Electroanalysis *with* Carbon Paste Electrodes

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Electroanalysis *with* Carbon Paste Electrodes

Ivan Švancara • Kurt Kalcher • Alain Walcarius • Karel Vytřas

Featuring a special Foreword by THEODORE KUWANA

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Image on the front cover of the book is a historical photo illustrating the detail of the very first prototype of carbon paste holder machined in workshops at the University of Pardubice in the mid-1980s. It should be noted that the extrusion of carbon paste from the body had been arranged just to show the presence of paste and its consistency.

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Foreword

A TRIBUTE TO THE LATE PROFESSOR RALPH N. ADAMS, INVENTOR OF THE CARBON PASTE ELECTRODE

During the early days of his research, Professor Ralph N. Adams (RNA) was interested in the electro-oxidation of organic compounds, mainly aromatic amines. The two principal materials used as electrodes for such electro-oxidations were platinum and carbon in various physical configurations (e.g., Pt as wire or planar foil and carbon as rods or sheets). A major problem with such solid electrodes, however, was the contamination and fouling of the electrode surface due to the product(s) of these electro-oxidations. He kept thinking that it would be nice to have an electrode like dropping mercury electrode (DME), which had a renewed surface with each new drop. Of course, Hg is not used in the anodic potential range since it itself readily undergoes oxidation.

In analogy to DME, Adams envisioned a dropping carbon electrode consisting of finely powdered, conductive carbon, like carbon black, with an inert organic liquid, mixed to be sufficiently fluid to flow through a thin capillary tube. Thus, the idea of a carbon paste electrode (CPE) was born, but implementation as a dropping electrode was still a problem. The organic liquid would separate from the carbon particles when the composition was sufficiently fluid to flow in the capillary, thus leading to an electrical disconnect.

At the time, I was a graduate student working on the oxidation of aromatic amines with an electrochemical cell that had a small circular cavity at the bottom containing Hg. The Hg surface was oxidized first in the presence of chloride ion to form a thin passivating film of mercurous chloride prior to introduction of the organic compound of interest. Adams thought that the cavity of this cell could be filled with the carbon paste (CP) to comprise a CPE in a stationary format. This CPE configuration worked well but was impractical since easy replacement of the CPE was inconvenient. So he machined an electrode that had had a small diameter cavity at the end of a Teflon rod which could be easily filled with the CP (carbon particles mixed with bromonaphthalene to a consistency like peanut butter). A Pt wire through the center of the rod extending into the cavity made electrical contact with the CP. This CPE could be readily removed from the cell for refreshing the surface by "scraping" the surface with a spatula or replacing the CP.

The advantages of the CPE (see Refs. [1–3]) were the low residual background current, the reproducibility of successive voltammetric scans, applications to both oxidations and reductions (hence the large applicable potential range), and low cost. For reductions, it was not necessary to remove oxygen because of the large overpotential for oxygen reduction. Adams and his students subsequently developed several configurations (see Refs. [4,5]), including a rotating ring-disc electrode, and studied the physical, chemical, and electrochemical characteristics of CP mixtures with different carbon particles, pasting liquids, and when using various model redox systems for both oxidations and reductions. Acheson graphite mixed with Nujol (a mineral oil) became the standard CPE for the lab.

As suggested by Adams, the reduction of metal ions to their metallic state would produce a reverse oxidative wave similar in shape to the stripping of metals from a Hg electrode. This idea of partitioning into CPE gave rise to experiments where organic compounds, insoluble in water, could be dissolved in the pasting liquid and oxidized or reduced to the water-soluble ionic state, thereby exhibiting voltammetric waves with diffusional characteristics (see Refs. [6,7]). An early application of the CPE was in a flow cell as a detector of electroactive species for liquid chromatography (LC), which subsequently gave rise to many forms of LC-EC.

Adams was an "idea scientist," unafraid to take risk to pioneer innovations. Examples include the placement of a small electrochemical cell with a metal electrode (Pt) in the cavity of the magnet of an ESR spectrometer to obtain spectra of electrogenerated free radicals, and the insertion of

microelectrodes in brain tissues for *in situ* electrochemical monitoring of neurotransmitters—all the aforementioned were "firsts," albeit many peer electrochemists at the time ridiculed his ideas when he first discussed them. He would come to the lab before sunrise (e.g., 4:00 a.m.) to do experiments and then return home to have breakfast with his family before coming back to meet with student and teach his courses. His hobby was flying, a skill he learned as a World War II bomber pilot (see Figure F.1), and his students often had memorable (stomach turning) flights of acrobatics with "Buzz"—a nickname for obvious reasons.



FIGURE F.1 R. N. Adams, ace chemist and pilot. A reproduction of the front cover of a contemporaneous local magazine. (From personal archives of Prof. Kuwana, with his kindly permission.)

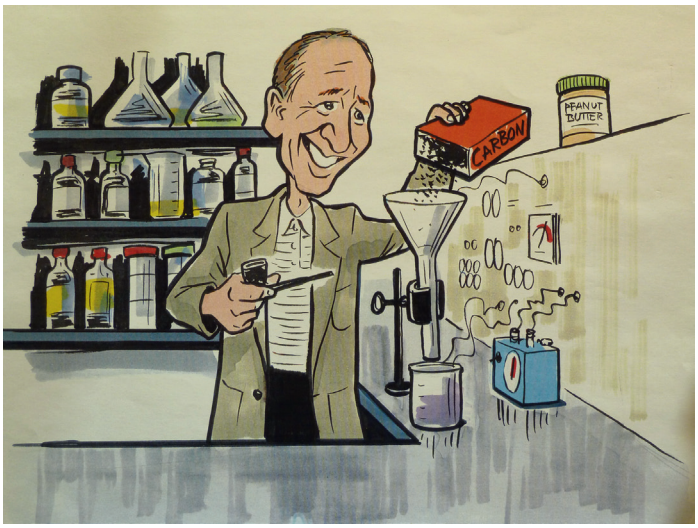


FIGURE F.2 Adams making carbon paste. A cartoon drawing. (From personal archives of Prof. Kuwana, with his kindly permission and with courtesy of Dr. Donald W. Leedy.)

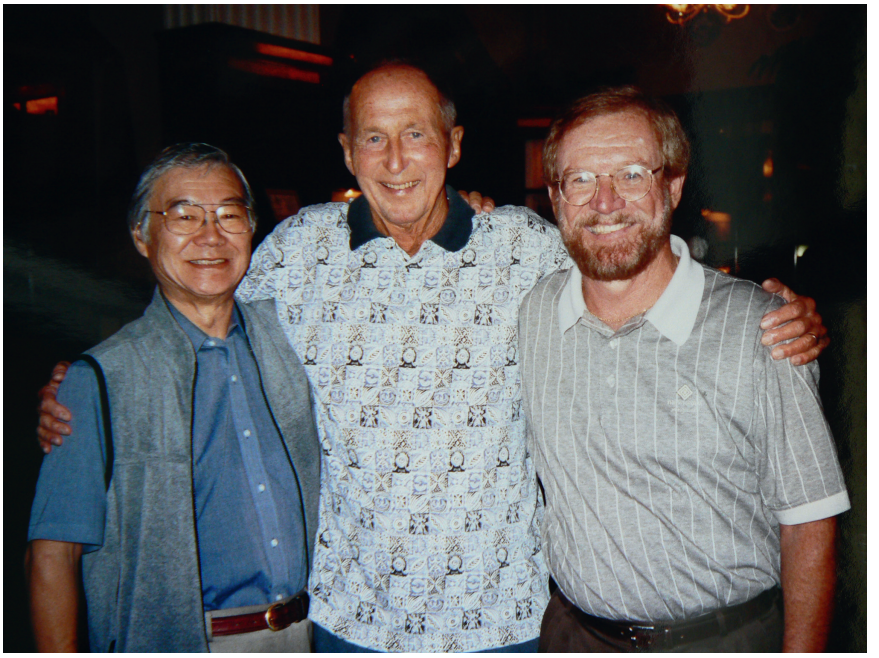


FIGURE F.3 Professor Adams with his students. From left to right: Theodore "Ted" Kuwana, Ralph "Buzz" Adams, and Donald W. Leedy, the last-mentioned being responsible for the drawing "Adams making carbon paste." This picture was taken in 1999 at a reunion of Professor Adams with his students. (From personal archives of Prof. Kuwana and with his kindly permission.)



FIGURE F.4 From a scientific discussion (about carbon paste electrodes?). From left to right: Professor Kurt Kalcher, Professor Theodore "Ted" Kuwana, and Professor Karel Vytras. The photo was shot in 1999 at the 7th International Seminar on Electroanalytical Chemistry (held in Changchun, China). (From authors' archives.)

His enthusiasm for science and life was infectious (see Figure F.2). Adams was just a wonderful scientist and human being. Many stories abound about him, including his habit from his days when he grew up on the beach in New Jersey—that is, not wearing sox…

Congratulations to the authors of this book for documenting the developments and applications of CPE and allowing this introduction about its inventor, the late Professor Ralph N. Adams (Figures F.3 and F.4). I end with what he told his students: "If you love what you are doing, the rewards will take care of themselves…".

Theodore "Ted" Kuwana
Lawrence, Kansas

REFERENCES

1. Adams, R.N. 1958. Carbon paste electrodes. *Anal. Chem*. 30:1576.
2. Adams, R.N. 1963. Carbon paste electrodes. A review. *Rev. Polarog*. 11:71–78.
3. Olson, C. and R.N. Adams. 1960. Carbon paste electrodes: Application to anodic voltammetry. *Anal. Chim. Acta* 22:582–589.
4. Olson, C.L. 1962. Investigation concerning the development and use of carbon paste electrodes for voltammetric measurements. PhD dissertation, University of Kansas, Lawrence, KS.
5. Galus, Z., C. Olson, H.Y. Lee, and R.N. Adams. 1962. Rotating disk electrodes. *Anal. Chem*. 34:164–166.
6. Kuwana, T. and W.G. French. 1964. Carbon paste electrodes containing some electroactive compounds. *Anal. Chem*. 36:241–242.
7. Schultz, F.A. and T. Kuwana. 1965. Electrochemical studies of organic compounds dissolved in carbon-paste electrodes. *Electroanal. Chem*. 10:95–103.

Preface

This book, *Electroanalysis with Carbon Paste Electrodes*, aims, for the very first time, to cover the long-established position of carbon paste in electrochemistry and electroanalysis.

Indeed, except for a series of contemporary reviews and a recent entry in the *Encyclopedia of Sensors* (*EOS*), there has been no specific textbook since the late 1950s (when carbon paste was invented) devoted exclusively to electroanalysis with carbon paste electrodes (CPEs) that attempts to cover the field in its entirety. The classic monograph, *Electrochemistry at Solid Electrodes*, by Ralph N. Adams—the inventor of carbon paste—published in 1969, cannot be regarded as a comprehensive book on CPEs because it deals with only basic facts and merely covers the early era of the field, whereas most of the milestones and principal innovations took place much later.

The idea of compiling this book came to us sometime in the mid-2000s, shortly after we had finished working on the aforementioned contribution to the *EOS*. We had been provided a wide scope for our overview and, thanks to such benevolence, we were encouraged to explore a still wider concept, resulting eventually in this book. As time went by, our team also published a series of new review articles that, in retrospect, were like actual presentations of the updated information we had been systematically gathering (to complete our archives) for the book.

The actual work on this book started in the winter of 2009/2010 and took us a year and a half to finish. It can be noted here that our original intention to use material from the aforementioned recent reviews was soon abandoned, and the book was written anew. Thus, current "hot topics" were integrated with the latest developments in the field, including novel types of CPEs (associated with the massive use of nanomaterials, ionic liquids, and other newly synthesized products), actual reflections of environment-friendly ("green") chemistry, and all the features illustrating flexible adaptation of CPEs, as well as the latest trends in biological and clinical analysis. (Herein, it should be emphasized that the latter area, especially, has been dealt with particular care as it was reviewed for the first time after many years.)

Moreover, all the actualities included were discussed and analyzed in the overall context considering numerous historical aspects as well as countless relations and links among the individual categories, themes, and phenomena. (This is also the reason why individual sections and paragraphs are closely linked and frequently navigate to the previous or, vice versa, following text.)

This book covers an enormously wide area of electrochemical and electroanalytical measurements with carbon paste–based electrodes, sensors, and detectors and required a balanced approach to compile. This was accomplished by dividing the major topics and distributing the respective themes among the four authors, who worked on a joint schedule, but in their own independent capacity. However, despite our best efforts, we have to admit certain overlaps that can be found in some chapters and sections. However, this has been left as it is so as not to spoil the integrality and the overall presentation of the individual chapters or sections.

On the other hand, we have paid special attention to avoid duplicities in the literature cited. Our decision to gather all the references (3300 in all) at the end of the book rather than citing them at the end of every chapter resulted in tremendous work. Thus, without the invaluable help of a special computer program (developed by one of us), which, at its optimum, could perform more than 3,000,000 mutual comparisons in one run, we would have continued to check and renumber all the references manually till today! Regarding the references as such, the "deadline" for having them ready was set as the summer of 2010, and articles officially published beyond this period are cited only occasionally.

Acknowledgments

Herein, we would like to acknowledge all the people who have been involved with this book. We are grateful to Professor Charles H. Lochmüller, who first suggested CRC Press/Taylor & Francis Group as a possible publisher, and to Barbara Glunn, David Fausel, Vinithan Sethumadhavan, and Joette Lynch with their production teams at Taylor & Francis for kindly helping us whenever we needed and for tremendous editorial work on our textbook. We are particularly delighted that Theodore "Ted" Kuwana, emeritus distinguished professor at the University of Kansas, who witnessed the very beginnings of the field, agreed to write a foreword for this book. He also supplied us with some personal material, which gave impetus to our work, and provided genuine encouragement.

Further, we are indebted to the following collaborators, colleagues, and friends for kindly providing literature material we could use and include in our reference list: Professor Jiří Zima (Charles University, Prague, Czech Republic), Dr. Miroslav Fojta (Institute of Biophysics, Brno, Czech Republic), Professor Ján Labuda (Slovak Technical University, Bratislava, Slovakia), Dr. Zuzana Navrátilová (Ostrava University, Czech Republic), Dr. Jana Skopalová (Palacky University, Olomouc, Czech Republic), and Dr. Libuše Trnková (Masaryk University, Brno, Czech Republic). Thanks also to a number of distinguished scientists who have contributed to our book through fruitful personal discussions or correspondence. They include Professor Joseph "Joe" Wang (University of California San Diego, California), always interested in our opinion on the news in the field; Professor Robert D. O'Neill (University College Dublin, Ireland), who willingly revised the chapter on *in vivo* electrochemistry; Professor Karel Štulík (Charles University, Prague, Czech Republic) with his valuable glosses; and Professor Robert Kalvoda (Heyrovský Institute, Prague, Czech Republic), who sadly passed away during the preparation of this book, leaving us his fond memories of Professor R. N. Adams. We would also like to thank all our coworkers who did research with us and under our supervision, as well as the electrochemists working with CPEs for publishing their results. It is indeed their work that made the realization of this project possible.

We would like to extend our thanks to Professor Jiří Barek (Charles University, Prague, Czech Republic), Professor Andrzej Bobrowski (AGH University, Krakow, Poland), Dr. Anastasios Economou (University of Athens, Greece), and Dr. Samo B. Hočevar (National Institute of Chemistry, Ljubljana, Slovenia), for their kind assessment and critical comments on the preliminary draft. Finally, Ivan Švancara and Karel Vytřas gratefully acknowledge financial support from the Ministry of Education, Youth, and Sports of the Czech Republic (project # MSM0021627502).

In particular, all of us express our gratitude and thankfulness to our relatives and friends and to our beloved family members, wives, and children, all of whom gracefully accepted our prolonged absences due to our constant engagement with the work related to the preparation of the book.

Last but not least, we would appreciate comments from readers, as some contributions or useful details could have escaped our attention and did not appear in the final text. Such a feedback is always welcome and will be reflected in our future work—including a possible updated edition of this book.

Ivan Švancara
Kurt Kalcher
Alain Walcarius
Karel Vytřas

1 Introduction to Electrochemistry and Electroanalysis with Carbon Paste–Based Electrodes

1.1 HISTORICAL SURVEY AND GLOSSARY

"During an investigation of the properties of a dropping carbon electrode, a new paste electrode has been developed which possesses unique advantages in anodic polarography. …" says an opening sentence of the first report on carbon paste electrode (CPE) with a laconic title *Carbon Paste Electrodes* [1]. The author of this text, Ralph N. Adams (Appendix A), had thus stepped into the history as the inventor of carbon paste for electrochemical and electroanalytical measurements.

The aforementioned formulation reveals that it happened more or less coincidentally, when the background of the discovery was mentioned in the inventor's first review on CPEs [2] and, some years later, revealed fully in his monograph [3]. Therein, on page 280, one can read as follows:

> … Carbon paste electrodes developed from an attempt to prepare a fluid of suspended carbon particles to be used in the sense of a dropping electrode for anodic oxidations. Such a mixture can be prepared and dropped from a capillary of internal bore slightly greater that that of the DME. However, the conditions for successful operation of the dropping carbon paste electrode are far from ideal, and it soon became apparent that a thicker paste, packed in a pool configuration and used either stationary or rotated, would be far more advantageous …

Finally, these circumstances were also confirmed by *Theodore Kuwana*, Adams's former student [4,5], the author of a special foreword in this book, and one of the first electrochemists who had ever worked with carbon paste. During a short meeting with the authors a decade ago [6], he said that he was "the slave" who had been working in the laboratory with the dropping carbon electrode (DCE) during the experimental testing of this device, as well as with the very first carbon paste mixtures made afterward. Despite some initial optimism (see the Adams's concluding words in his pioneering report [1]), the whole concept of the DCE failed; nevertheless, the unsuccessful work with fluid graphite suspensions had resulted in an unexpected side product—the carbon paste. In addition, the mixtures of this consistency soon became so popular that carbon pastes as such represented the classic electrode material for laboratory preparations of electrodes, sensors, and detectors of innumerable types, sizes, and configurations.

Before having achieved such a position, however, the carbon paste–based electrodes had undergone a very interesting genesis, comprising a number of significant developments and achievements. It may even be stated that there is scarcely another type of electrode material whose employment would illustrate more faithfully the overall progress—or, on the contrary, the individual movements and trends—in electrochemical and electroanalytical measurements over half a century—across the time period of existence of carbon paste [7].

The era of carbon paste–based electrodes can then be summarized by means of the following periods and key moments.

1.1.1 1958: The Very First Report on Carbon Paste Electrodes

As already noticed, the end of the 1950s saw an unsuccessful attempt at constructing an alternative to Heyrovský's dropping mercury electrode for anodic oxidations [1]. Instead, the electrochemists obtained a brand new electrode material—carbon paste—whose potentialities in electrochemical research and applied measurements could only be assumed at that time. This was pretty well formulated by *Peter T. Kissinger*, another Adams's student, in his dedicated profile [5]: "… I don't think anyone could have predicted a number of carbon paste publications from reading the very first carbon paste article …" (Herein, we can add that this number is currently around 2500 scientific publications, increasing by 20–30 new items each month.)

The first carbon paste was a mixture of 1 g carbon powder with 7 mL bromoform, whose properties were demonstrated on the oxidation of iodide in a solution of 1×10^{-4} M I^- in 1 M H_2SO_4; the second paste was reportedly tested as a mixture of graphite and carbon tetrachloride [1]. In retrospect, these pioneering experiments had been quite atypical for research activities of the carbon paste inventor and his group whose domain was mainly organic electrochemistry.

1.1.2 1959–1963: Proposals of Carbon Pastes, Their Characterization, and Initial Applications

The early years of using CPEs can be classified as the "Era of Adams's Group" or "Era of the Electrochemists from Kansas University (KU)." At that time, several selected types of carbon pastes were subjected to a fundamental characterization in anodic and cathodic voltammetry [8,9], using both inorganic and organic compounds as model species or systems. Of interest were also self-made carbon paste holders applicable in several different electrode configurations [10,11].

As time went by, the initially preferred halogenated liquids were replaced by less harmful and commercially available mineral oils such as Nujol®, which was finally recommended as the pasting liquid of choice. (It is notable that this substance is still one of the most popular binders for the preparation of carbon pastes and its use is being regularly reported in research articles until now [7].) Satisfactory experience from the testing measurements with CPEs soon initiated their systematic employment in investigations of the electrode behavior of various substances, predominantly biologically important aromates from the family of substituted phenols, aromatic amines, and aminophenols. The results of these studies were first summarized in Adams's review [2] and later, in more detail, in the aforementioned textbook [3]. Moreover, after a lengthy period of four decades, these invaluable investigations are again the central point of interest within this book—in Section 7.1.

Extensive studies of both anodic oxidations and cathodic reductions of organic compounds were typically qualitative in nature, and therefore, the first quantitative analysis with carbon paste–based electrodes can be attributed to Jacob's simultaneous determination of gold and silver [12] who was using atypical (bell-shaped) tubings filled with carbon paste. The author of the corresponding procedure, offering the limits of detections at the nanomolar level despite the use of direct voltammetry (i.e., without accumulation step), is also an early user of CPEs who had not originated from the research team at the KU, the other two being Davis and Everhart [13].

1.1.3 1964, 1965: First Modifications of Carbon Pastes

In the mid-1960s, two other breaking events happened in Adams's laboratories. First, it was shown that carbon pastes made of the two main constituents might contain another component and the resultant system offered new attractive applications in electrochemical research [14,15]. The intention of such an approach was to use the binary nature of carbon pastes for obtaining a simple approach to study the electrode behavior of compounds completely insoluble in aqueous solutions (see also the foreword to this book). Because the whole concept "bare carbon paste + substance

admixed in" could later be adapted for studying inorganic solids, the pioneering studies by Kuwana et al. are often regarded to be the initial step in the development of the so-called carbon paste electroactive electrodes (CPEEs) that are discussed separately, in Section 7.2.

A similar reason—i.e., combination of CPEs with measurements in organic solvents—was also behind the second key work [16] that introduced a new type of CPE containing up to 50% (w/w) of solid surfactant dissolved in the binder, acting as the stabilizer against disintegration of the native paste in nonaqueous solutions of a majority of organic solvents (e.g., MeOH, EtOH, ACN, DMSO, or DMFA). In this case, one can also refer to the purposely performed change in the typical properties of carbon paste mixtures in an effort to improve their resistivity in aggressive conditions. In other words and generally, this study was the first actual modification of carbon pastes, leading to the desired behavior of a particular CPE for a given application.

1.1.4 1965–1975: Expansion of Carbon Paste Electrodes in Electrochemical Laboratories

Whereas the activities of Adams's school had continued (see, e.g., [17–25]), representing—with a few exceptions [26,27]—the research activities in Northern America, electrochemists and electroanalysts in the Old Continent came rapidly to the fore [28–40]. In the late 1960s, especially, researchers from the Central Europe were active in developing and characterizing various types of CPEs [28–32], including newly proposed mixtures with silicon polymer–based binders such as highly viscous oils and greases [28] or even rubber [32]. (The latter was apparently the first example of the "solid-like" CPE whose originally soft consistency had been turned to a compact composite by solidifying the binder, here, by cold vulcanization.) Within these studies, some innovative constructions of carbon paste holders were designed [28,31], featuring also an unusual device for renewing the carbon paste surface with the aid of a stretched piano string [33] or new filling procedures [34]. Finally, there were some pioneering reports on the use of a CPE in equilibrium potentiometry [35,36], in analysis of biologically important compounds [37], or in voltammetry of solids [38].

The 1970s brought several valuable contributions into the advanced characterization of CPEs [39–41], including a sophisticated procedure for protecting the graphite particles against sorption of air oxygen [39], which had attracted the carbon paste inventor himself [3]. The same time period saw also the decline of Adams's dominance in the field [42–44], more specifically, his reorientation toward pharmaceutical and biological sciences—pharmacotoxicology and *in vivo* monitoring [45–50]. (The last contribution is a review, cementing Adams's position within the clinical research—namely, in contemporary brain electrochemistry—and it has also commented in detail on the first successful assays with carbon paste–based microelectrodes implanted in living laboratory animals.)

1.1.5 1976–1980: Pioneering Chemical Modifications of Carbon Paste

The late 1970s showing some stagnation in publication activities (see Figure 1.1) had spawned two studies whose significance was soon recognized as a breakthrough in the field. At first, Cheek and Nelson ([51]; the second author being further absolvent of Adams's school [4]) reported on an intentionally made modification with amino groups chemically immobilized onto the graphite particles by means of rather complicated laboratory procedure. However, the effort made had been compensated by the result, and the sensor was found to exhibit a high affinity to Ag(I) ions, enabling their determination far below the sub-nanomolar level. The second milestone happened in Japan, where Yao and Musha [52] introduced the first prototype of a carbon paste biosensor, although, according to the authors themselves, the respective configuration was a chemically modified CPE applied to the determination of a biologically important compound. Apart from the proper classification, both reports predetermined the turbulent movement in the subsequent decades signaling two dominant areas: (i) chemically modified CPEs and (ii) biologically modified CPEs (carbon paste–based biosensors).

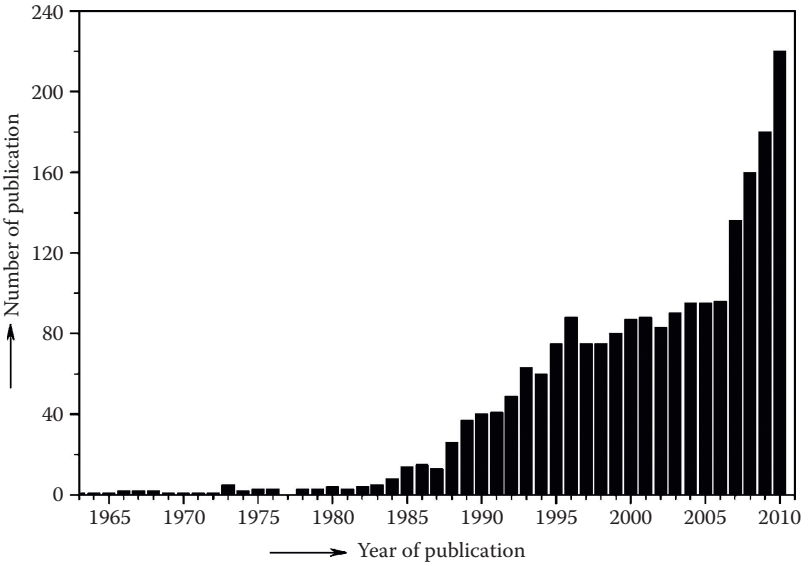


FIGURE 1.1 Carbon paste electrodes in publication activity over the whole period of 1958–2010. Diagram. (From authors' archives.)

1.1.6 1981–1988: Era of Chemically Modified Carbon Paste Electrodes

All the previous results from measurements with carbon pastes containing additional constituents could not remain unnoticed. The specific combination of the two major components in solid and liquid states with evident potential for multicomponent concept and in contrast with simple laboratory preparation gave altogether such an attractive proposition that it was a question of time, when these features would be reflected in wider applications. The real boom was apparently ignited by a report by Ravichandran and Baldwin [53] who had used the advantages of "mechanical modification" (i.e., direct mixing of both main carbon paste components with a modifier) and who were probably the first to introduce the term *chemically modified carbon paste electrode* (CMCPE) [53,54]. Their method of modification by means of incorporation of modifying agent into the carbon paste is now regarded as revolutionary [7], although the concept of direct modification had not been new and resembled the preparation of Kuwana's ferrocene-containing CPEs [14,15] or Adams's "nonaqueous CPE" [16], all appearing in the early 1960s. On the other hand, there were some nuances in the proper making, when the modifier could be delivered into the bulk through (i) its dissolution in the binder [14,15] or loaded as a solid [16,53,54] by (ii) mixing it with both main components as well as into the ready-made carbon paste.

Although the entire 1980s have been influential mainly in association with the development and applications of CMCPEs (for comprehensive surveys, see, e.g., [55,56]), electrodes made of traditional carbon paste mixtures were still of interest. Such unmodified CPEs were successfully employed in analyses of pharmaceuticals [57], biologically important compounds [58], or organic pollutants [59]. In parallel, there also were studies continuing in the characterization of unmodified carbon pastes [60], including their testing in newly introduced modern instrumentation [61,62], some of them trying to improve their surface characteristics by means of a pretreatment by intensive electrolysis [63] or through addition of a surfactant [64]. In addition, there were attempts to replace the pasting liquid by more resistant high-molecular PVC binder [65], chlorofluorinated polymeric fluid, *Kel-F*® [66], or via the total alteration of the CPE surface by its spraying with solid graphite layer [67], all these configurations documenting further applicability of "solid-like" CPE configurations. At the end of the commentary on this period, one should not forget to quote Adams's farewell

to the world of carbon pastes in his classical contribution to the reaction kinetics of CPEs [68], having achieved a remarkable citation index and competing, in this respect, with the introductory report itself (see [7] and data analysis therein).

1.1.7 1988–1995: Worldwide Spread of Carbon Pastes with Enzymes as a Novel Type of Biosensor

Hand in hand with the development of CMCPEs [69], carbon pastes were also examined as a substrate for incorporating biological modifiers—enzymes, co-enzymes, or suitable tissues containing such natural catalysts. Hitherto the most comprehensive review on CP-based biosensors [70] quotes that the earliest examples of such modifications go back to the 1980s or even before, which is the case of the already mentioned electrode [52] with chemically immobilized species of NAD^+ (oxidized form of NADH). Similar attempts followed soon, where enzyme(s) had been anchored onto the protective membranes of carbon paste–based substrates with admixed mediators (see, e.g., [71,72]). However, the direct incorporation of enzyme into a carbon paste—i.e., mechanical modification without any other linking or coating elements—was described for the first time by Matuszewski and Trojanowicz [73]. Their simple sensing device for amperometric detection of glucose contained the paste with glucose oxidase embedded inside and loaded into a small well at the bottom of a common electrode shaft. Reportedly, excellent stability of such a sensor (min. 3 weeks) together with surprisingly rapid response due to the functioning of carbon paste as arrays of miniature membranes [69,70] seems to be a sufficiently stimulating factor that had initiated a real boom in the development and subsequent applications of biologically modified carbon paste electrodes, commonly known as CP-biosensors.

Thus, this type of biosensors came rapidly to the fore, forming in a short time another major area within the electrochemistry with CPEs. Again, one of the reasons for this widespread use was the uniqueness of carbon paste materials in their flexibility to be modified. Similarly as with CMCPEs, carbon paste–based biosensors offer a wider choice in modification strategies than those available for common solid electrode materials. Among others, the substrates from heterogeneous carbon pastes allow one to incorporate an enzyme and a mediator in one matrix, which improves the kinetics of the corresponding enzymatic reaction and fastens the biosensor response. Also, carbon pastes can be simply modified with two different enzymes forming bifunctional (dual) biosensors and may contain suitable stabilizing additives as well as some biological tissues or microbial cells (particular examples and further details are given in Chapter 5). These carbon paste–based dual sensors were one of the models for the future constructions of multifunctional sensors known as electronic tongues (see the following).

It can be concluded that biologically modified carbon pastes had been in a lead position throughout the 1990s, holding the same position up to the mid-2000s, when laboratory-made carbon paste material stepped into an uneven confrontation with commercially marketed carbon inks as substrates for serial machining or manufacturing of screen-printed (carbon) electrodes, SP(C)Es [74]. This hypothetical battle had its beginnings in the mid-1990s [75], thus characterizing the upcoming period of our chronicle.

1.1.8 1996–2000: Starting Competition of Traditional Carbon Pastes with Screen-Printed Sensors and Other Carbon Composites

Probably the first analysis devoted to this competition was included in the review [75] introduced earlier, positioning CPEs in the role of laboratory predecessors of SP(C)Es. Because the respective literature source is not so easily accessible, the entire rather visionary discussion can be briefly presented herein—through interpretation of carbon pastes and carbon inks as the electrode material close in nature. Both are heterogeneous substrates and both can be classified as dispersions of

carbon or graphite particles in suitable binders. Regarding CPEs, the latter is represented by pasting liquid that stays in the liquid state even after preparation of the carbon paste mixture; whereas, in SPEs, the original fluid agent is solidified during the machining of the final product. Thus, although the resultant properties of a CPE and the selected SPE can be quite different, the method of eventual modification is nearly the same, including the direct mixing of the two main components with the modifying agent. If such modification is to be used for the first time and hence tested in advance, it is evident that the whole process for SPEs (including model measurements) can be simulated with CPEs, which is advantageous because the corresponding procedure with a CPE is usually much simpler. Yet another factor in favor of this strategy is the fact that SPEs are typically made in special machines as integrated series (sets) of many electrodes [74] and their repeated fabrication just for testing would became unacceptable from the economical point of view.

Besides SP(C)Es, there are a number of other carbon composite materials for which the respective sensing units are called "carbon paste–like" or "pseudo-carbon paste" electrodes, often, by the authors themselves. Some of them have already been introduced in the previous sections [33,62,63]); further types and prototypes have been proposed newly [76–79]. One of such composites was a mixture of carbon powder with melted phenanthrene [76], when the hot liquid homogeneous mixture was cooled down, thus giving rise to a granular mass that could be stored for later use. Then, before use, a portion of such granules was melted up and—as a fluid—packed into an ordinary carbon paste holder. Alternatively, this solid-like carbon paste material could be modified like common carbon paste mixtures, either by incorporating a modifier into the mixture—again, in melted form—or *in situ* if the modifying agent(s) tended to decompose at higher temperatures.

Other types of "solid-like" CPEs were polyethylene-based carbon paste solid-like mixture [77], with the modifier added, and the relatively popular paraffin wax–based carbon composites (see, e.g., [78,79]), continuing in the concept of a pioneering prototype by Crow and his "carbon wax electrode" (CWE [80]). In these cases, the electrode material itself is obtainable in the same way as for the previously described phenanthrene-s-CPE, and its later modification can also be performed analogically.

Similar to the previous decade, the 1990s with CPEs were also surveyed in some contemporary reviews [81,82], highlighting the significance of new technologies in the area and the flexibility of carbon paste as being "ready for things to come."

1.1.9 2000–2001: Carbon Pastes and New Technologies

The arrival of a new millennium coincided with rapidly increasing applicability of materials that had been developed with the aid of new technologies. In electroanalysis with carbon pastes, they are represented mainly by two major groups of modifiers [83]: (a) complexants and (b) redox electrocatalysts, including mediators for biosensing, when—from the chemical point of view—the individual compounds typically belong to the so-called inorganic or organic hybrids; e.g., various (I) cations of the $[Me^{N}(A)_a(B)_b]^{m+}$ type (where "Me" is a metal of the iron or platinum groups, "A" inorganic ligand, and "B" organic molecule or vice versa) or (II) heteropoly-anions based on Si^{IV}, P^{V}, and As^{V} as central atoms, Mo^{VI}, W^{VI}, and V^{V} as metals in oxo-anionic ligands, both in combination with voluminous organic and organometallic cations as well as neutral organic molecules.

These complex structures offer numerous attractive properties owing to their multifunctional nature, coupling in one the mechanical stability of the inorganic lattice, chemical reactivity of the organic moiety, and its lipophilicity, which ensures good adhesion of the voluminous molecule to the hydrophobic carbon paste surface or bulk, respectively [84].

Incorporations of these substances and materials into various CPE configurations cannot, of course, be confined to a couple of years as evoked by the title of this section, because their applications have been or are of interest for many years—before, as well as after, the commencement of the year 2000. This is also emphasized in two recent reviews [83,84] analyzing for the first time the phenomenon called "carbon paste vs. new technologies" and mapping in detail the respective

research activities that accompany the electrochemistry and electroanalysis with carbon paste–based electrodes until now.

In order to describe the earlier stated and to illustrate the situation on the verge of the centuries, some examples can be given. An inorganic or organic hybrid was of interest in studies [85,86], whereas the use of a traditional analytical reagent in a new role of mediator is reported in [87], demonstrating also a special immobilization of the sol-gel type. Such procedures, as cross-linking of an enzyme [88], were usually connected with applications of silica and titanica porous matrices, representing yet another example of "modern" modifiers whose boom had peaked mainly in the 1990s [89].

Among typical trends of the early 2000s, one can quote the advanced investigations of nucleic acids [90], with the roots in the previous decade (see, e.g., [91] or [92], the former being also notable for the lowest detection limit ever reported for a CPE: 4×10^{-16} mol L^{-1} [7]); the increasing use of various nanomaterials (e.g., colloidal gold [93], renamed soon to nanogold [94], apparently, under the influence of contemporary nomenclature—see also a critical note in [84]), continuing efforts in seeking novel types of CPEs (such as "glassy carbon paste electrode" [GCPE] [95], having an almost identical predecessor in the productive 1990s [96]) or further expansion of SP(C)Es ([97], in this case, sorted among CPEs by the authors themselves). Finally, there are also some rarities; for instance, (probably) the first prototype of a reference electrode based on carbon paste [98], cyanobacteria-containing carbon paste applied to accomplish the photoelectrochemical oxidation of water [99] or a novel solar cell [100], documenting once again the potentialities of carbon pastes in new technologies.

1.1.10 2002–2003: Carbon Pastes Follow the Concept of Green Chemistry

This point reflects the growing intensity of the ecologic aspects of modern instrumental analysis and the associated research, giving rise to a new field of "green chemistry" [101].

In this respect, carbon pastes as such are quite a fine material, when traditional mixtures are practically nontoxic. Nevertheless and despite this, the investigations with CPEs, CMCPEs, and CP-biosensors were further directed toward the green-chemistry concept. One of the most typical activities of the last decade was the search for an alternative to controversial mercury electrodes, which would be applicable in electrochemical stripping analysis (ESA) to the determination of heavy metal ions, with comparable performance. Moreover, the great success with the bismuth film electrode (BiFE), introduced under these circumstances in 2000 [102], opened a door for a new electroanalytical area with nonmercury metallic electrodes, where carbon pastes had been among the firsts [103,104], still the most frequently used electrode substrates thanks to the diversity with which they can be modified with bismuth and bismuth compounds.

Other contributions that were ecologically useful [105–110] appeared in parallel with the early reports on bismuth-film plated CPEs (BiF-CPEs). Thus, there was an interesting method for speciation of Hg_2^{2+} and Hg^{2+} [105]; determination of Hg(II), Pb(II), and Cd(II) [106,107]; or differentiation and subsequent quantification of both As^{III} and As^{V} [108], all representing highly toxic species in the environment. Finally, similar methods have been proposed for notorious organic pollutants such as phenol [109] and two commercial herbicides [110], which were also phenolic derivatives.

1.1.11 2003–2010: Brand New Carbon Pastes and Their Immediate Success

The last period of our chronicle concerns again a number of the previously pursued activities, such as the continuing employment of various CMCPEs and solid-like CPEs in inorganic and organic analyses, pharmaceutical and clinical analyses, or for the investigation and determination of numerous biologically important compounds. At still growing intensity, there have been further applications of new materials, novel types of modifiers, as well as various innovative procedures. All these

trends are also documented in the retrospective literature [7,83,84], including the latest two reviews [111,112], with a collection of review articles since the appearance of the very first contribution [2] of a kind compiled nearly a half a century ago by R.N. Adams, the inventor of carbon paste.

However, the most significant movement of the late 2000s is undoubtedly associated with the commencement of newly synthesized forms of carbon (i) besides or (ii) instead of ordinary graphite and with (iii) conventional or (iv) alternate binders, as well as (v) both in one mixture. These five possible combinations have logically resulted in a qualitatively variable family of new carbon paste mixtures.

Within this area, (i) glassy carbon powder with spherical particles and a specially pretreated surface [95,96,113] came again to the fore, shown newly as the electrode material with extraordinary resistivity in media with a higher content of organic solvents (such as solutions containing up to 80%–90% (v/v) MeOH [114]). Better performances due to electrocatalytic effect on reaction kinetics compared with traditional carbon or graphite materials have then been reported for carbon pastes prepared from (ii) acetylene black [115], (iii) template carbon, (iv) porous carbon foam, (v) porous carbon microspheres [116], and (vi) fullerene "C-60" [117]. Interestingly, the carbon moiety in a paste mixture can also be (vii) diamond powder [118] despite its almost zero conductivity. In the last few years, intensively popularized new forms of carbon have been completed with (viii) ordered mesoporous carbon [119]), (ix) carbon nanoparticles [120], (x) electrospun carbon nanofibers (ES-CFs [121]), or with (xi) carbon nanotubes [122] and their two basic variants: single wall carbon nanotubes, SWCNT(s) and multiwall carbon nanotubes, MWCNT(s).

The CNT(s) deserve a special attention as their introduction into electrochemistry with carbon pastes [123,124] has started a little revolution in the field, with the unprecedented boom of qualitatively new carbon paste mixtures and the respective electrodes, known soon as "carbon nanotube paste electrodes" (CNTPEs). A similar situation occurred after the first successful testing of the (room-temperature) ionic liquids, (RT)ILs, in carbon paste configurations [125]. It was shown soon that ILs may effectively replace traditional pasting liquids [126], giving rise to another new type of carbon paste–based electrodes, the so-called "carbon ionic liquid electrodes" (CILEs). In accordance with the aforementioned variability of configurations with alternate carbon paste constituents, the mutual combinations of CNT or ES-CFs with ILs came as well, giving rise to further new mixtures [127,128], where one does not find any of the two traditional components.

Otherwise, the last years of the 2000s have also seen some new trends in electrochemical investigation, for instance, the rapidly increasing popularity of carbon pastes as substrates for electropolymerization or their compatibility to form integrated systems with modifiers loaded inside such polymeric layers (see [129–138]). Another example of such activities is a rapidly growing area of continuing syntheses and testing of various inorganic or organic hybrids, especially, of new catalysts. Within the respective procedures, one can also find quite sophisticated methods of direct modification of carbon during electrospinning [139] or a long string of analogically oriented studies, originating from various Chinese regions and having appeared regularly each year (see, e.g., [140–147]).

For the latter, it is typical that the newly synthesized solids undergo an intimate characterization by means of the whole arsenal of instrumental techniques, namely, CHN-elemental analysis (EA); thermogravimetric analysis (TGA); microscopic techniques (SEM, STEM, and AFM); UV/vis-spectrophotometry; fluorimetry (F); roentgen spectroscopy of solids (XPS, XRF, and XRD); Fourier-transform infrared (FT-IR), Auger-, and mass spectroscopy (MS); and up to four variants of nuclear magnetic resonance (H^1-NMR, C^{13}-NMR, Si^{29}-NMR, and P^{31}-NMR). The electrochemistry with carbon pastes is then represented by cyclic voltammetry (CV), potentiostatic coulometry (COU), equilibrium potentiometry (POT), chronoamperometry (CA), electrochemical impedance spectroscopy (EIS), and mainly solid-state voltammetry (SPV) with the CPEE, where the material studied is admixed into the carbon paste bulk and, in this form, studied to evaluate its electrocatalytic capabilities in the redox behavior of selected model

substance(s). Regarding all the nonelectrochemical and electrochemical techniques listed earlier, the individual applications have also been surveyed (see [83,84] and references therein).

To summarize the 2000s with all the events, it should be added that the end of the decade saw a further decline of interest in CP-biosensors—at least, compared with the preceding periods [70,111]—and practically absolute fade-out of solid phase voltammetry with CPEEs, when the respective report(s) had appeared only seldom (e.g., [148,149]). Regarding the overall activities in the field, however, there was an abrupt increase in the last 3 years, for which there are two evident explanations: (i) stormy development of both CNTPEs and CILEs (representing around 150 publications) and (ii) the establishment of new online journals that have quickly become a pivotal platform for several productive authors' teams.

1.2 FIELD IN PUBLICATION ACTIVITIES AND LITERATURE

Research activities in the development and applications of CPEs, CMCPEs, CP-biosensors, or CPEEs within a period of more than half a century have affected practically all the areas of theoretical and applied electrochemistry. In some aspects, the results obtained have also contributed substantially to a successful competition of modern electrochemical measurements with rapidly expanding separation and spectral techniques. Since the discovery of carbon paste until now, it can be estimated that the terms "carbon paste" or "carbon paste electrode," respectively, have appeared in 2500–3000 original papers published in renowned international journals or local periodicals.

Publication intensity had run in several waves reflecting the individual periods of increasing interest, the times of the real boom, as well as some poorer years. To illustrate this, one obtains a diagram shown in Figure 1.1.

It can be deemed from that the exponential growth in the last three decades corresponds to (i) dynamic progress in the area of chemically modified carbon pastes during the 1980s and in the first half of the 1990s [55,56,59,69], (ii) similar boom in the introduction of various carbon paste–based biosensors through the 1990s and in the early 2000s [70,81,82], and (iii) maybe the most dynamically growing attention toward the new carbon paste mixtures, hand in hand with reflections of newly synthesized materials in all the CPE configurations [83]. The latter is particularly typical for the past few years [84,111,112], when the renowned Internet databases (e.g., "Web of Science" [150]) annually offered more than 150 abstracts of freshly published papers—see again Figure 1.1 as well as the closing remark in the previous section.

Regarding the spectrum of international journals publishing a majority of contributions on CPEs, CMCPEs, and CP-biosensors, summarizations of publication activities with the chart of most productive authors and teams, the highlights among the original papers ("the classics of the field") with actual citation indexes and many other trivia, such material has been reviewed a couple of years ago [7] and the reader(s) is advised to consult directly this original title full of never-before published data, surveys, and statistics.

To date, CPEs in all known modifications, configurations, and variants were the central subject of interest in more than 20 review articles [2,7,55,56,59,69,70,75,81,82,84,111,112,151–160]. Among them and together with one book chapter [161], solely a minor part represents general compilations that have covered the topic as a whole, which is obvious for the first review from the early 1960s [2] but remarkable for the others [7,55,56,69,70], when the field had already become a worldwide phenomenon, covering hundreds of papers. Thus, it is quite logical that a majority of reviews have been arranged more specifically and framed either by the time period(s) [75,82,84,111,155] or by the particular (sub)area chosen, the latter being, for example, the case of a survey of physicochemical processes at CPEs and CMCPEs [157], food [112] and water [161] analyses, solid phase voltammetry with CPEEs [151], *in vivo* electrochemistry [152], potentiometry [159], pharmaceutical analysis [158], and electrochemistry with enzymatic CP-biosensors [156]. Most of the reviews [59,81,152–156,158–160], including the already mentioned ones [75,151], target local audiences, often referring to the regional publications and presenting the papers of the authors themselves.

Thus, until now, a chapter in the *Encyclopedia of Sensors* (EOS) book series [83] is the only text that can be regarded as comprehensive and contemporary study covering electrochemistry and electroanalysis with CPEs in its entirety regardless that a certain part has been devoted to related screen-printed electrodes, SP(C)Es. (Such a generous scope could also be chosen thanks to the extraordinary space in the book with an allowance to insert a set of extensive tables and a list with more than 2200 references.)

Finally, information about CPEs is also included in various textbooks and monographs [3,57,58,162–170], most of which is today being considered as the classical electrochemical literature. The selection of these books has not been fortuitous, and they are highlighted here because during the 1970s and 1980s most of them had to substitute the missing review, having provided contemporaneous information on CPEs, when Adams's early article [2] had become old and nonactual.

Furthermore, this collection also mirrors the geography of traditionally strong electrochemical regions: (i) North America [57,58,163,166,168], (ii) Middle Europe [162,164], and (iii) the former U.S.S.R. [169], although practically each of these books has become popular worldwide. Some of them obtained a good reputation after being translated into English (see [164] vs. [165] and [169] vs. [170], the former representing a paradox situation, when the translated version had come to the market 1 year earlier than the original), the other could then be sold in the reeditions ([163,166,168]; the second one reappearing in considerably revised form, where, interestingly, the chapter about CPEs has been updated and rewritten by other authors—compare [166] with [167]).

References

Foreword

1. Adams, R.N. 1958. Carbon paste electrodes. Anal. Chem. 30:1576.

2. Adams, R.N. 1963. Carbon paste electrodes. A review. Rev. Polarog. 11:71-78.

3. Olson, C. and R.N. Adams. 1960. Carbon paste electrodes: Application to anodic voltammetry. Anal. Chim. Acta 22:582-589.

4. Olson, C.L. 1962. Investigation concerning the development and use of carbon paste electrodes for voltammetric measurements. PhD dissertation, University of Kansas, Lawrence, KS.

5. Galus, Z., C. Olson, H.Y. Lee, and R.N. Adams. 1962. Rotating disk electrodes. Anal. Chem. 34:164-166.

6. Kuwana, T. and W.G. French. 1964. Carbon paste electrodes containing some electroactive compounds. Anal. Chem. 36:241-242.

7. Schultz, F.A. and T. Kuwana. 1965. Electrochemical studies of organic compounds dissolved in carbonpaste electrodes. Electroanal. Chem. 10:95-103.

References

1. Adams, R.N. 1958. Carbon paste electrodes. *Anal. Chem*. 30:1576.
2. Adams, R.N. 1963. Carbon paste electrodes. A review. *Rev. Polarog. (Jpn.)* 11:71–78.
3. Adams, R.N. 1969. *Electrochemistry at Solid Electrodes*, pp. 26–27, 30, 55, 100, 125–130, 280–283, 330–367. New York: Marcel Dekker.
4. Editorial. 1999. Dedicated to Professor Ralph N. Adams on the occasion on his 75th birthday. *Electroanalysis* 11:284–291.
5. Kissinger, P.T. 1999. Lessons from the work of Professor Ralph N. Adams. *Electroanalysis* 11:292–294.
6. Kuwana, T. 2001. Personal communication.
7. Švancara, I., K. Vytřas, K. Kalcher, A. Walcarius, and J. Wang. 2009. Carbon paste electrodes in facts, numbers, and notes: A review on the occasion of the 50-years jubilee of carbon paste in electrochemistry and electroanalysis. *Electroanalysis* 21:7–28.
8. Olson, C. and R.N. Adams. 1960. Carbon paste electrodes: Application to anodic voltammetry. *Anal. Chim. Acta* 22:582–589.
9. Olson, C. and R.N. Adams. 1963. Carbon paste electrodes: Application to cathodic reductions and anodic stripping voltammetry. *Anal. Chim. Acta* 29:358–363.
10. Galus, Z., C. Olson, H.Y. Lee, and R.N. Adams. 1962. Rotating disk electrodes. *Anal. Chem*. 34:164–166.
11. Olson, C.L. 1962. Investigation concerning the development and use of carbon paste electrode for voltammetric measurements. PhD dissertation, University of Kansas, Lawrence, KS.
12. Jacobs, E.S. 1963. Anodic stripping voltammetry of gold and silver with carbon paste electrodes. *Anal. Chem*. 25:2112–2115.
13. Davis, D.G. and M.E. Everhart. 1964. Chronopotentiometry of the bromide-bromine couple at platinum and carbon paste electrodes. *Anal. Chem*. 36:38–40.
14. Kuwana, T. and W.G. French. 1964. Carbon paste electrodes containing some electroactive compounds. *Anal. Chem*. 36:241–242.
15. Schultz, F.A. and T. Kuwana. 1965. Electrochemical studies of organic compounds dissolved in carbon-paste electrodes. *J. Electroanal. Chem*. 10:95–103.
16. Marcoux, L.S., K.G. Prater, B.G. Prater, and R.N. Adams. 1965. Nonaqueous carbon paste electrode. *Anal. Chem*. 37:1446–1447.
17. Hawley, D. and R.N. Adams. 1965. Homogenous chemical reactions in electrode processes: Studies of the follow-up chemical reactions. *J. Electroanal. Chem*. 10:376–386.
18. Prater, B. and R.N. Adams. 1966. A critical evaluation of practical rotated disc electrodes (RDEs). *Anal. Chem*. 38:153–155.
19. Chambers, C.A.H. and J.Q. Chambers. 1966. Electrochemical oxidation of a quinol phosphate. *J. Am. Chem. Soc*. 88:2922–2923.
20. Chambers, C.A.H. and J.K. Lee. 1967. Studies of the extraction of organic molecules into the carbon-paste electrode. *J. Electroanal. Chem*. 14:309–314.
21. Hawley, D., S.V. Tatawawadi, S. Piekarski, and R.N. Adams. 1967. Electrochemical studies of the oxidation pathways processes of catecholamines. *J. Am. Chem. Soc*. 89:447–448.
22. Malachesky, P.A., K.B. Prater, G. Petrie, and R.N. Adams. 1968. Measurement of chemical reaction rates following electron transfer: An empirical approach by using ring disk electrodes (RDEs). *J. Electroanal. Chem*. 16:41–46.
23. Marcus, M.F. and M.D. Hawley. 1968. The electrochemical oxidation of p-dimethyl-aminophenol in aqueous solution. *J. Electroanal. Chem*. 18:175–183.
24. Meier, E.P. and J.Q. Chambers. 1969. Adsorption of organic molecules at a carbon paste electrode. *Anal. Chem*. 41:914–918.
25. Papouchado, L., J. Bacon, and R.N. Adams. 1970. Potential-step cyclic voltammetry for the study of electrode reaction mechanisms. *J. Electroanal. Chem*. 24:1–5.
26. Beilby, A.L. and B.R. Mather. 1965. Resistance effects of two types of carbon paste electrodes. *Anal. Chem*. 37:766–768.

27. Lawrence, R.J. and J.A. Chambers. 1967. Voltammetry at solid electrodes with renewable surface: A revolving wheel electrode. *Anal. Chem*. 39:134–136.
28. Farsang, Gy. 1965. Voltammetric properties and analytical uses of carbon paste electrodes prepared with silicone oil. *Acta Chim. Acad. Sci. Hung*. 45:163–176.
29. Landsberg, R. and R. Thiele. 1966. On the effect of inactive surface areas upon the diffusion current at a rotating disc electrode and the transition time in galvanostatic measurements (in German). *Electrochim. Acta* 11:1243–1259.
30. Brezina, M. 1966. Estimation of electrochemical activity of carbon using a paste electrode. *Nature* 212:283–283.
31. Monien, H., H. Specker, and K. Zinke 1967. Application of various carbon electrodes for inverse voltammetric determination of silver. *Fresenius Z. Anal. Chem*. 225:342–351.
32. Pungor, E. and E. Szepesvary. 1968. Voltammetric studies with silicone rubber-based graphite electrodes. *Anal. Chim. Acta* 43:289–296.
33. Lindquist, J. 1968. A new carbon paste electrode holder and a simple method for preparing reproducible electrode surfaces. *J. Electroanal. Chem*. 18:204–205.
34. Neeb, R., I. Kiehnast, and A. Narayanan. 1972. On the use of carbon paste electrodes in voltammetry. *Fresenius Z. Anal. Chem*. 262:339–343.
35. Ruzicka, J., E.H. Hansen, and J.C. Tjell. 1973. Selectrode: The universal ion-selective electrode. *Anal. Chim. Acta* 67:155–178.
36. Mesaric, S. and E.M.F. Dahmen. 1973. Ion-selective carbon-paste electrodes for halides and silver(I) ions. *Anal. Chim. Acta* 64:431–438.
37. Atuma, S.S. and J. Lindquist. 1973. Voltammetric determination of tocopherols by use of a newly developed carbon paste electrode. *Analyst (U.K.)* 98:886–894.
38. Bauer, D. and P. Gaillochet. 1974. Behavior of carbon pastes containing an electro-active compound (in French). *Electrochim. Acta*, 19:597–606.
39. Lindquist, J. 1973. Carbon paste electrode with a wide anodic potential range. *Anal. Chem*. 45:1006–1008.
40. Lindquist, J. 1974. A study of seven different carbon paste electrodes. *J. Electroanal. Chem*. 52:37–46.
41. Soderhjelm, P. 1976. A comparison of the analytical utility of three different potential ramp techniques in voltammetry, using a carbon-paste electrode. *J. Electroanal. Chem*. 71:109–115.
42. Papouchado, L., G. Petrie, and R.N. Adams. 1972. Anodic oxidation pathways of phenolic compounds. Part 1: Anodic hydroxylation reactions. *J. Electroanal. Chem*. 38:389–396.
43. Petek, M., S. Bruckenstein, B. Feinberg, and R.N. Adams. 1973. Anodic oxidation of substituted methoxyphenols: MS-identification of methanol formed. *J. Electroanal. Chem*. 42:397–401.
44. Papouchado, L., R.W. Sandford, G. Petrie, and R.N. Adams. 1975. Anodic oxidation pathways of phenolic compounds: Part 2. Stepwise electron transfers and coupled hydroxylations. *J. Electroanal. Chem*. 65:275–284.
45. Adams, R.N., E. Murrill, R. McCreery, L. Blank, and M. Karolczak. 1972. 6-Hydroxy-dopamine: A new oxidation pathway. *Eur. J. Pharmacol*. 17:287–289.
46. Kissinger, P.T., C. Refshauge, R. Dreiling, and R.N. Adams. 1973. Electrochemical detector for liquid chromatography with picogram sensitivity. *Anal. Lett*. 6:465–477.
47. Sternson, A.W., R. McCreery, B. Feinberg, and R.N. Adams. 1973. Electrochemical studies of adrenergic neurotransmitters and related compounds. *J. Electroanal. Chem*. 46:313–321.
48. Kissinger, P.T., J.B. Hart, and R.N. Adams. 1973. Voltammetry in brain tissue: A new neurophysical measurement. *Brain Res*. 55:209–213.
49. McCreery, R.L., R. Dreiling, and R.N. Adams. 1974. Voltammetry in brain tissue: The fate of injected 6-hydroxydopamine. *Brain Res*. 73:15–21.
50. Adams, R.N. 1976. Probing brain chemistry with electroanalytical techniques. *Anal. Chem*. 48:1126A–1138A.
51. Cheek, G.T. and R.F. Nelson. 1978. Applications of chemically modified electrodes to analysis of metal ions. *Anal. Lett*. 11:393–402.
52. Yao, T. and S. Musha. 1979. Electrochemical enzymic determinations of ethanol and L-lactic acid with a carbon paste electrode modified chemically with nicotinamide adenine dinucleotide. *Anal. Chim. Acta* 110:203–209.
53. Ravichandran, K. and R.P. Baldwin. 1981. Chemically modified carbon paste electrodes. *J. Electroanal. Chem*. 126:293–300.
54. Ravichandran, K. and R.P. Baldwin. 1983. Phenylenediamine-containing chemically modified carbon paste electrodes as catalytic voltammetric sensors. *Anal. Chem*. 55:1586–1591.

55. Kalcher, K. 1990. Chemically modified carbon paste electrodes in voltammetric analysis. *Electroanalysis* 2:419–433.
56. Švancara, I.K. Vytřas, F. Renger, and M.R. Smyth. 1992/93. Application of carbon paste electrodes in electroanalysis. A review. *Sb. Ved. Pr., Vys. Sk. Chemickotechnol., Pardubice* 56:21–57.
57. Wang, J. 1988. *Electroanalytical Techniques in Clinical Chemistry and Laboratory Medicine*, pp. 3, 31, 35, 39, 40, 97, 113, 124, 133, 150, 157, 158. Weinheim, Germany: VCH Publishers.
58. Hart, J.P. 1990. *Electroanalysis of Biologically Important Compounds*, pp. 29, 34, 68, 69, 139, 169, 179, 183, 184. Chichester, U.K.: Ellis Horwood.
59. Ulakhovich, N.A., E.P. Medyantseva, and G.K. Budnikov. 1993. Carbon-paste electrodes as chemical sensors in voltammetry. *J. Anal. Chem. (Russ.)*/transl. of *Zh. Anal. Khim*. 48:980–998.
60. Urbaniczky, C. and K. Lundstroem. 1984. Voltammetric studies on carbon paste electrodes. The influence of paste composition on electrode capacity and kinetics. *J. Electroanal. Chem*. 176:169–182.
61. Kingsley, E.D. and D.J. Curran. 1988. Some observations on carbon paste electrodes in AC-voltammetry. *Anal. Chim. Acta* 206:385–390.
62. Curran, D.J., M.B. Gelbert, and E.D. Kingsley. 1990. An instrument for alternating current voltammetry featuring a digital phase-sensitive detector: Application to flow-injection analysis using ac amperometry. *Electroanalysis* 2:435–442.
63. Ravichandran, K. and R.P. Baldwin. 1984. Enhanced voltammetric response by electrochemical pretreatment of carbon paste electrodes. *Anal. Chem*. 56:1744–1747.
64. Albahadily, F.N. and H.A. Mottola. 1987. Improved response of carbon-paste electrodes for electrochemical detection in flow systems by pretreatment with surfactants. *Anal. Chem*. 59:958–962.
65. Stulik, K. and V. Pacakova. 1981. Comparison of several voltammetric detectors for high-performance liquid chromatography. *J. Chromatogr. A* 208:269–278.
66. Danielson, N.D., J. Wangsa, and M.A. Targove. 1989. Comparison of paraffin oil and poly(chlorotrifluoroethylene) oil carbon paste electrodes in high organic content solvents. *Anal. Chem*. 61:2585–2588.
67. Kauffmann, J.-M., A. Laudet, G.J. Patriarche, and G.D. Christian. 1982. The graphite spray electrode and its application in the anodic stripping voltammetry of bismuth. *Anal. Chim. Acta* 135:153–158.
68. Rice, M.E., Z. Galus, and R.N. Adams. 1983. Graphite paste electrodes: Effects of paste composition and surface states on electron-transfer rates. *J. Electroanal. Chem*. 143:89–102.
69. Kalcher, K., J.-M. Kauffmann, J. Wang, I. Švancara, K. Vytřas, C. Neuhold, and Z. Yang. 1995. Sensors based on carbon paste in electrochemical analysis: A review with particular emphasis on the period 1990–1993. *Electroanalysis* 7:5–22.
70. Gorton, L. 1995. Carbon paste electrodes modified with enzymes, tissues, and cells. A review. *Electroanalysis* 7:23–45.
71. Turner, A.P.F., W.J. Aston, I.J. Higgins, J.M. Bell, J. Colby, G. Davies, and H.A.O. Hill. 1984. Carbon monoxide-acceptor oxidoreductase from pseudomonas thermo-carboxydovorans strain C2 and its use in a carbon monoxide sensor. *Anal. Chim. Acta* 162:161–174.
72. Ikeda, T., H. Hamada, K. Miki, and M. Senda. 1985. Glucose-oxidase immobilised benzoquinone carbon paste electrode as glucose sensors. *Agricult. Biol. Chem*. 49:541–543.
73. Matuszewski, W. and M. Trojanowicz. 1988. Graphite paste-based enzymatic glucose electrode for flow-injection analysis. *Analyst (U.K.)* 113:735–738.
74. Wang, J. 1994. Decentralized electrochemical monitoring of trace metals: From disposable strips to remote electrodes. *Analyst (U.K.)* 119:763–766.
75. Kalcher, K.K. Schachl, I. Švancara, K. Vytřas, and H. Alemu. 1997. Recent progress in the development of electrochemical carbon paste sensors. *Sci. Pap. Univ. Pardubice Ser. A* 3:57–85.
76. Diewald, W., K. Kalcher, C. Neuhold, I. Švancara, and X.-H. Cai. 1994. Voltammetric behavior of thallium(III) at a solid heterogeneous carbon electrode using ion-pair formation. *Analyst (U.K.)* 119:299–304.
77. Cataldi T.R.I. and D. Centonze. 1996. Development and treatment of a carbon paste (composite) electrode made from polyethylene and graphite powder modified with Cu_2O. *Anal. Chim. Acta* 326:107–115.
78. Pravda, M., C. Petit, Y. Michotte, J.-M. Kauffmann, and K. Vytřas. 1996. Study of a new solid carbon paste tyrosinase-modified amperometric biosensor for the determination of catecholamines by HPLC. *J. Chromatogr. A* 727:47–54.
79. Mirel, S., R. Sandulescu, J.-M. Kauffmann, and L. Roman. 1999. Electrochemical study of some 2-mercapto-5-R-amino-1,3,4-thiadiazole derivatives using solid carbon paste electrode. *J. Pharm. Biomed. Anal*. 18:535–544.

80. Crow, D.R. 1975. Voltammetry with the carbon-wax-based electrode. *Proc. Anal. Div. Chem. Soc*. 12:181–184.
81. Zhang, Z.-Q., H. Liu, and Z.-F. Li. 1998. New developments of carbon paste electrode (a review). *Fenxi Kexue Xuebao* 14: 80–86; 1998. *Chem. Abstr*. 125:175403x.
82. Švancara, I., K. Vytřas, J. Barek, and J. Zima. 2001. Carbon paste electrodes in modern electroanalysis (a review). *Crit. Rev. Anal. Chem*. 31:311–345.
83. Kalcher, K., I. Švancara, R. Metelka, K. Vytřas, and A. Walcarius. 2006. Heterogeneous electrochemical carbon sensors. In *The Encyclopedia of Sensors*, Vol. 4, Eds. C.A. Grimes, E.C. Dickey, and M.V. Pishko, pp. 283–429. Stevenson Ranch, CA: American Scientific Publishers.
84. Švancara, I., A. Walcarius, K. Kalcher, and K. Vytřas. 2009. Carbon paste electrodes in the new millennium (a review). *Cent. Eur. J. Chem*. 7:598–656.
85. Gil, E.S. and L.T. Kubota. 2000. Electrochemical properties of Doyle catalyst immobilized on carbon paste in the presence of DNA. *Bioelectrochemistry* 51:145–149.
86. Rodrigues, C.A. and E. Stadler. 2000. Electrocatalytic oxidation of ascorbic acid on carbon paste electrode modified with [Ru(EDTA)(4PMC)]. *Portugal. Electrochim. Acta* 18:55–61.
87. Ferreira, C.U., Y. Gushikem, and L.T. Kubota. 2000. Electrochemical properties of Meldola's blue immobilized on silica-titania phosphate prepared by the sol-gel method. *J. Solid State Electrochem*. 4:298–303.
88. Miao, Y., L.-S. Chia, N.-K. Goh, and S.-N. Tan. 2001. Amperometric glucose biosensor based on immobilization of glucose oxidase in chitosan matrix cross-linked with glutaraldehyde. *Electroanalysis* 13:347–349.
89. Walcarius, A. 2001. Electroanalysis with pure, chemically modified, and sol-gel-derived silica-based materials (an overview). *Electroanalysis* 13:701–718.
90. Wang, J., P. Gruendler, G.U. Flechsig, M. Jasinski, G.A. Rivas, E. Sahlin, and J.L. Lopez Paz. 2000. Stripping analysis of nucleic acids at a heated carbon paste electrode. *Anal. Chem*. 72:3752–3756.
91. Wang, J., X.-H. Cai, J. Wang, C. Jonsson, and E. Palecek. 1995. Trace measurements of RNA by potentiometric stripping analysis at carbon paste electrodes. *Anal. Chem*. 67:4065–4070.
92. Tomschik, M., L. Havran, M. Fojta, and E. Palecek. 1998. Constant current chronopotentiometric stripping analysis of bioactive peptides at mercury and carbon electrodes. *Electroanalysis* 10:403–409.
93. Gonzalez Garcia, M.B. and A. Costa Garcia. 2001. Silver electrodeposition catalyzed by colloidal gold on carbon paste electrode: Application to biotin/streptavidin interaction monitoring. *Biosens. Bioelectron*. 15:663–670.
94. Hernandez Santos, D., M.B. Gonzalez Garcia, and A. Costa Garcia. 2002. Metal nanoparticles based electroanalysis (a review). *Electroanalysis* 14:1225–1235.
95. Wang, J., U.A. Kirgoz, J.-W. Mo, J.-M. Lu, A.N. Kawde, and A. Muck. 2001. Glassy carbon paste electrodes. *Electrochem. Commun*. 3:203–208.
96. Švancara, I., M. Hvizdalova, K. Vytřas, K. Kalcher, and R. Novotny. 1996. A microscopic study on carbon paste electrodes. *Electroanalysis* 8:61–65.
97. Grennan, K., A.J. Killard, and M.R. Smyth. 2001. Physical characterizations of a screen-printed electrode for use in an amperometric biosensor system. *Electroanalysis* 13:745–750.
98. Hammouti, B., H. Oudda, A. El Maslout, and A. Benayada. 2000. Realisation of ferrocene reference electrode. *Bull. Electrochem*. 16:283–284.
99. Torimura, M., A. Miki, A. Wadano, K. Kano, and T. Ikeda. 2001. Electrochemical investigation of photoreduction catalyzed by cyanobacteria *Synechococcus* sp. PCC7942 in exogenous quinones and photoelectrochemical oxidation of water. *J. Electroanal. Chem*. 496:21–28.
100. Kureishi, Y., H. Shiraishi, and H. Tamiaki. 2001. Self-aggregates of synthetic zinc chlorins as the photosensitizer on carbon paste electrodes for a novel solar cell. *J. Electroanal. Chem*. 496:13–20.
101. Wang, J. 2002. Real-time electrochemical monitoring: Toward green analytical chemistry. *Ass. Chem. Res*. 35:811–816.
102. Wang, J., J.-M. Lu, S.B. Hočevar, P.A.M. Farias, and B. Ogorevc. 2000. Bismuth-coated carbon electrodes for anodic stripping voltammetry. *Anal. Chem*. 72:3218–3222.
103. Krolicka, A., R. Pauliukaite, I. Švancara, R. Metelka, A. Bobrowski, E. Norkus, K. Kalcher, and K. Vytřas. 2002. Bismuth film-plated carbon paste electrodes. *Electrochem. Commun*. 4:193–196.
104. Hocevar, S.B., B. Ogorevc, J. Wang, and B. Pihlar. 2002. A study on operational parameters for advanced use of bismuth film electrodes in anodic stripping voltammetry. *Electroanalysis* 14:1707–1712.
105. Kong, Y.-T., G.-H. Choi, M.-S. Won, and Y.-B. Shim. 2002. Determination of $Hg_2^{(2+)}$ ions using the specific reaction with a picolinic acid N-oxide modified electrode. *Chem. Lett*. 1:54–55.
106. Yantasee, W., Y.-H. Lin, T.S. Zemanian, and G.E. Fryxell. 2003. Voltammetric detection of Pb(II) and Hg(II) using a carbon paste electrode modified with thiol self-assembled monolayer on mesoporous silica. *Analyst (U.K.)* 128:467–472.

107. Marino, G., M.F. Bergamini, M.F.S. Teixeira, and E.T.G. Cavalheiro. 2003. Evaluation of a carbon paste electrode modified with organo-functionalized amorphous silica in for the determination of cadmium(II) by using differential pulse anodic stripping voltammetry. *Talanta* 59:1021–1028.
108. Švancara, I., K. Vytřas, A. Bobrowski, and K. Kalcher. 2002. Determination of arsenic at a gold-plated carbon paste electrode using constant current stripping analysis. *Talanta* 58:45–55.
109. Freire, R.S., N. Duran, and L.T. Kubota. 2002. Electrochemical biosensors for continuous phenols monitoring in environmental matrices. *J. Brazil. Chem. Soc*. 13:456–462.
110. Sreedhar, M., L.M. Reddy, K.R. Sirisha, and S.R.J. Reddy. 2003. Differential pulse adsorptive stripping voltammetric determination of Dinoseb and Dinoterb at a modified electrode. *Anal. Sci. (Jpn.)* 19:511–516.
111. Zima, J., I. Švancara, J. Barek, and K. Vytřas. 2009. Recent advances in electroanalysis of organic and biological compounds at carbon paste electrodes. *Crit. Rev. Anal. Chem*. 39:204–227.
112. Kalcher, K., I. Švancara, M. Buzuk, K. Vytřas, and A. Walcarius. 2009. Electrochemical sensors and biosensors based on heterogeneous carbon materials. *Monatsh. Chem*. 140:861–889.
113. Varma, S. and C.K. Mitra. 2002. Low frequency impedance studies on covalently modified glassy carbon paste. *Electroanalysis* 14:1587–1596.
114. Zima, J., J. Barek, and A. Muck. 2005. Monitoring of environmentally and biologically important substances at carbon paste electrodes. *Rev. Chim. (Bucharest)* 55:657–662.
115. Li, G., Z.-M. Ji, and K.-B. Wu. 2006. Square wave anodic stripping voltammetric determination of Pb^{2+} using acetylene black paste electrode based on the inducing adsorption ability of I(–). *Anal. Chim. Acta* 577:178–182.
116. Nossol, E. and A.J.G. Zarbin. 2008. Carbon paste electrodes made from novel carbonaceous materials: Preparation and electrochemical characterization. *Electrochim. Acta* 54:582–589.
117. Miranda Hernandez, A., M.E. Rincon, and I. Gonzalez. 2005. Characterization of carbon-fullerene-silicone oil composite paste electrodes. *Carbon* 43:1961–1967.
118. Stefan, R.I. and S.G. Bairu. 2003. Monocrystalline diamond paste-based electrodes and their possible applications to the determination of Fe(II) in vitamins. *Anal. Chem*. 75:5394–5398.
119. Zhu, L., C. Tian, D. Zhu, and R. Yang. 2008. Ordered mesoporous carbon paste electrodes for electrochemical sensing and biosensing. *Electroanalysis* 20:1128–1134.
120. Hocevar, S.B. and B. Ogorevc. 2007. Preparation and characterization of carbon paste micro-electrode based on carbon nanoparticles. *Talanta* 74:405–411.
121. Tang, X.-F., Y. Liu, H.-Q. Hou, and T.-Y. You. 2010. Electrochemical determination of L-tryptophan, L-tyrosine and L-cysteine using electrospun carbon nanofibers modified electrode. *Talanta* 80:2182–2186.
122. Iijima, S. 1991. Helical microtubules of graphitic carbon. *Nature* 354:56–58.
123. Rubianes, M.D. and G.A. Rivas. 2003. Carbon nanotubes paste electrode. *Electrochem. Commun*. 5:689–694.
124. Valentini, F., A. Amine, S. Orlanducci, M.L. Terranova, and G. Palleschi. 2003. Carbon nanotube purification: Preparation and characterization of carbon nanotube paste electrodes. *Anal. Chem*. 75:5413–5421.
125. Liu, H.-T., P. He, Z.-Y. Li, Y. Liu, J. Li, L.-Z. Zheng, and J-H. Li. 2005. The inherent capacitive behavior of imidazolium-based room-temperature ionic liquids at carbon paste electrodes. *Electrochem. Solid State Lett*. 8:17–19.
126. Liu, H.-T., P. He, Z.-Y. Li, C.-N. Sun, L.-H. Shi, Y. Liu, G.-Y. Zhu, and J.-H. Li. 2005. An ionic liquid-type carbon paste electrode and its polyoxometalate-modified properties. *Electrochem. Commun*. 7:1357–1363.
127. Kachoosangi, R.T., G.G. Wildgoose, and R.G. Compton. 2007. Room temperature ionic liquid carbon nanotube paste electrodes: Overcoming large capacitive currents using rotating disk electrodes. *Electroanalysis* 19:1483–1489.
128. Liu, Y., D.-W. Wang, J.-S. Huang, H.-Q. Hou, and T.-Y. You. 2010. Highly sensitive composite electrode based on electrospun carbon nanofibers and ionic liquid. *Electrochem. Commun*. 12:1108–1111.
129. Ojani, R., J.B. Raoof, and E. Zarei. 2009. Electrocatalytic oxidation and determination of cysteamine by poly-N,N-dimethylaniline/ferrocyanide film modified carbon paste electrode. *Electroanalysis* 21:1189–1193.
130. Raoof, J.B., A. Omrani, R. Ojani, and F. Monfared. 2009. Poly(N-methylaniline)/nickel modified carbon paste electrode as an efficient and cheep electrode for electrocatalytic oxidation of formaldehyde in alkaline medium. *J. Electroanal. Chem*. 633:153–158.
131. Ojani, R., J.B. Raoof, and S. Fathi. 2009. Poly(o-aminophenol) film in the presence of sodium dodecyl sulfate: Application to the Ni(II) dispersion and the electrocatalytic oxidation of methanol and ethylene glycol. *Electrochim. Acta* 54:2190–2196.

132. Ojani, R., J.B. Raoof, and B. Norouzi. 2009. Electropolymerization of N-methylaniline in the presence of sodium dodecylsulfate and its application for electrocatalytic reduction of nitrite. *J. Mater. Sci*. 44:4095–4103.
133. Ojani, R., J.B. Raoof, A. Ahmady, and S.R. Hosseini. 2010. Carbon paste as a candidated electrode substrate for electrochemical polymerization of 2,5-dimethylaniline. *Asian J. Chem*. 22:943–952.
134. Nagashree, K.L., N.H. Raviraj, and M.F. Ahmed. 2010. Carbon paste electrodes modified with Pt and Pt-Ni microparticles dispersed in poly-indole film for electro-catalytic oxidation of methanol. *Electrochim. Acta* 55:2629–2635.
135. Pandurangachar, M., B.E.K. Swamy, U. Chandra, O. Gilbert, and B.S. Sherigara. 2009. Simultaneous determination of dopamine, ascorbic acid and uric acid at poly(Patton and Reeder's) modified carbon paste electrode. *Int. J. Electrochem. Sci*. 4:672–683.
136. Zhou, C.-L., Y.-X. Zheng, H.-W. Chen, C.-Q. Shou, Y.-M. Dong, Z. Liu, and L.-R. Chen. 2009. Preparation and application of the hyperbranched polymer modified carbon paste electrode. *Fenxi Huaxue* 37:111–114.
137. He, J.-B., F. Qi, Y. Wang, and N. Deng. 2010. Solid carbon paste-based amperometric sensor with electropolymerized film of 2-amino-5-mercapto-1,3,4-thiadiazole. *Sens. Actuators B* 145:480–487.
138. Stoces, M., K. Kalcher, I. Švancara, and K. Vytřas. 2011. A biosensor for glucose based on electrochemically generated poly-aniline film and carbon paste. *Int. J. Electrochem. Sci*. 6:1917–1926.
139. Liu, Y., L. Zhang, Q.-H. Guo, H.-Q. Hou, and T.-Y. You. 2010. Enzyme-free ethanol sensor based on electrospun nickel nanoparticle-loaded carbon fiber paste electrode. *Anal. Chim. Acta* 663:153–157.
140. Wang, X.-L., Z.-B. Han, E.-B. Wang, H. Zhang, and C.-W. Hu. 2003. A bifunctional electrocatalyst containing tris(2,2′-bipyridine)Ru(II) and 12-molybdophosphate bulk-modified carbon paste electrode. *Electroanalysis* 15:1460–1464.
141. Wang, L., J. Li, E.-B. Wang, L. Xu, J. Peng, and Z. Li. 2004. Preparation and characterization of ultrathin multilayer films based on polyoxometalate of the $Mo_8V_2O_{28}x_7$-H_2O type. *Mater. Lett*. 58:2027–2031.
142. Han, Z.G., Y.-L. Zhao, J. Peng, A.-X. Tian, Y.-H. Feng, and Q. Liu. 2005. Inorganic/organic hybrid polyoxometalate: Preparation, characterization and electrochemical properties. *J. Solid State Chem*. 178:1386–1394.
143. Wang, X.-L., H.-Y. Zhao, and Y.-F. Wang. 2006. Preparation, electrochemical property and application in bulk-modified electrode of Dawson type phosphomolybdate-doped polypyrrole composite nanoparticles. *Gaodeng Xuexiao Huaxue Xuebao* 22:556–559.
144. Dong, B.-X., J. Peng, A.-X. Tian, J.-Q. Sha, L. Li, and H.S. Liu. 2007. Two new inorganic–organic hybrid single pendant hexadecavanadate derivatives with bifunctional electrocatalytic activities. *Electrochim. Acta* 52:3804–3812.
145. Zhao, Z.-F., B.-B. Zhou, Z.-H. Su, H.-Y. Ma, and C.-X. Li. 2008. A new $[As_3Mo_3O_{15}](3-)$ fragment binded with Cu(I)-imidazole complexes: Synthesis, structure, and electrochemical properties. *Inorg. Chem. Commun*. 11:648–651.
146. Wang, X.-L., B.-K. Chen, G.-C. Liu, H.-Y. Zhao, H.-Y. Lin, and H.-L. Hu. 2009. Hydrothermal syntheses and structural characterization of two new supramolecular compounds: $(H_{(2)}bbi)_{(2)}[Mo_8O_{26}]$ and $(H_{(2)}bbi)_{(2)}[SiW_{12}O_{40}]$ x $2H_{(2)}O$. *Solid State Sci*. 11:61–67.
147. Jin, H.-J., B.-B. Zhou, Z.-F. Zhao, and Z.-H. Su. 2010. Synthesis, structure and electrochemical property of a supramolecular compound $(H_{(2)}en)_{(2)}$ $[Cu(en)_{(2)}(H_3O)_{(2)}]$ $[Mo_8O_{28}]$. *Chin. J. Struct. Chem*. 29:213–218.
148. Memon, M., K.Z. Memon, M.S. Akhtar, and D. Stuben. 2009. Characterization and quantification of iron oxides occurring at low concentration level in soil materials. *Commun. Soil Sci. Plant Anal*. 40:62–178.
149. He, J.-B., G.-H. Ma, J.-C. Chen, Y. Yao, and Y. Wang. 2010. Voltammetry and spectro-electrochemistry of solid Indigo dispersed in carbon paste. *Electrochim. Acta* 55:4845–4850.
150. Web of Science–Science–Thampson Reuters, http://thomsonreuters.com/products_services/science/science_products/a-z/web_of science/ (accessed December 10, 2010).
151. Brainina, Kh.Z. and V. Ashpur. 1979. Phase electrochemical analysis with a carbon paste electrically-active electrode (in Russian). *Zavod. Lab. (U.S.S.R.)* 45:10–20.
152. O'Neill, R.D. 1993. Sensor–tissue interactions in neurochemical analysis with carbon paste electrodes in vivo (a review). *Analyst (U.K.)* 118:433–438.
153. Švancara, I. and K. Vytřas. 1994. Preparation and properties of carbon paste electrodes (a review, Part I; in Czech). *Chem. Listy* 88:138–146; Vytřas, K. and I. Švancara. 1994. Applications of carbon paste electrodes in electroanalysis (a review, Part II; in Czech). *Chem. Listy* 88:412–422.
154. Vytřas, K. and I. Švancara. 1994. Some ways of modern voltammetry: Carbon paste electrodes. *Egypt. J. Anal. Chem*. 3:78–86.

155. Kalcher, K., X.-H. Cai, G. Kolbl, I. Švancara, and K. Vytřas. 1994. New trends in voltammetric analysis: Modified carbon paste electrodes. *Sb. Ved. Pr., Vys. Sk. Chemickotechnol. Pardubice* 57:5–27.
156. Lobo Castanon, M.J., S.L. Alvarez Crespo, M.I. Alvarez Gonzalez, S.B. Saidman, A.J. Miranda Ordieres, and P. Tunon-Blanco. 1998. Biosensors based on carbon paste electrodes using immobilized dehydrogenase enzymes. An overview and trends. *Sci. Pap. Univ. Pardubice Ser. A* 3:17–29.
157. Švancara, I. and K. Vytřas. 2000. Physicochemical processes in analytical electrochemistry with carbon paste electrodes. An overview. *Chemija (Vilnius)* 11:18–27.
158. Radi, A.E. 2006. Applications of stripping voltammetry at carbon paste and chemically modified carbon paste electrodes to pharmaceutical analysis (a review). *Curr. Pharm. Anal*. 2:1–8.
159. Vytřas, K. and I. Švancara. 2007. Carbon paste-based ion-selective electrodes. In *Sensing in Electroanalysis*, Vol. 2, Eds. K. Vytřas and K. Kalcher, pp. 7–22. Pardubice, Czech Republic: University Press.
160. Vytřas, K., I. Švancara, and R. Metelka. 2009. Carbon paste electrodes in electroanalytical chemistry. *J. Serbian Chem. Soc*. 74:1021–1033.
161. Zima, J., I. Švancara, K. Peckova, and J. Barek. 2009. Carbon paste electrodes for the determination of detrimental substances in drinking water. In *Progress on Drinking Water Research*, Chapter 1, Eds. M.H. Lefebvre and M.M. Roux, pp. 1–54. Hauppauge, NY: Nova Science Publishers.
162. Neeb, R. 1969. *Inverse polarographie und voltammetrie* (*Inverse polarography and voltammetry)*, Orig. Edn. (in German), pp. 26, 55, 58, 68, 104–107. Weinheim, Germany: Verlag Chemie.
163. Meittes, L., P. Zuman, and A. Rott. 1976. *Handbook Series in Inorganic Electrochemistry* (Vol. I + II) & *Handbook Series in Organic Electrochemistry* (Vol. III + IV), Orig. Edn., pp.: throughout the tables. Cleveland, OH: CRC Press.
164. Vydra, F., K. Stulik, and E. Julakova. 1977. *Rozpousteci polarografie a voltametrie* (*Stripping polarography and voltammetry*), Orig. Edn. (in Czech), pp. 20, 137, 138, 143, 145, 180, 193, 196, 215, 220–227, 237, 242. Prague, Czech Republic: SNTL.
165. Vydra, F., K. Stulik, and E. Julakova. 1976. *Electrochemical Stripping Analysis*, Eng. Edn., Chichester, U.K.: Ellis Horwood.
166. Dryhust, G. and D.L. McAllister. 1985. Carbon electrodes. In *Laboratory Techniques in Electroanalytical Chemistry*, Chapter 10-III, Eds. P.T. Kissinger and W.R. Heineman, Orig. Edn., pp. 294–301. New York: Marcel Dekker.
167. McCreery, R.L. and K.K. Cline 1996. Carbon electrodes. In *Laboratory Techniques in Electroanalytical Chemistry*, Chapter 10-III, Eds. P.T. Kissinger and W.R. Heineman, Revised and Expanded Edn., pp. 311–312, 816,817. New York: Marcel Dekker.
168. Wang, J. 1985. *Stripping Analysis: Principles, Instrumentation, and Applications*, Orig. Edn., pp. 62, 64, 73–75, 137, 142, 143. Deerfield Beach, FL: VCH Publishers.
169. Brainina, Kh.Z., E.Ya. Neiman, and V.V. Slepuschkin. 1988. *Инверсионные електроаналитицеские методы* (*Inverse Electroanalytical Methods*), Orig. Edn. (in Russian), pp. 48, 49, 55, 56, 59, 78, 79, 127, 132, 135, 138–143, 150, 159, 169–171, 174. Moscow, Russia: ХИМИЯ (Chemistry).
170. Brainina, Kh. and E. Neiman. 1993. *Electroanalytical Stripping Methods*, Eng. Edn., New York: John Willey & Sons.
171. Anonymous. 1995. *Spectral coal—powder, "RW-B" product, the highest purity*. Characterization & guarantee certificate (in German). Bonn, Germany: Ringsdorff–Werke GmbH.
172. Wang, J., T. Martinez, D.R.Yaniv, and L. McCormick. 1990. Characterization of the micro-distribution of conductive and insulating regions of carbon paste electrodes with scanning tunneling microscopy. *J. Electroanal. Chem*. 286:265–272.
173. Švancara, I., L. Baldrianova, E. Tesarova, M. Vlcek, K. Vytřas, and S. Sotiropoulos. 2007. Microscopic studies with bismuth-modified carbon paste electrodes: Morphological transformations of bismuth microstructures and related observations. In *Sensing in Electroanalysis*, Vol. 2, Eds. K. Vytřas and K. Kalcher, pp. 35–58. Pardubice, Czech Republic: University of Pardubice.
174. Cheng, I.F. and C.R. Martin. 1988. Ultramicrodisk electrode ensembles prepared by incorporating carbon paste into a microporous host membrane. *Anal. Chem*. 60:2163–2165.
175. Švancara, I. and K. Schachl. 1999. Testing of unmodified carbon paste electrodes. *Chem. Listy* 93:490–499.
176. Švancara, I., J. Zima, K. Schachl. 1998. The testing of carbon paste electrodes: An example on the characterisation of a carbon paste electrode prepared from newly used graphite powder. *Sci. Pap. Univ. Pardubice Ser. A* 4:49–63.
177. Zakharchuk, N.F. 1991. Personal communication.
178. Ali Qureshi, G. 1978. Carbon paste for calcium selective electrode. *Libyan J. Sci*. 8A:37–41.

179. Johansson, E., G. Marko Varga, and L. Gorton, 1993. Study of a reagent- and mediatorless biosensor for D-amino acids based on co-immobilized D-amino acid oxidase and peroxidase in carbon paste electrodes. *J. Biomater. Appl*. 8:146–173.
180. Narasaiah, D., U. Spohn, and L. Gorton. 1996. Simultaneous determination of L- and D-lactate by enzyme modified carbon paste electrodes. *Anal. Lett*. 29:181–201.
181. Wang, H., H. Cui, A. Zhang, and R. Liu. 1996. Adsorptive stripping voltammetric determination of tryptophan at an electrochemically pre-treated carbon-paste electrode with solid paraffin as a binder. *Anal. Commun*. 33:275–277.
182. Švancara, I., K. Kalcher, K. Vytřas., and W. Diewald. 1996. Voltammetric determination of silver at ultra-trace levels using a carbon paste electrode with improved surface characteristics. *Electroanalysis* 8:336–342.
183. Analytical chemistry & chromatography products, Fluka & Supelco/Sigma-Aldrich-com, http://www.sigma-aldrich.com/saws.nsf/FluProducts?OpenFrameset (accessed May 15, 2004).
184. Anonymous. 1995. *Sigradur®* Pulver: Characterization & Guarantee Certificate (in German). Meitingen, Germany: HTW-Hochtemperatur-Werkstoffe GmbH.
185. Li, G., C.-D. Wan, Z.-M. Ji, and K.-B. Wu. 2007. An electrochemical sensor for Cd2+ based on the inducing adsorption ability of I(–). *Sens. Actuators, B* 124:1–5.
186. Yang, C.-H., J. Zhao, J.-H. Xu, C.-G. Hu, and S.-S. Hu. 2009. A highly sensitive electrochemical method for determination of Sudan-I at polyvinyl-pyrrolidone modified acetylene black-based paste electrode with enhancement effect of sodium dodecyl sulphate. *Int. J. Environ. Anal. Chem*. 89:233–244.
187. Kauffmann, J.-M., M.P. Prete, J.-C. Vire, and G.J. Patriarche. 1985. Voltammetry of pharmaceuticals using different types of modified electrodes. *Fresenius Z. Anal. Chem*. 321:172–176.
188. Švancara, I., J. Jezkova, P. Kotzian, R. Metelka, J. Zima, K. Kalcher, K. Vytras et al. 1985–2010. Unpublished results.
189. Švancara, I. 2002. Carbon paste electrodes in electroanalysis. Hab dissertation (in Czech), University of Pardubice, Pardubice, Czech Republic.
190. Schmid, G.M. and G.W. Bolger. 1973. Determination of gold in drugs and serum by use of anodic stripping voltammetry. *Clin. Chem*. 19:1002–1005.
191. Navratilova, Z. 2009. Coal as a new carbon paste electrode modifier with sorption properties. *Electroanalysis* 21:1758–1762.
192. Hvizdalova, M. 1994. A study on applicability of carbon paste electrodes in voltammetry. MSc dissertation (in Czech), University of Pardubice, Pardubice, Czech Republic.
193. Varma, S. and C.K. Mitra. 2002. Bioelectrochemical studies on catalase modified glassy carbon paste electrodes. *Electrochem. Commun*. 4:151–157.
194. Rodriguez, M.C. and G.A. Rivas. 2002. Glassy carbon paste electrodes modified with polyphenol oxidase. Analytical applications. *Anal. Chim. Acta* 459:43–51.
195. Rubianes, M.D. and G.A. Rivas. 2003. Amperometric quantification of dopamine using different carbon electrodes modified with a melanin-type polymer. *Anal. Lett*. 36:329–345.
196. Ricci, F, C. Goncalves, A. Amine, L. Gorton, G. Palleschi, and D. Moscone. 2003. Electroanalytical study of Prussian blue modified glassy carbon paste electrodes. *Electroanalysis* 15:1204–1211.
197. Dejmkova, H., Z. Hranicka, Z. Navratilova, and J. Barek. 2010. Voltammetric determination of nitrophenols at clay-modified glassy carbon paste electrodes. *Chem. Listy* 104:563–566.
198. Qian, H., J.-N. Ye, and L.-T. Jin. 1997. Study of the electrochemical properties of C-60 modified carbon paste electrode and its application for nitrobenzene quantitation based on electrocatalytic reduction. *Anal. Lett*. 30:367–381.
199. Kureishi, Y., H. Tamiaki, H. Shiraishi, and K. Maruyama. 1999. Photoinduced electron transfer from synthetic chlorophyll analog to fullerene C-60 on carbon paste electrode. Preparation of a novel solar cell. *Bioelectrochem. Bioenerg*. 48:95–100.
200. Lokesh, S.V., B.S. Sherigara, Jayadev, H.M. Mahesh, and R.J. Mascarenhas. 2008. Electrochemical reactivity of 'C-60' modified carbon paste electrode by physical vapor deposition method. *Int. J. Electrochem. Sci*. 3:578–587.
201. Zhu, S.-Y., L.-S. Fan, X.-Q. Liu, L.-H. Shi, H.-J. Li, S. Han, and G.-B. Xu. 2008. Determination of concentrated hydrogen peroxide at the single-walled carbon nanohorn paste electrode. *Electrochem. Commun*. 10:695–698.
202. Pruneanu, S., Z. Ali, G. Watson, S.-Q. Hu, D. Lupu, A.R. Biris, L. Olenic, G. Mihailescu. 2006. Investigation of electrochemical properties of carbon nanofibers prepared by the CCVD method. *Part. Sci. Technol*. 24:311–320.
203. Wu, Y.-H., X.-Y. Mao, X.-J. Cui, and L.-D. Zhu. 2010. Electroanalytical application of graphite nanofibers paste electrode. *Sens. Actuators B* 145:749–755.

204. Wang, L., X.-H., Zhang, H.-Y. Xiong, and S.-F. Wang. 2010. Novel nitromethane biosensor based on biocompatible conductive redox matrix of chitosan/hemoglobin/graphene/(room temperature) ionic liquid. *Biosens. Bioelectron*. 26:991–995.
205. Švancara, I. and K. Vytřas. 1993. Voltammetry with carbon paste electrodes containing membrane plasticizers used for PVC-based ion-selective electrodes. *Anal. Chim. Acta* 273:195–204.
206. Sagar, K., J.H. Fernandez Alvarez, C. Hua, M.R. Smyth, and R. Munden. 1992. Differential pulse voltammetric determination of Sumatriptan succinate (1–1) in a tablet dosage. *J. Phar. Biomed. Anal*. 10:17–21.
207. Hattori, T., M. Kato, S. Tanaka, and M. Hara. 1997. Adsorptive stripping voltammetry of anionic surfactants on a carbon paste electrode using ferrocenyl cationic surfactant as an analytical electrochemical probe. *Electroanalysis* 9:722–725.
208. Jezkova, J. 1999. Potentiometric determinations with a carbon paste electrode. PhD dissertation (in Czech), University of Pardubice, Pardubice, Czech Republic.
209. Švancara, I., R. Pazdera, R. Metelka, E. Norkus, and K. Vytřas. 2001. On the applica-bility of stripping potentiometry at carbon paste electrodes plated with mercury and gold films. In *Monitoring of Environmental Pollutants*, Eds. K. Vytřas, J. Kellner, and J. Fischer, pp. 123–134. Pardubice, Czech Republic: University of Pardubice.
210. Švancara, I., B. Ogorevc, S.B. Hocevar, and K. Vytřas. 2002. Perspectives of carbon paste electrodes in stripping potentiometry. *Anal. Sci. (Jpn.)* 18:301–305.
211. Švancara, I., K. Vytřas, F. Renger, and M.R. Smyth. 1992. Application of carbon paste electrodes in highly methanolic solutions. *Electrochim. Acta* 37:1355–1361.
212. Sigma-Aldrich: Products, services, support, http://www.sigmaaldrich.com/cgibin/hsrun/DistributedEU/HahtShop/HahtShop.htx; start = HS_Frameset Main (accessed May 30, 2004; site now discontinued).
213. Merck, http://www.merck.de/english/services/chemdat/english/index.htm (accessed May 30, 2004; site now discontinued).
214. Boujtita, M., M. Chapleau, and N. El Murr. 1996. Biosensors for analysis of ethanol in food: Effect of the pasting liquid. *Anal. Chim. Acta* 319:91–96.
215. Nyasulu, F.W. 1990. Electrochemistry of brucine. Part I: Brucine. *Electroanalysis* 2:327–331.
216. Wang, J., F. Lu, S.A. Kane, Y.-K. Choi, M.R. Smyth, and K. Rogers. 1997. Hydro-carbon pasting liquids for improved tyrosinase-based carbon paste phenol biosensors. *Electroanalysis* 9:1102–1106.
217. Farsang, Gy. 1965. Voltammetric behavior of Ag at C paste electrode, and some problems of the applicability of this electrode to anodic stripping. *Acta Chim. Acad. Sci. Hung*. 45:257–266.
218. Wang, J. and B.A. Freiha. 1983. Selective voltammetric detection based upon adsorptive preconcentration for flow injection systems. *Anal. Chem*. 55:1285–1288.
219. Wang, J. and B.A. Freiha. 1984. Extractive preconcentration of organic compounds at carbon paste electrodes. *Anal. Chem*. 56:849–852.
220. Wang, J., B.K. Deshmukh, and M. Bonakdar. 1985. Solvent extraction studies with carbon paste electrodes. *J. Electroanal. Chem*. 194:339–353.
221. Deshmukh, B.K. 1987. Role of solute in the behavior of carbon paste electrodes. *Indian J. Chem. A* 26:315–319.
222. Rogers, K.R., J.Y. Becker, J. Cembrano, and S.H. Chough. 2001. Viscosity and binder composition effects on tyrosinase-based carbon paste electrode for detection of phenol and catechol. *Talanta* 54:1059–1065.
223. Kuzmina, N.V., F.K. Kudasheva, V.N. Maistrenko, and S.V. Sapelnikova. 2003. Influence of the nature of the pasting liquid on the accumulation of nitroanilines at carbon paste electrode during determination by absorptive stripping voltammetry. *Anal. Bioanal. Chem*. 375:1182–1185.
224. Pauliukaite, R., G. Zhylyak, D. Citterio, and U.E. Spichiger Keller. 2006. L-Glutamate biosensor for estimation of the taste of tomato specimens. *Anal Bioanal. Chem*. 386:220–227.
225. Chandra, U., B.E.K. Swamy, O. Gilbert, S.S. Shankar, K.R. Mahanthesha, and B.S. Sherigara. 2010. Electrocatalytic oxidation of dopamine at chemically modified carbon paste electrode with 2,4-dinitrophenyl hydrazine. *Int. J. Electrochem. Sci*. 5:1–9.
226. Wang, J. and D.-B. Luo. 1984. Competition studies in voltammetric measurements based on extractive accumulation into carbon paste electrodes. *J. Electroanal. Chem*. 179:251–261.
227. Mikysek, T., A. Ion, I. Švancara, K. Vytřas, and F.G. Banica. 2005. Carbonaceous materials for single-use metal ion sensors. Quality assessment by electrochemical impedance spectrometry. In *Sensing in Electroanalysis*, Eds. K. Vytřas and K. Kalcher, pp. 19–27. Pardubice, Czech Republic: University of Pardubice.
228. Mikysek, T., I. Švancara, M. Bartos, K. Kalcher, K. Vytřas, and J. Ludvik. 2009. New Approaches to the characterization of carbon paste electrodes based on ohmic resistance and qualitative carbon paste indexes. *Anal. Chem*. 81:6327–6333.

229. Mikysek, T., M. Stoces, I. Švancara, and J. Ludvik. 2010. Relation between the composition and properties of carbon nanotubes paste electrodes (CNTPEs). In *Sensing in Electroanalysis*, Vol. 5, Eds. K. Vytřas, K. Kalcher, and I. Švancara, pp. 69–75. Pardubice, Czech Republic: University Press Center.
230. Ulakhovich, N.A., E.P. Medyantseva, and S.V. Mashkina. 1997. Electroactive carbon-paste electrode for determining iridium(III). *J. Anal. Chem. (Russ.)*/transl. of *Zh. Anal. Khim* 52:331–333.
231. Tomcik, P., C.E. Banks, T.J. Davies, and R.G. Compton. 2004. A self-catalytic carbon paste electrode for the detection of vitamin B12. *Anal. Chem*. 76:161–165.
232. H. Ibrahim. 2005. Carbon paste electrode modified with silver thimerosal for the potentiometric flow injection analysis of silver(I) ion. *Anal. Chim. Acta* 545:158–165.
233. Cookeas, E.G. and C.E. Efstathiou. 1992. Preconcentration of organic compounds at a diphenyl ether graphite paste electrode and determination of vanillin by adsorptive-extractive stripping voltammetry. *Analyst (U.K.)* 117:1329–1334.
234. Zhang, Z.-Q., H. Liu, H. Zhang, and Y.-F. Li. 1996. Simultaneous cathodic stripping voltammetric determination of mercury, cobalt, nickel, and palladium by mixed binder carbon paste electrode containing dimethylglyoxime. *Anal. Chim. Acta* 333:119–124.
235. Li, Y.-F., Z.-L. Xiao, X.-Y. Liu, and Z.-Q. Zhang. 1998. Voltammetric characteristics of chlordiazepoxide at the mixed binder carbon paste electrode. *Fenxi Kexue Xuebao* 14:106–109.
236. Radi, A. 1999. Electroanalysis of melatonin using castor oil-graphite paste electrode. *Anal. Commun*. 36:43–44.
237. Fatibello Filho, O., K.O. Lupetti, and L.D. Vieira. 2001. Chronoamperometric determination of paracetamol using an avocado tissue (*Persea americana*) biosensor. *Talanta* 55:685–692.
238. Parellada, J., A. Narvaez, E. Dominguez, and I. Katakis. 1997. A new type of hydrophilic carbon paste electrodes for biosensor manufacturing: Binder paste electrodes. *Biosens. Bioelectron*. 12:267–275.
239. Parellada, J., E. Dominguez, and I. Katakis. 1997. Binder paste: New composite material for biosensors and electrochemical bioreactors. *Polym. Mater. Sci. Engineer*. 76:511–512.
240. Wang, J. 2002. Personal communication.
241. Metrohm—Carbon electrodes & accessories, http://sirius.metrohm.ch/accessories/FMPro (accessed January 10, 2002; site now discontinued).
242. Pap, S., J.-M. Kauffmann, J.-C.Vire, G.J. Patriarche, and M.P. Prete. 1984. The electrochemistry of butyrophenones studied with the aid of modified carbon electrodes (in French). *J. Pharm. Belg*. 39:335–340.
243. Digua, K., J.-M. Kauffmann, and J.L. Delplancke. 1994. Surfactant-modified carbon paste electrode. Part 1: Electrochemical and microscopic characterization. *Electroanalysis* 6:451–458; Digua, K., J.-M. Kauffmann, and M. Khodari. 1994. Surfactant-modified carbon paste electrode. Part 2: Analytical performances. *Electroanalysis* 6:459–462.
244. Kulys, J., L. Wang, H.E. Hansen, T. Buch Rasmussen, J. Wang, and M. Ozsoz. 1995. Methylene green-mediated carbon paste glucose biosensor. *Electroanalysis* 7:92–94.
245. Lutz, M., E. Burestedt, J. Emneus, H. Liden, S. Gobhadi, L. Gorton, and G. Marko Varga. 1995. Effects of different additives on a tyrosinase based carbon paste electrode. *Anal. Chim. Acta* 305:8–17.
246. Spohn, U., D. Narasaiah, L. Gorton, and D. Pfeiffer. 1996. A bienzyme modified carbon paste electrode for the amperometric detection of L-lactate at low potentials. *Anal. Chim. Acta* 319:79–90.
247. Miland, E., A.J. Miranda Ordieres, P. Tunon Blanco, M.R. Smyth, and C.O. Fagain. 1996. Poly(o-aminophenol)-modified bienzyme carbon paste electrode for the detection of uric acid. *Talanta* 43:785–796.
248. Huang, T., A. Warsinke, O.V. Koroljova Skorobogatko, A. Makower, T. Kuwana, and F.W. Scheller. 1999. A bienzyme carbon paste electrode for the sensitive detection of NADPH and the measurement of glucose-6-phosphate dehydrogenase. *Electroanalysis* 11:295–300.
249. Wang, J. and M.-S. Lin. 1989. Dual electrode configurations with a plant tissue as generator reactor. *Anal. Chim. Acta* 218:281–290.
250. Zhang, X. and G.A. Rechnitz. 1994. Simultaneous determination of glucose and sucrose by a dual-working electrode multienzyme sensor flow-injection system. *Electroanalysis* 6:361–367.
251. Sapio, J.P., J.F. Colaruotolo, and J.M. Bobbitt. 1973. Universal ion-selective electrode based on graphite paste. *Anal. Chim. Acta* 67:240–242.
252. Wu, W.-S., M.S. Uddin, and C. Hua. 1995. Cation exchange based chemically modified electrodes. *Bull. Electrochem*. 11:402–406.
253. Vytřas, K., E. Khaled, J. Jezkova, H.N.A. Hassan, and B.N. Barsoum. 2000. Studies on the potentiometric thallium(III)-selective carbon paste electrode and its possible applications. *Fresenius J. Anal. Chem*. 367:203–207.
254. Švancara, I., B. Ogorevc, M. Novic, and K. Vytřas. 2002. Simple and rapid determination of iodide in table salt by stripping potentiometry at a carbon-paste electrode. *Anal. Bioanal. Chem*. 372:795–800.

255. Švancara, I., K. Kalcher, and K. Vytřas. 1997. Solid electrodes plated with metallic films. *Sci. Pap. Univ. Pardubice Ser. A* 3:207–225.
256. Kauffmann, J.-M., A. Laudet, and G.J. Patriarche. 1982. The modified carbon paste electrode. On its use by differential pulse anodic stripping voltammetry in the presence of a mercury film (in French). *Anal. Lett*. l5:763–774.
257. Švancara, I., M. Pravda, M. Hvizdalova, K. Vytřas, and K. Kalcher. 1994. Voltammetric investigations on carbon paste electrodes as supports for mercury films. *Electroanalysis* 6:663–671.
258. Guo, S.X. and S.B. Khoo. 1997. Formation of a mercury plated carbon paste electrode by electroreduction of a mercury(II) diethyldithiocarbamate modified carbon paste. Environ. Monitor. Assess. 44:471–480.
259. Navratilova, Z. and Vaculikova. 2006. Electrodeposition of mercury film on electrodes modified with clay minerals. *Chem. Pap*. 60:348–352.
260. Švancara, I., M. Matousek, E. Sikora, K. Schachl, K. Kalcher, and K. Vytřas. 1997. Carbon paste electrodes plated with a gold film for the voltammetric determination of mercury(II). *Electroanalysis* 9:827–833.
261. Chadim, P., I. Švancara, B. Pihlar, and K. Vytřas. 2000. Gold-plated carbon paste electrodes for anodic stripping determination of arsenic. *Collect. Chem. Czech. Commun*. 65:1035.
262. Wang, J. 2005. Stripping analysis at bismuth electrodes: A review. *Electroanalysis* 17:1341–1346.
263. Economou, A. 2005. Bismuth-film electrodes: Recent developments and potentialities for electroanalysis. *Trends Anal. Chem*. 24:334–340.
264. Kokkinos, C. and A. Economou. 2008. Stripping analysis at bismuth-based electrodes (a review). *Curr. Anal. Chem*. 4:183–190.
265. Pauliukaite, R., R. Metelka, I. Švancara, A. Krolicka, A. Bobrowski, K. Vytřas, E. Norkus, and K. Kalcher. 2002. Carbon paste electrodes modified with Bi_2O_3 as sensors for the determination of cadmium and lead. *Anal. Bioanal. Chem*. 374:1155–1158.
266. Hocevar, S.B., I. Švancara, B. Ogorevc, and K. Vytřas. 2005. Novel electrode for electrochemical stripping analysis based on carbon paste modified with bismuth powder. *Electrochim. Acta* 51:706–710.
267. Cao, L.-Y., J.-B. Jia, and Z.-H. Wang. 2008. Sensitive determination of Cd and Pb by differential pulse stripping voltammetry with in-situ bismuth-coated zeolite doped carbon paste electrodes. *Electrochim. Acta* 53:2177–2182.
268. Švancara, I., C. Prior, S.B. Hočevar, and J. Wang. 2010. A decade of bismuth-modified electrodes in electroanalysis (a review). *Electroanalysis* 22:1405–1420.
269. Sopha, H., L. Baldrianova, E. Tesarova, G. Grinciene, T. Weidlich, I. Švancara, and S.B. Hocevar. 2010. A new type of bismuth electrode for electrochemical stripping analysis based on the ammonium tetrafluorobismuthate bulk-modified carbon paste. *Electroanalysis* 22:1489–1493.
270. Gardea Torresdey, J., D. Darnall, and J. Wang. 1988. Bioaccumulation and voltammetric behavior of gold at alga-containing carbon paste electrodes. *J. Electroanal. Chem*. 252:197–208.
271. Connor, M., E. Dempsey, M.R. Smyth, D.H. Richardson. 1991. Determination of some metal ions using lichen-modified carbon paste electrodes. *Electroanalysis* 3:331–336.
272. Ramos, J.A., E. Bermejo, A. Zapardiel, J.A. Perez, and L. Hernandez. 1993. Direct determination of lead by bioaccumulation at a moss-modified carbon paste electrode. *Anal. Chim. Acta* 273:219–227.
273. Navaratne, A. and G.A. Rechnitz. 1992. Improved plant tissue-based biosensor using in-vitro cultured tobacco callus tissue. *Anal. Chim. Acta* 257:59–66.
274. Wijesuriya, D. and GA. Rechnitz. 1991. Mixed carbon paste-pea seedling electrochemical sensor for measuring plant growth-regulating activity of amines. *Anal. Chim. Acta* 243:1–8.
275. Ouangpipat, W., T. Lelasattarathkul, C. Dongduen, and S. Liawruangrath. 2003. Bioaccumulation and determination of lead using treated-Pennisetum-modified carbon paste electrode. *Talanta* 61:455–464.
276. Wang, J. and M.-S. Lin. 1988. Mixed plant tissue carbon paste bioelectrode. *Anal. Chem*. 60:1545–1548.
277. Horie, H. and G.A. Rechnitz. 1995. Hybrid tissue/enzyme biosensor for pectin. *Anal. Chim. Acta* 306:123–127.
278. Cummings, E.A., P. Mailley, S. Linquette Mailley, B.R. Eggins, E.T. McAdams, and S. McFadden. 1998. Amperometric carbon paste biosensor based on plant tissue for the determination of total flavanol content in beers. *Analyst (U.K.)* 123:1975–1980.
279. Forzani, E.S., G.A. Rivas, and V.M. Solis. 1997. Amperometric determination of dopamine on vegetal-tissue enzymic electrodes. Analysis of interferents and enzymic selectivity. *J. Electroanal. Chem*. 435:77–84.
280. Bezerra, V.S., J.L. de Lima Filho, M.C. Montenegro, A.N. Araujo, and V. Lins da Silva. 2003. Flow-injection amperometric determination of dopamine in pharmaceuticals using a polyphenol oxidase biosensor obtained from soursop pulp. *J. Pharm. Biomed. Anal*. 33:1025–1031.

281. Mojica Elmer, R.E., S.P. Gomez, J.R.L. Micor, and C.C. Deocaris. 2006. Lead detection using a pineapple bioelectrode. *Philipp. Agricult. Sci*. 89:134–140.
282. Kozan, J.V.B., R.P. Silva, S.H.P. Serrano, A.W.O. Lima, and L. Angnes. 2010. Amperometric detection of benzoyl peroxide in pharmaceutical preparations using carbon paste electrodes with peroxidases naturally immobilized on coconut fibers. *Biosens. Bioelectron*. 25:1143–1148.
283. Skladal, P. 1991. Mushroom tyrosinase-modified carbon paste electrode as an amperometric biosensor for phenols. *Collect. Czech. Chem. Commun*. 56:1427–1433.
284. Moressi, M.B., A. Zon, H. Fernández, G.A. Rivas, and V. Solis. 1999. Amperometric quantification of Alternaria mycotoxins with a mushroom tyrosinase modified carbon paste electrode. *Electrochem. Commun*. 1:472–476.
285. Sugawara, K., T. Takano, H. Fukushi, S. Hoshi, K. Akatsuka, H. Kuramitz, and S. Tanaka. 2000. Glucose sensing by a carbon-paste electrode containing chitin modified with glucose oxidase. *J. Electroanal. Chem*. 482:81–86.
286. Lei, C.-X., F.-C. Gong, G.-L. Shen, and R.-Q. Yu. 2003. Amperometric immunosensor for *Schistosoma japonicum* sp. antigen using antibodies loaded on a nano-gold monolayer modified chitosan-entrapped carbon paste electrode. *Sensors Actuators B* 96:582–588.
287. Sugawara, K., H. Matsui, S. Hoshi, and K. Akatsuka. 1998. Voltammetric detection of Ag(I) at carbon paste electrode modified with keratin. *Analyst (U.K.)* 123:2013–2016.
288. Ito, Y., S. Yamazaki, K. Kano, and T. Ikeda. 2002. *Escherichia coli* and its application in a mediated amperometric glucose sensor. *Biosens. Bioelectron*. 17:993–998.
289. Erdem, A., K. Kerman, B. Meric, U.S. Akarca, and M. Ozsoz. 2000. Novel hybridization indicator methylene blue for the electrochemical detection of short DNA sequences related to the hepatitis-B virus. *Anal. Chim. Acta* 422:139–149.
290. Kim, E.J., T. Haruyama, Y. Yanagida, E. Kobatake, and M. Aizawa. 1999. Disposable creatinine sensor based on thick-film hydrogen peroxide electrode system. *Anal. Chim. Acta* 394:225–231.
291. Wang, J., J. Liu, and G. Cepra. 1997. Thermal stabilization of enzymes immobilized within carbon paste electrodes. *Anal. Chem*. 69:3124–3127.
292. Korbut, O., M. Buckova, P. Tarapcik, J. Labuda, and P. Grundler. 2001. Damage to DNA indicated by an electrically heated DNA-modified carbon paste electrode. *J. Electroanal. Chem*. 506:143–148.
293. Korbut, O., M. Buckova, J. Labuda, and P. Gruendler. 2003. Voltammetric detection of antioxidative properties of flavonoids using electrically heated DNA modified carbon paste electrode. *Sensors* 3:1–10.
294. Flechsig, G.-U., O. Korbout, S.B. Hocevar, S. Thongngamdee, B. Ogorevc, P. Gruendler, and J. Wang. 2002. Electrically heated bismuth-film electrode for voltammetric stripping measurements of trace metals. *Electroanalysis* 14:192–196.
295. Švancara, I., P. Kotzian, R. Metelka, M. Bartos, P. Foret, and K. Vytřas. 2002. Plastic bars with carbon paste: A new type of the working electrode in electroanalysis. In *Monitoring of Environmental Pollutants*, Vol. IV (in Czech), Eds. K. Vytřas, J. Kellner, and J. Fischer, pp. 145–158. Pardubice, Czech Republic: University of Pardubice.
296. Švancara, I., S. Hradilova, L. Nepejchalova, and M. Bartos. 2009. Temperature-controlled processes at carbon paste-based electrodes: Possibilities and limitations in electroanalytical measurements. In *Sensing in Electroanalysis*, Vol. 4, Eds. K. Vytřas, K. Kalcher, and I. Švancara, pp. 7–26. Pardubice, Czech Republic: University Press Center.
297. Lopes da Silva, W.T., C. Thobie Gautier, M.O.O. Rezende, and N. El Murr. 2002. Electrochemical behavior of Cu(II) on carbon paste electrode modified by humic acid. A cyclic voltammetry study. *Electroanalysis* 14:71–77.
298. Wang, J., A.N. Kawde, A. Erdem, and M. Salazar. 2001. Magnetic bead-based label-free electrochemical detection of DNA hybridization. *Analyst (U.K.)* 126:2020–2024.
299. Wang, J. and A.N. Kawde. 2002. Magnetic-field stimulated DNA oxidation. *Electrochem. Commun*. 4:349–352.
300. Dunwoody, D.C., M. Unlu, A.K.H. Wolf, W.L. Gellett, and J. Leddy. 2005. Magnet incorporated carbon electrodes: Methods for construction and demonstration of increased electrochemical flux. *Electroanalysis* 17:1487–1494.
301. Tang, D.-P., R. Yuan, and Chai Y.-Q. 2006. Direct electrochemical immunoassay based on protein-magnetic nanoparticle composites on to magnetic electrode surfaces by sterically enhanced magnetic field force. *Biotechnik. Lett*. 28:559–565.
302. Liu, Z.-M., H.-F. Yang, Y.-F. Li, Y.-L. Liu, G.-L. Shen, and R.-Q. Yu. 2006. Core-shell magnetic nanoparticles applied for immobilization of antibody on carbon paste electrode and amperometric immunosensing. *Sens. Actuators B* 113:956–962.

303. Tang, D.-P., R. Yuan, and Y.-Q. Chai. 2006. Magnetic core-shell Fe_3O_4@Ag nano-particles coated carbon paste interface for studies of carcinoembryonic antigen in clinical immunoassay. *J. Phys. Chem. B* 110:11640–11646.
304. Gaillochet, P., D. Bauer, and M.-C. Hennion. 1974. Rapid determination of uranium in ores by means of a carbon paste electrode (in French). *Analusis (Bruxelles)* 3:513–516.
305. Barikov, V.G., Z.B. Rozhdestvenskaya, and O.A. Songina. 1969. Phase electrochemical analysis with a carbon paste electrically-active electrode (in Russian). *Zavod. Lab. (U.S.S.R.)* 35:776–778.
306. Brainina, K.Z. and M.B. Vydrevich. 1981. Stripping analysis of solids. *J. Electroanal. Chem*. 121:1–28.
307. Grygar, T., F. Marken, U. Schroeder, and F. Scholz. 2002. Electrochemical analysis of solids. A review. *Collect. Czech. Chem. Commun*. 67:163–208.
308. Nagy, G., Zs. Feher, and E. Pungor. 1970. Application of silicone rubber-based graphite electrodes for continuous flow measurements: Part II. Voltammetric study of active substances injected into electrolyte streams. *Anal. Chim. Acta* 52:47–54.
309. Siska, E. and E. Pungor. 1971. Indirect voltammetric determination of potassium and caesium and direct amperometric determination of potassium with tetraphenylborate using silicone rubber based graphite electrodes. *Fresenius Z. Anal. Chem*. 257:7–11.
310. Stulik, K., V. Pacakova, and B. Starkova. 1981. Carbon pastes for voltammetric detectors in high-performance liquid chromatography. *J. Chromatogr. A* 213:41–46.
311. Lee, B.-G., K.-B. Rhyu, and K.-J. Yoon. 2010. Amperometric study of hydrogen peroxide biosensor with butadiene rubber as immobilization matrix. *J. Industr. Engineer. Chem*. 16:340–343.
312. Rajendran, V., E. Csoregi, Y. Okamoto, and L. Gorton. 1998. Amperometric peroxide sensor based on horseradish peroxidase and toluidine blue O-acrylamide polymer in carbon paste. *Anal. Chim. Acta* 373:241–251.
313. Sandulescu, R. 1999. Personal communication.
314. Sandulescu, R.V., S.M. Mirel, R.N. Oprean, and S. Lotrean. 2000. Comparative electrochemical study of some Phenothiazines with carbon paste, solid carbon paste, and glass-like carbon electrodes. *Collect. Czech. Chem. Commun*. 65:1014–1028.
315. Blankert, B., O. Dominguez, W. El Ayyas, J. Arcos, and J.-M. Kauffmann. 2004. Horseradish peroxidase electrode for the analysis of clozapine. *Anal. Lett*. 37:903–913.
316. Mascarenhas, R.J., A.K. Satpati, S. Yellappa, B.S. Sherigara, and A.K. Bopiah. 2006. Wax-impregnated carbon paste electrode modified with mercuric oxalate for the simultaneous determination of heavy metal ions in medicinal plants and ayurvedic tablets. *Anal. Sci. (Jpn.)* 22:871–875.
317. Niranjana, E., R.R. Naik, B.E.K. Swamy, B.S. Sherigara, and H. Jayadevappa. 2007. Studies on adsorption of Triton X-100 at carbon paste and ceresin wax carbon paste electrodes and enhancement effect in dopamine oxidation by cyclic voltammetry. *Int. J. Electrochem. Sci*. 2:923–934.
318. Wangsa, J. and N.D. Danielson. 1990. Electrochemical detection for high-performance liquid chromatography using a Kel-F wax-graphite electrode. *J. Chromatogr. A* 514:171–178.
319. Wangsa, J. and N.D. Danielson. 1991. Enzymatic determination of ethanol by flow injection analysis using a Kel-F wax carbon paste electrode. *Electroanalysis* 3:625–630.
320. Sikora, E. and K. Vytřas. 1997. Voltammetric determinations at polymeric colloidal gold paste electrodes. *Sci. Pap. Univ. Pardubice, Ser. A* 3:333–338.
321. Compagnone, D., P. Schweicher, J.-M. Kauffman, and G.G. Guilbault. 1998. Sub-micromolar detection of hydrogen peroxide at a peroxidase/tetramethylbenzidine solid carbon paste electrode. *Anal. Lett*. 31:1107–1120.
322. Cui, G., J.-H. Yoo, J.-S. Lee, J. Yoo, J.-H. Uhm, G.-S. Cha, and H. Nam. 2001. Effect of pretreatment on the surface and electrochemical properties of screen-printed carbon paste electrodes. *Analyst (U.K.)* 126:1399–1403.
323. Morrin, A., A.J. Killard, and M.R. Smyth. 2003. Electrochemical characterization of commercial and home-made screen-printed carbon electrodes. *Anal. Lett*. 36:2021–2039.
324. Huang, X. and W.T. Kok. 1993. Conductive carbon cement as electrode matrix for cobalt phthalocyanine-modified electrodes for detection in flowing solutions. *Anal. Chim. Acta* 273:245–253.
325. Niwa, O. 2005. Electroanalytical chemistry with carbon film electrodes and micro- and nano-structured carbon film-based electrodes (a review). *Bull. Chem. Soc. Jan*. 78:555–571.
326. Schachl, K., H. Alemu, K. Kalcher, J. Jezkova, I. Švancara, and K. Vytřas. 1997. Determination of hydrogen peroxide with sensors based on heterogeneous carbon materials modified with MnO_2. *Sci. Pap. Univ. Pardubice Ser. A* 3:41–55.

327. Fanjul Bolado, P., D. Hernandez Santos, P.J. Lamas Ardisana, A. Martin Pernia, and A. Costa Garcia. 2008. Electrochemical characterization of screen-printed and conventional carbon paste electrodes. *Electrochim. Acta* 53:3635–3642.
328. Xu, L.-J., N.-Y. He, J.-J. Du, Y. Deng, S. Li, and H.-N. Liu. 2008. Fabrication of porous pseudo-carbon paste electrode as a novel high-sensitive electrochemical biosensor. *Anal. Lett*. 41:2402–2411.
329. Xu, L.-J., N.-Y. He, J.-J. Du, Y. Deng, Z.-Y. Li, and T. Wang. 2009. Detailed investigation on the determination of tannic acid by using anodic stripping voltammetry and a porous electrochemical sensor. *Anal. Chim. Acta* 634:49–53.
330. Xu, L.-J., J.-J. Du, Y. Deng, and N.-Y. He. 2010. Fabrication of magnetic porous pseudo-carbon paste electrode electrochemical biosensor and its application in detection of Schistosoma egg antigen. *Electrochem. Commun*. 12:1329–1332.
331. Xu, L.-J., J.-J. Du, Y. Deng, Z.-Y. Li, C.-X. Xu, and N.-Y. He. 2011. Fabrication and characterization of nanoporous pseudo-carbon paste electrode. *Adv. Sci. Lett*. 4:104–107.
332. Wang, Z.-H. and H. Zhang. 2005. An in-laid super-thin carbon paste film modified electrode for simultaneous determination of xanthine and hypoxanthine. *Fenxi Huaxue* 33:671–674.
333. Yan, Q.-P., F.-Q. Zhao, G.-Z. Li, and B.-Z. Zeng. 2006. Voltammetric determination of uric acid with a glassy carbon electrode coated by paste of multiwalled carbon nanotubes and ionic liquid. *Electroanalysis* 18:1075–1080.
334. Fan, S.-H., F. Xiao, L.-Q. Liu, F.-Q. Zhao, and B.-Z. Zeng. 2008. Sensitive voltammetric response of methylparathion on single-walled carbon nanotube paste coated electrodes using ionic liquid as binder. *Sens. Actuators B* 132:34–39.
335. Song, J.-C., J. Yang, J.-F. Zeng, J. Tan, and L. Zhang. 2011. Graphite oxide film-modified electrode as an electrochemical sensor for acetaminophen. *Sens. Actuators B* 155:220–225.
336. Chen, L.-Y., Y.-H. Tang, K. Wang, C.-B. Liu, and S.-L. Luo. 2011. Direct electro-deposition of reduced graphene oxide on glassy carbon electrode and its electrochemical application. *Electrochem. Commun*. 13:133–137.
337. Compton, R.G., J.S. Foord, and F. Marken. 2003. Electroanalysis at diamond-like and doped-diamond electrodes (a review). *Electroanalysis* 15:1349–1363.
338. Kraft, A. 2007. Doped diamond: A compact review on a new, versatile electrode material. *Int. J. Electrochem. Sci*. 2:355–385.
339. Luong, J.H.T., K.B. Male, and J.D. Glennon. 2009. Boron-doped diamond electrode: Synthesis, characterization, functionalization, and analytical applications (a review). *Analyst (U.K.)* 134:1965–1979.
340. Mueller, T.R. and R.N. Adams. 1960. Voltammetry at inert electrodes. Part 1: Analytical applications of boron carbide electrodes. *Anal. Chim. Acta* 23:467–479.
341. Mueller T.R. and R.N. Adams. 1961. Voltammetry at inert electrodes. Part 2: Correlation of experimental results with theory for voltage and controlled potential scanning, controlled potential electrolysis, and chronopotentiometric techniques—Oxidation of ferrocyanide and o-dianisidine at boron carbide electrodes. *Anal. Chim. Acta* 25:482–497.
342. Stefan, R.I., S.G. Bairu, and J.F. van Staden. 2003. Diamond paste electrodes for the determination of iodide in vitamins and table salt. *Anal. Lett*. 36:1493–1500.
343. Stefan, R.I. and R.M. Nejem. 2003. Determination of L- and D-pipecolic acid using diamond paste based amperometric biosensors. *Anal. Lett*. 36:2635–2644.
344. Stefan, R.I., S.G. Bairu, J.F. van Staden. 2003. Diamond paste-based electrodes for the determination of Cr(III) in pharmaceuticals. *Anal. Bioanal. Chem*. 376:844–847.
345. Stefan, R.I. and R.G. Bokretsion. 2003. Determination of creatine and creatinine using a diamond paste based electrode. *Instrum. Sci. Technol*. 31:183–188.
346. Stefan, R.I. and S.G. Bairu. 2003. Diamond paste-based electrodes for the determination of Cr(VI) at trace levels. *Instrum. Sci. Technol*. 31:261–267.
347. Stefan, R.I., S.G. Bairu, and J.F. van Staden. 2003. Determination of Fe(III) in water samples using diamond paste based electrodes. *Instrument. Sci. Technol*. 31:411–416.
348. Stefan, R.I. and R.G. Bokretsion. 2003. Diamond paste-based immunosensor for rapid determination of azidothymidine. *J. Immunoassay Immunochem*. 24:319–324.
349. Stefan, R.I. and S.G. Bairu. 2004. Diamond paste based electrodes for determination of Pb(II) at trace concentration level. *Talanta* 63:605–608.
350. Stefan, R.I., R.M. Nejem, J.F. van Staden, and H.Y. Aboul Enein. 2004. New amperometric biosensors based on diamond paste for the assay of L- and D-pipecolic acids in serum samples. *Prep. Biochem. Biotechnol*. 34:135–143.

351. Stefan, R.I. and R.M. Nejem. 2004. Determination of L- and D-pipecolic acids using a diamond paste based electrode. *Instrum. Sci. Technol*. 32:311–320.
352. Stefan-van Staden, R.I. and R.G. Bokretsion. 2006. Simultaneous determination of creatine and creatinine using monocrystalline diamond paste based amperometric biosensors. *Anal. Lett*. 39:2227–2233.
353. Stefan-van Staden, R.I., S.G. Bairu, and J.F. van Staden. 2010. Diamond paste based electrodes for the determination of Ag(I) ion. *Anal. Methods* 2:650–652.
354. Stefan-van Staden, R.I., J.F. van Staden, and H.Y. Aboul Enein. 2010. Diamond paste-based electrodes for the determination of Sildenafil citrate (Viagra). *J. Solid State Electrochem*. 14:997–1000.
355. Van Staden, J.F. and R.I. Stefan-van Staden. 2010. Personal communication.
356. Gong, K.-P., Y.-M. Yang, M.-N. Zhang, L. Su, S.-X. Xiong, and L.-Q. Mao. 2005. Electrochemistry and electroanalytical applications of carbon nanotubes: A review. *Anal. Sci. (Jpn.)* 21:1383–1393.
357. Dumitrescu, I., R. Unwin Patrick, and J.V. MacPherson. 2009. Electrochemistry at carbon nanotubes: Perspective and issues. *Chem. Commun*. 45:6886–6901.
358. Pumera, M. 2009. The electrochemistry of carbon nanotubes: Fundamentals and applications. *Chem. Eur. J*. 15:4970–4978.
359. Britto, P.J., K.S.V. Santhanam, and P.M. Ajayan. 1996. Carbon nanotube electrode for oxidation of dopamine. *Bioelectrochem. Bioenerg*. 41:121–125.
360. Ricci, F., A. Amine, D. Moscone, and G. Palleschi. 2003. Prussian blue modified carbon nanotube paste electrodes: A comparative study and a biochemical application. *Anal. Lett*. 36:1921–1938.
361. Pedano, M.L. and Rivas, G.A. 2004. Adsorption and electrooxidation of nucleic acids at carbon nanotubes paste electrodes. *Electrochem. Commun*. 6:10–16.
362. Antiochia, R., I. Lavagnini, F. Magno, F. Valentini, and G. Palleschi. 2004. Single-wall carbon nanotube paste electrodes: A comparison with carbon paste, platinum and glassy carbon electrodes via cyclic voltammetric data. *Electroanalysis* 16:1451–1458.
363. Lawrence, N.S., R.P. Deo, and J. Wang. 2004. Detection of homocysteine at carbon nanotube paste electrodes. *Talanta* 63:443–449.
364. Rubianes, M.D. and G.A. Rivas. 2005. Enzymatic biosensors based on carbon nanotubes paste electrodes. *Electroanalysis* 17:73–78.
365. Chicharro, M., E. Bermejo, M. Moreno, A. Sanchez, A. Zapardiel, and G. Rivas. 2005. Adsorptive stripping voltammetric determination of amitrole at a multi-wall carbon nanotubes paste electrode. *Electroanalysis* 17:476–482.
366. He, J.-B., X.-Q. Lin, and J. Pan. 2005. Multi-wall carbon nanotube paste electrode for adsorptive stripping determination of quercetin: A comparison with a CPE via voltammetry and chronopotentiometry. *Electroanalysis* 17:1681–1686.
367. Chicharro, M., A. Sanchez, E. Bermejo, A. Zapardiel, M.D. Rubianes, and G.A. Rivas. 2005. Carbon nanotubes paste electrodes as new detectors for capillary electrophoresis. *Anal. Chim. Acta* 543:84–91.
368. Antiochia, R., I. Lavagnini, and F. Magno. 2005. Electrocatalytic oxidation of NADH at single-wall carbon-nanotube-paste electrodes: Kinetic considerations for use of redox mediator in solution and dissolved in paste. *Anal. Bioanal. Chem*. 381:1355–1361.
369. Ly, S.Y., S.K. Kim, T.H. Kim, Y.S. Jung, and S.M. Lee. 2005. Measuring mercury ion concentration with a carbon nanotube paste electrode using the cyclic voltammetry method. *J. Appl. Electrochem*. 35:567–571.
370. Arribas, A.S., E. Bermejo, M. Chicharro, A. Zapardiel, G.L. Luque, N.F. Ferreyra, and G.A. Rivas. 2006. Analytical applications of a carbon nanotubes composite modified with copper micro-particles as detector in flow systems. *Anal. Chim. Acta* 577:183–189.
371. Kurusu, F.S. Koide, I. Karube, and M. Gotoh. 2006. Electrocatalytic activity of bamboo-structured carbon nanotube paste electrode toward hydrogen peroxide. *Anal. Lett*. 39:903–911.
372. Antiochia, R. and I. Lavagnini. 2006. Alcohol biosensor based on immobilization of Meldola blue and alcohol dehydrogenase into a carbon nanotube paste electrode. *Anal. Lett*. 39:1643–1655.
373. Tian, X.-J., J.-F. Song, X.-J. Luan, Y.-Y. Wang, and Q.-Z. Shi. 2006. Determination of *Metformin* based on amplification of its voltammetric response by a combination of molecular wire and carbon nanotubes. *Anal. Bioanal. Chem*. 386:2081–2086.
374. Lin, X.-Q., J.-B. He, and Z.-G. Zha. 2006. Simultaneous determination of quercetin and rutin at a multiwall carbon-nanotube paste electrodes by reversing differential pulse voltammetry. *Sens. Actuators B* 119:608–614.
375. Luque, G.L., N.F. Ferreyra, and G.A. Rivas. 2006. Glucose biosensor based on the use of carbon nanotube paste electrode modified with metallic particles. *Microchim. Acta* 152:277–283.

376. Ly, S.-Y. 2006. Detection of dopamine in the pharmacy with a carbon nanotube paste electrode using voltammetry. *Bioelectrochemistry* 68:227–231.
377. Ly, S.-Y. 2006. Real-time voltammetric assay of cadmium ions in plant tissue and fish brain core. *Bull. Korean Chem. Soc*. 27:1613–1617.
378. Nie, L.-B., J.-R. Chen, Y.-Q. Miao, and N.-Y. He. 2006. Gold nanoparticle-based layer-by-layer enhancement of DNA hybridization electrochemical signal at carbon nanotube modified carbon paste electrode. *Chin. Chem. Lett*. 17:795–798.
379. Zheng, L. and J. Song. 2007. Voltammetric behavior of Urapidil and its determination at multi-wall carbon nanotube paste electrode. *Talanta* 73:943–947.
380. Qu, J., X. Zou, B. Liu, and S. Dong. 2007. Assembly of polyoxometalates on carbon nanotubes paste electrode and its catalytic behaviors. *Anal. Chim. Acta* 599:51–57.
381. Timur, S., U. Anik, D. Odaci, and L. Gorton. 2007. Development of a microbial biosensor based on carbon nanotube modified electrodes. *Electrochem. Commun*. 9:1810–1815.
382. Ly, S.-Y., Y.-S. Jung, S.-K. Kim, and H.-K. Lee. 2007. Trace analysis of lead and copper ions in fish tissue using paste electrodes. *Anal. Lett*. 40:2683–2692.
383. Shahrokhian, S. and M. Amiri. 2007. Multi-walled carbon nanotube paste electrode for selective voltammetric detection of isoniazid. *Microchim. Acta* 157:149–158.
384. Shahrokhian, S. and L. Fotouhi. 2007. Carbon paste electrode incorporating multi-walled carbon nanotube/cobalt salophen for sensitive voltammetric determination of tryptophan. *Sens. Actuators B* 123:942–949.
385. Antiochia, R. and L. Gorton. 2007. Development of a carbon nanotube paste electrode osmium polymer-mediated biosensor for determination of glucose in alcoholic beverages. *Biosens. Bioelectron*. 22:2611–2617.
386. Chen, J.-H., Z.-Y. Lin, and G.-N. Chen. 2007. An electrochemiluminescent sensor for glucose employing a modified carbon nanotube paste electrode. *Anal. Bioanal. Chem*. 388:399–407.
387. Abbaspour, A. and R. Mirzajani. 2007. Electrochemical monitoring of piroxicam in different pharmaceutical forms with multi-walled carbon nanotubes paste electrode. *J. Pharm. Biomed. Anal*. 44:41–48.
388. Nie, L.-B., H.-S. Guo, Q.-G. He, J.-R. Chen, and Y.-Q. Miao. 2007. Enhanced electrochemical detection of DNA hybridization with carbon nanotube modified paste electrode. *J. Nanosci. Nanotechnol*. 7:560–564.
389. Chen, Y., Z. Lin, J. Chen, J. Sun, L. Zhang, and G. Chen. 2007. New capillary electrophoresis-electrochemiluminescence detection system equipped with an electrically heated $Ru(bpy)_3^{2+}$/multi-wall-carbon-nanotube paste electrode. *J. Chromatogr. A* 1172:84–91.
390. Ly, S.-Y., C.-H. Lee, and Y.-S. Jung. 2007. Measuring oxytetracycline using a simple prepared DNA immobilized on a carbon nanotube paste electrode in fish tissue. *J. Korean Chem. Soc*. 51:412–417.
391. Kachoosangi, R.T., L. Xiao, G.G. Wildgoose, F. Marken, P.C.B. Page, and R.G. Compton. 2007. A new method of studying ion transfer at liquidlliquid phase boundaries using a carbon nanotube paste electrode with a redox active binder. *J. Phys. Chem. C* 111:18353–18360.
392. Zheng, L. and J.F. Song. 2007. Adsorptive voltammetric determination of cisapride on carbon nanotubes paste electrode. *Fenxi Huaxue* 35:1018–1020.
393. Deng, P.-H., J.-J. Fei, J. Zhang, and J.-N. Li. 2008. Determination of trace copper by adsorptive voltammetry using a multiwalled carbon nanotube modified carbon paste electrode. *Electroanalysis* 20:1215–1219.
394. Zhang, X.-Z., K. Jiao, and X. Wang. 2008. Paste electrode based on short single-walled carbon nanotubes and room temperature ionic liquid: Preparation, characterization and application in DNA detection. *Electroanalysis* 20:1361–1366.
395. Li, X.-L. and J.-S. Ye. 2008. Comparison of the electrochemical reactivity of carbon nanotubes paste electrodes with different types of multiwalled carbon nanotubes. *Electroanalysis* 20:1917–1924.
396. Ly, S.-Y. 2008. Diagnosis of Cu(II) ions in vascular tracts by a fluorine-doped carbon nanotube sensor. *Talanta* 74:1635–1641.
397. Deng, P.H., J. Zhang, S.F. Liao, and J.N. Li. 2008. Adsorption voltammetry of the zirconium-alizarin red S complex at a multi-walled carbon nanotubes modified carbon paste electrode. *Microchim. Acta* 161:123–128.
398. Zhuang, Q., J.-H. Chen, J. Chen, and X.-H. Lin. 2008. Electrocatalytical properties of bergenin on a multi-wall carbon nanotubes modified carbon paste electrode and its determination in tablets. *Sens. Actuators B* 128:500–506.
399. Wang, Z.-H., X.-Y. Dong, and J. Li. 2008. An inlaying ultra-thin carbon paste electrode modified with functional single-wall carbon nanotubes for simultaneous determination of three purine derivatives. *Sens. Actuators B* 131:411–416.

400. Odaci, D., A. Telefoncu, and S. Timur. 2008. Pyranose oxidase biosensor based on carbon nanotube-modified carbon paste electrode. *Sens. Actuators B* 132:159–165.
401. Dong, S.-Q., S. Zhang, L.-Z. Chi, P.-A. He, Q.-J. Wang, and Y.-Z. Fang. 2008. Electrochemical behaviors of amino acids at multiwall carbon nanotubes and Cu_2O modified carbon paste electrode. *Anal. Biochem*. 381:199–204.
402. Ly, S.-Y. 2008. Voltammetric analysis of DL-alpha-tocopherol with a paste electrode. *J. Sci. Food Agricult*. 88:1272–1276.
403. Shahrokhian, S., Z. Kamalzadeh, A. Bezzaatpour, and D.M. Boghaei. 2008. Differential pulse voltammetric determination of N-acetylcysteine by the electro-catalytic oxidation at the surface of carbon nanotube-paste electrode modified with cobalt salophen complexes. *Sens. Actuators B* 133(2):599–606.
404. Kim, T.-H., S.-J. Kwon, H.-H. Yoon, C.-W. Chung, and J.-S. Kim. 2008. Fabrication of carbon nanotube paste using photosensitive polymer for field emission display. *Colloids Surf. A* 313:448–451.
405. Xie, J.-N., S.-Y. Wang, L. Aryasomayajula, and V.K. Varadan. 2008. Effect of nano-materials in platinum-decorated carbon nanotube paste-based electrodes for amperometric glucose detection. *J. Mater. Res*. 23:1457–1465.
406. Zhang, H., G.-P. Cao, Y.-S. Yang, and Z.-N. Gu. 2008. The capacitive performance of an ultralong aligned carbon nanotube electrode in an ionic liquid at 60°C. *Carbon* 46:30–34.
407. Deng, P.-H., J.-J. Fei, J. Zhang, and J.-N. Li. 2008. Trace determination of zirconium using anodic adsorptive voltammetry at a carbon paste electrode modified with multi-waited carbon nanotubes. *Chin. Sci. Bull*. 53:1665–1670.
408. Deng, P.-H., J. Zhang, and J.-N. Li. 2008. Anodic adsorption voltammetry of zirconium-alizarin red S complex at a multi-walled carbon nanotube modified carbon paste electrode. *Fenxi Huaxue* 36:691–694.
409. Ly, S.-Y., Y.-S. Jung, C.-H. Lee, and B.-W. Lee. 2008. Administering pesticide assays in *in-vivo* implanted biosensors. *Aust. J. Chem*. 61:826–832.
410. Ganjali, M.R., H. Khoshsafar, F. Faridbod, A. Shirzadmehr, M. Javanbakht, and P. Norouzi. 2009. Room temperature ionic liquids and multiwalled carbon nanotubes as modifiers for improvement of carbon paste ion selective electrode response. A comparison study with PVC membrane. *Electroanalysis* 21:2175–2178.
411. Zheng, L. and J.-F. Song. 2009. Ni(II)-*baicalein* complex modified multi-wall carbon nanotube paste electrode toward electrocatalytic oxidation of hydrazine. *Talanta* 79:319–326.
412. Sun, W., Y. Li, Y. Duan, and K. Jiao. 2009. Direct electrochemistry of guanosine on multi-walled carbon nanotubes modified carbon ionic liquid electrode. *Electrochim. Acta* 54:4105–4110.
413. Sun, W., X. Li, Y. Wang, R. Zhao, and K. Jiao. 2009. Electrochemistry and electrocatalysis of hemoglobin on multi-walled carbon nanotubes modified carbon ionic liquid electrode with hydrophilic EMIMBF4 as the modifier. *Electrochim. Acta* 54:4141–4148.
414. Zheng, L., J.-Q. Zhang, and J.-F. Song. 2009. Ni(II)-quercetin complex modified multiwall carbon nanotube ionic liquid paste electrode and its electrocatalytic activity toward the oxidation of glucose. *Electrochim. Acta* 54:4559–4565.
415. Faridbod, F., M.R. Ganjali, B. Larijani, and P. Nurouzi. 2009. Multi-walled carbon nanotubes (MWCNTs) and room temperature ionic liquids (RTILs) carbon paste Er(III) sensor based on a new derivative of dansyl chloride. *Electrochim. Acta* 55:234–239.
416. Tashkhourian, J., M.R. Hormozi Nezhad, J. Khodavesi, and S. Javadi. 2009. Silver nanoparticles modified carbon nanotube paste electrode for simultaneous determination of dopamine and ascorbic acid. *J. Electroanal. Chem*. 633:85–91.
417. Sun, W., Z. Zhai, X. Li, L. Qu, T. Zhan, and K. Jiao. 2009. Direct electrochemistry of hemoglobin in chitosan/multiwalled carbon nanotubes/ionic liquid-modified carbon paste electrode. *Anal. Lett*. 42:2460–2473.
418. Ganjali, M.R., H. Khoshsafar, A. Shirzadmehr, M. Javanbakht, and F. Faridbod. 2009. Improvement of carbon paste ion-selective electrode response by using room temperature ionic liquids and multi-walled carbon nanotubes. *Int. J. Electrochem. Sci*. 4:435–443.
419. Ganjali, M.R., N. Motakef-Kazemi, P. Norouzi, and S. Khoee. 2009. A Ho(III)-modified carbon paste electrode based on multiwalled carbon nanotubes (MWCNTs) and nanosilica. *Int. J. Electrochem. Sci*. 4:906–913.
420. Yaghoubian, H., H.M. Karimi, M.A. Khalilzadeh, and F. Karimi. 2009. Electrocatalytic oxidation of *Levodopa* at a ferrocene modified carbon nanotube paste electrode. *Int. J. Electrochem. Sci*. 4:993–1003.

421. Raoof, J.-B., M.S. Hejazi, R. Ojani, and E.H. Asl. 2009. A comparative study of carbon nanotube paste electrode for the development of indicator-free DNA sensors by differential pulse voltammetry and electrochemical impedance spectroscopy: Human iont-erleukin-2 oligonucleotide as a model. *Int. J. Electrochem. Sci*. 4:1436–1451.
422. Beitollahi, H., M. Mazloum Ardakani, H. Naeimi, and B. Ganjipour. 2009. Electrochemical characterization of 2,2′-[1,2-ethanediyl-bis-(nitriloethylidyne)]-bis-hydroquinone carbon nanotube paste electrode and its application to simultaneous voltammetric determination of ascorbic acid and uric acid. *J. Solid. State Electrochem*. 13:353–363.
423. Xiong, H., H. Xu, L. Wang, and S. Wang. 2009. Characterization and sensing properties of a CNTPE for acetaminophen. *Microchim. Acta* 167:129–133.
424. Zheng, L. and J.-F. Song. 2009. Electrocatalytic oxidation of methanol and other short chain aliphatic alcohols at Ni(II)-quercetin complex modified multi-wall carbon nanotube paste electrode. *J. Solid. State Electrochem*. 14:43–50.
425. Janegitz, B.C., L.H. Marcolino-Junior, S.P. Campana-Filho, R.C. Faria, and O. Fatibello Filho. 2009. Anodic stripping voltammetric determination of Cu(II) using a functionalized carbon nanotubes paste electrode modified with crosslinked chitosan. *Sens. Actuators B* 142:260–266.
426. Dai, H., Y.-M. Wang, X.-P. Wu, L. Zhang, and G. Chen. 2009. An electrochemiluminescent sensor for methamphetamine hydrochloride based on multi-wall carbon nanotube/ionic liquid composite electrode. *Biosens. Bioelectron*. 24:1230–1234.
427. Mazloum Ardakani, M., H. Beitollahi, B. Ganjipour, H. Naeimi, and M. Nejati. 2009. Electrochemical and catalytic investigations of dopamine and uric acid by modified carbon nanotube paste electrode. *Bioelectrochemistry* 75:1–8.
428. Santos, V.S., W.d.J. Rodrigues Santos, L.T. Kubota, T. Teixeira, and R. Cesar. 2009. Speciation of Sb(III) and Sb(V) in meglumine antimoniate pharmaceutical formulations by PSA using carbon nanotube electrode. *J. Pharm. Biomed. Anal*. 50:151–157.
429. Zheng, L. and J.-F. Song. 2009. Nickel(II)-*Baicalein* complex modified multiwall carbon nanotube paste electrode and its electrocatalytic oxidation toward glycine. *Anal. Biochem*. 391:56–63.
430. Ly, S.-Y., C.-H. Lee, and Y.-S. Jung. 2009. Voltammetric bioassay of caffeine using sensor implant. *Neuromol. Med*. 11:20–27.
431. Zhai, Z.-Q., J. Wu, W. Sun, and K. Jiao. 2009. Direct electrochemistry of hemoglobin and its electrocatalysis based on a carbon nanotube paste electrode. *J. Chin. Chem. Soc. (Taiwan)* 56:561–567.
432. Yaghoubian, H., M.H. Karimi, M.A. Khalilzadeh, and F. Karimi. 2009. Electrochemical detection of *Carbidopa* using a ferrocene-modified CNTPE. *J. Serb. Chem. Soc*. 74:1443–1453.
433. Lozano, M.L., M.C. Rodriguez, P. Herrasti, L. Galicia, and G.A. Rivas. 2010. Amperometric response of hydrogen peroxide at carbon nanotubes paste electrodes modified with an electrogenerated poly(Fe(III)-5-amino-phenantroline). Analytical applications for glucose biosensing. *Electroanalysis* 22:128–134.
434. Gligor, D., I. Craciunescu, I.C. Popescu, and L. Gorton. 2010. Influence of the electrode material on the electrochemical behavior of CPEs modified with meldola blue and methylene green adsorbed on a synthetic zeolite. *Electroanalysis* 22:509–512.
435. Suresh, S., A.K. Gupta, V.K. Rao, O. Kumar, and R. Vijayaraghavan. 2010. Amperometric immunosensor for ricin by using on graphite and carbon nanotube paste electrodes. *Talanta* 81:703–708.
436. Alamo, L.S.T., T. Tangkuaram, and S. Satienperakul. 2010. Determination of sulfite by pervaporation-flow injection with amperometric detection using copper hexacyano-ferrate-carbon nanotube modified carbon paste electrode. *Talanta* 81:793–1799.
437. Merisalu, M., J. Kruusma, and C.E. Banks. 2010. Metallic impurity free carbon nanotube paste electrodes. *Electrochem. Commun*. 12:144–147.
438. Shahrokhian, S. and E. Asadian. 2010. Simultaneous voltammetric determination of ascorbic acid, acetaminophen, and isoniazid using thionine immobilized multi-walled carbon nanotube modified carbon paste electrode. *Electrochim. Acta* 55:666–672.
439. Fotouhi, L., F. Raei, M.M. Heravi, and D. Nematollahi. 2010. Electrocatalytic activity of 6,7-dihydroxy-3-methyl-9-thia-4,4-diazafluoren-2-one/multi-wall carbon nano-tubes immobilized on carbon paste electrode for NADH oxidation: Application to the trace determination of NADH. *J. Electroanal. Chem*. 639:15–20.
440. Ensafi, A.A. and H. Karimi Maleh. 2010. Modified multiwall CNPE as a sensor for simultaneous determination of 6-thioguanine and folic acid using ferrocene-dicarboxylic acid as a mediator. *J. Electroanal. Chem*. 640:75–83.

441. Khalilzadeh, M.A. and H. Karimi Maleh. 2010. Sensitive and selective determination of phenylhydrazine in the presence of hydrazine at a ferrocene monocarboxylic acid modified carbon nanotube paste electrode. *Anal. Lett*. 43:186–196.
442. Mazloum Ardakani, M., H. Beitollahi, B Ganjipour, and H. Naeimi. 2010. Novel carbon nanotube paste electrode for simultaneous determination of norepinephrine, uric acid, and d-penicillamine. *Int. J. Electrochem. Sci*. 5:531–546.
443. Zare, H.R. and N. Nasirizadeh. 2010. Application of hematoxylin multi-wall carbon nanotube modified carbon paste electrode as a sensor for simultaneous determination of dopamine and acetaminophen. *Int. J. Electrochem. Sci*. 4:1691–1705.
444. Ensafi, A.A. and H. Karimi Maleh. 2010. Ferrocenedicarboxylic acid modified multiwall carbon nanotubes paste electrode for voltammetric determination of sulfite. *Int. J. Electrochem. Sci*. 5:392–406.
445. Ensafi, A.A., M. Taei, T. Khayamian, H. Karimi Maleh, and F. Hasanpour. 2010. Voltammetric measurement of trace amount of glutathione using multiwall carbon nano-tubes as a sensor and chlorpromazine as a mediator. *J. Solid State Electrochem*. 14:1415–1423.
446. Faridbod, F., M.R. Ganjali, B. Larijani, M. Hosseini, and P. Norouzi. 2010. $Ho^{(3+)}$-carbon paste sensor based on multi-walled carbon nanotubes for determination of the content of holmium in biological and environmental samples. *Mater. Sci. Engineer. C* 30:555–560.
447. Ganjali, M.R., N. Motakef Kazami, F. Faridbod, and S. Khoee. 2010. Determination of Pb(II) ions by a modified carbon paste electrode based on multi-walled carbon nanotubes and nanosilica. *J. Hazard. Mater*. 173:415–419.
448. Khani, H., M.K. Rofouei, P. Arab, V.K. Gupta, and Z. Vafaei. 2010. Multi-walled carbon nanotubes-ionic liquid-carbon paste electrode as a super selectivity sensor: Application to potentiometric monitoring of mercury ion(II). *J. Hazard. Mater*. 183:402–409.
449. Gligor, D., C. Varodi, A. Maicaneanu, and L.M. Muresan. 2010. Carbon nanotubes-graphite paste electrode modified with Cu(II)-exchanged zeolite for the detection of H_2O_2. *Stud. Univ. Babes-Bolyai Chem. (Romania)* 55:293–302.
450. Tiyapiboonchaiya, C., D.R. MacFarlane, J.-Z. Sun, and M. Forsyth. 2002. Polymer-in-ionic-liquid electrolytes. *Macromol. Chem. Phys*. 203:1906–1911.
451. Wei, D. and A. Ivaska. 2008. Applications of ionic liquids in electrochemical sensors. *Anal. Chim. Acta* 607:126–135.
452. Weidlich, T. and I. Švancara. 2010. Possibilities and limitations of (room temperature) ionic liquids in electrochemistry and electroanalytical measurements. In *Sensing in Electroanalysis*, Vol. 5, Eds. K. Vytřas, K. Kalcher, and I. Švancara, pp. 33–56. Pardubice, Czech Republic: University Press Center.
453. Maleki, N., A. Safavi, and F. Tajabadi. 2006. High-performance carbon composite electrode based on an ionic liquid as a binder. *Anal. Chem*. 78:3820–3826.
454. Shul, G., J. Sirieix Plenet, L. Gaillon, and M. Opallo. 2006. Ion transfer at carbon paste electrode based on ionic liquid. *Electrochem. Commun*. 8:1111–1114.
455. Niedziolka J., E. Rozniecka, J.-Y. Chen, and M. Opallo. 2006. Changing the direction of ion transfer across o-nitrophenyloctylether/water interface coupled to electrochemical redox reaction. *Electrochem. Commun*. 8:941–945.
456. Safavi, A., N. Maleki, O. Moradlou, and F. Tajabadi. 2006. Simultaneous determination of dopamine, ascorbic acid, and uric acid using carbon ionic liquid electrode. *Anal. Biochem*. 359:224–229.
457. Safavi, A., N. Maleki, F. Honarasa, F. Tajabadi, and F. Sedaghatpour. 2007. Ionic liquids for modifying the performance of carbon based potentiometric sensors. *Electroanalysis* 19:582–586.
458. Sun, W., M. Yang, R. Gao, and K. Jiao. 2007. Electrochemical determination of ascorbic acid in room temperature ionic liquid BPPF6 modified carbon paste electrode. *Electroanalysis* 19:1597–1602.
459. Maleki, N., A. Safavi, and F. Tajabadi. 2007. Investigation of the role of ionic liquids in imparting electrocatalytic behavior to carbon paste electrode. *Electroanalysis* 19:2247–2250.
460. Zheng, J.-B., Y. Zhang, and P.-P. Yang. 2007. An ionic liquid-type carbon paste electrode for electrochemical investigation and the determination of calcium dobesilate. *Talanta* 73:920–925.
461. Safavi, A., N. Maleki, and F. Tajabadi. 2007. Highly stable electrochemical oxidation of phenols at carbon ionic liquid electrode. *Analyst (U.K.)* 132:54–58.
462. Li, J., M. Huang, X. Liu, H. Wei, Y. Xu, G. Xu, and E. Wang. 2007. Enhanced electrochemiluminescence sensor from tris(2,2′-bipyridyl)Ru(II) incorporated into MCM-41 and ionic liquid-based carbon paste electrode. *Analyst (U.K.)* 132:687–691.

463. Wang, S.-F., H.-Y. Xiong, and Q.-X. Zeng. 2007. Design of carbon paste biosensors based on the mixture of ionic liquid and paraffin oil as a binder for high performance and stabilization. *Electrochem. Commun*. 9:807–812.
464. Sun, W., D.-D. Wang, R.-F. Gao, and K. Jiao. 2007. Direct electrochemistry and electrocatalysis of hemoglobin in sodium alginate film on a BMIMPF6 modified carbon paste electrode. *Electrochem. Commun*. 9:1159–1164.
465. Zhang, Y. and J.-B. Zheng. 2007. Comparative investigation on electrochemical behavior of hydroquinone at carbon ionic liquid electrode, ionic-liquid modified-, and the bare carbon paste electrode. *Electrochim. Acta* 52:7210–7216.
466. Sun, W., M. Yang, and K. Jiao. 2007. Electrocatalytic oxidation of dopamine at an ionic liquid modified CPE and its analytical application. *Anal. Bioanal. Chem*. 389:1283–1291.
467. Sun, W., M.-X. Yang, R.-F. Gao, and K. Jiao. 2007. Electrochemistry and electro-catalysis of hemoglobin in Nafion/nano-$CaCO_3$ film on a new ionic liquid BPPF6 modified carbon paste electrode. *J. Phys. Chem. B* 111:4560–4567.
468. Zhang, Y. and J.-B. Zheng. 2007. An ionic liquid bulk-modified carbon paste electrode and its electrocatalytic activity toward p-aminophenol. *Chin. J. Chem*. 25:1652–1657.
469. Sun, W., R.-F. Gao, R.-F. Bi, and K. Jiao. 2007. Preparation and characteristics of room temperature ionic liquid N-butylpyridinium hexafluorophosphate modified carbon paste electrode. *Fenxi Huaxue* 35:567–570.
470. Sun, W., R.-F. Gao, D.-D. Wang, and K. Jiao. 2007. Direct electrochemistry of hemoglobin at room temperature ionic liquid [BMIM]PF6 modified carbon paste electrode. *Yaoxue Xuebao* 23:1247–1251.
471. Safavi, A., N. Maleki, S. Momeni, and F. Tajabadi. 2008. Highly improved electro-catalytic behavior of sulfite at carbon ionic liquid electrode: Application to the analysis of some real samples. *Anal. Chim. Acta* 625:8–12.
472. Musameh, M.M. and J. Wang. 2008. Sensitive and stable amperometric measurements at ionic liquid-carbon paste micro-electrodes. *Anal. Chim. Acta* 606:45–49.
473. Musameh, M.M., R.T. Kachoosangi, and R.G. Compton. 2008. Enhanced stability and sensitivity of ionic liquid-carbon paste electrodes at elevated temperatures. *Analyst (U.K.)* 133:133–138.
474. Sun, W., Y. Li, M. Yang, S. Liu, and K. Jiao. 2008. Direct electrochemistry of single-stranded DNA on an ionic liquid modified carbon paste electrode. *Electrochem. Commun*. 10:298–301.
475. Shang, G.-X., H.-F. Zhang, and J.-B. Zheng. 2008. Direct electrochemistry of glucose oxidase based on its direct immobilization on carbon ionic liquid electrode and glucose sensing. *Electrochem. Commun*. 10:1140–1143.
476. Sun, W., Y.-Z. Li, M.-X. Yang, J. Li, and K. Jiao. 2008. Application of carbon ionic liquid electrode for the electrooxidative determination of catechol. *Sens. Actuators B* 133:387–392.
477. Shang Guan, X., H. Zhang, and J. Zheng. 2008. Electrochemical behavior and differential pulse voltammetric determination of Paracetamol at a carbon ionic liquid electrode. *Anal. Bioanal. Chem*. 391:1049–1055.
478. Musameh, M.M., R.T. Kachoosangi, L. Xiao, A. Ruseell, and R.G. Compton. 2008. Ionic liquid-carbon composite glucose biosensor. *Biosens. Bioelectron*. 24:87–92.
479. Sun, W., D.-D. Wang, J.-H. Zhong, and K. Jiao. 2008. Electrocatalytic activity of hemoglobin in sodium alginate/SiO_2 nanoparticle/ionic liquid BMIM-PF_6 composite film. *J. Solid State Electrochem*. 12:655–661.
480. Sun, W., Q. Jiang, M.-X. Yang, and K. Jiao. 2008. Electrochemical behaviors of hydroquinone on a carbon paste electrode with ionic liquid as the binder. *Bull. Korean Chem. Soc*. 29:915–920.
481. Sun, W., X.-Q. Li, and K. Jiao. 2009. Direct electrochemistry of myoglobin in a Nafion-ionic composite film modified carbon ionic liquid electrode. *Electroanalysis* 21:959–964.
482. Haghighi, B. and H. Hamidi. 2009. Electrochemical characterization and application of carbon ionic liquid electrodes containing 1:12 phosphomolybdic acid. *Electroanalysis* 21:1057–1065.
483. Sun, W., Y.-Y. Duan, Y.-H. Li, T.-R. Zhan, and K. Jiao. 2009. Electrochemistry and voltammetric determination of adenosine with N-hexyl-pyridinium hexafluorophosphate modified electrode. *Electroanalysis* 21:2667–2673.
484. Sun, W., Y. Duan, Y. Li, H. Gao, and K. Jiao. 2009. Electrochemical behaviors of guanosine on carbon ionic liquid electrode and its determination. *Talanta* 78:695–699.
485. Ding, C.-F., F. Zhao, R. Ren, and J.-M. Lin. 2009. An electrochemical biosensor for alpha-fetoprotein based on carbon paste electrode constructed of room temperature ionic liquid and gold nanoparticles. *Talanta* 78:1148–1154.

486. Dai, H., H. Xu, X. Wu, Y. Chi., and G. Chen. 2009. Fabrication of a new electrochemiluminescent sensor for Fentanyl citrate based on glassy carbon microspheres and ionic liquid composite paste electrode. *Anal. Chim. Acta* 647:60–65.
487. Ji, H., L. Zhu, D. Liang, Y. Liu, L. Cai, S. Zhang, and S. Liu. 2009. Use of a 12-molybdovanadate(V) modified ionic liquid carbon paste electrode as a bifunctional electrochemical sensor. *Electrochim. Acta* 54:7429–7434.
488. Gao, R. and J. Zheng. 2009. Direct electrochemistry of myoglobin based on DNA accumulation on a carbon ionic liquid electrode. *Electrochem. Commun*. 11:1527–1529.
489. Lin, Z., X. Chen, H. Chen, B. Qiu, and G. Chen. 2009. Electrochemiluminescent behavior of N6-isopentenyl-adenine/$Ru(bpy)_{(3)}^{(2+)}$ system on an electrically heated ionic liquid/carbon paste electrode. *Electrochem. Commun*. 11:2056–2059.
490. Sun, W., C.-X. Guo, Z. Zhu, and C.-M. Li. 2009. Ionic liquid/mesoporous carbon/protein composite microelectrode and its possible applications in biosensing. *Electrochem. Commun*. 11:2105–2108.
491. Sun, W., Y. Li, H. Gao, and K. Jiao. 2009. Direct electrochemistry of double stranded DNA on ionic liquid modified carbon paste electrode (CILE). *Microchim. Acta* 165:313–317.
492. Li, Y., X. Liu, X. Zeng, Y. Liu, X. Liu, W. Wei, and S. Luo. 2009. Non-enzymatic sensor for hydrogen peroxide based on a Prussian blue-modified carbon ionic liquid electrode. *Microchim. Acta* 165:393–398.
493. Sun, W., Q. Jiang, and K. Jiao. 2009. Electrochemical behaviors of metal on ionic-liquid-modified carbon paste electrode and its analytical application. *J. Solid State Electrochem*. 13:1193–1199.
494. Sun, W., Q. Jiang, Y. Wang, and K. Jiao. 2009. Electrochemical behaviors of metol on hydrophilic ionic liquid 1-ethyl-3-methyl-imidazolium tetrafluoroborate-modified electrode. *Sens. Actuators B* 136:419–424.
495. Li, Y.-H., X.-Y. Liu, X.-D. Zeng, Y. Liu, X.-T. Liu, W.-Z. Wei, and S.-L. Luo. 2009. Simultaneous determination of ultra-trace lead and cadmium at a hydroxyapatite-modified carbon ionic liquid electrode by square-wave stripping voltammetry. *Sens. Actuators B* 139:604–610.
496. Sun, W., Z.-Q. Zhai, D.-D. Wang, S.-F. Liu, and K. Jiao. 2009. Electrochemistry of hemoglobin entrapped in a Nafion/nano-ZnO film on carbon ionic liquid electrode. *Bioelectrochem*. 74:295–300.
497. Safavi, A., N. Maleki, and E. Farjami. 2009. Fabrication of a glucose sensor based on a novel nanocomposite electrode. *Biosens. Bioelectron*. 24:1655–1660.
498. Sun, W., M.-X. Yang, Y.-Z. Li, Q. Jiang, S.-F. Liu, and K. Jiao. 2009. Electrochemical behavior and determination of rutin on a pyridinium-based ionic liquid modified carbon paste electrode. *J. Pharm. Biomed. Anal*. 48:1326–1331.
499. Sun, W., X.-Q. Li, S.-F. Liu, and K. Jiao. 2009. Electrochemistry of hemoglobin in the chitosan and TiO_2 nanoparticles composite film modified carbon ionic liquid electrode and its electrocatalysis. *Bull. Korean Chem. Soc*. 30:582–588.
500. Sun, W., M.-X. Yang, Q. Jiang, and K. Jiao. 2009. Direct electrocatalytic reduction of *p*-nitrophenol at room temperature ionic liquid modified electrode. *Chin. Chem. Lett*. 19:1156–1158.
501. Zhao, R.-J., Q. Jiang, W. Sun, and K. Jiao. 2009. Electropolymerization of methylene blue on carbon ionic liquid electrode and its electrocatalysis to 3,4-dihydroxybenzoic acid. *J. Chin. Chem. Soc. (Taiwan)* 56:158–163.
502. Sun, B., H.-L. Qi, C. Ling, and C.-Q. Zhang. 2009. Sensitive electrogenerated chemiluminescence sensor for determination of *Heroin. Fenxi Huaxue* 37:1601–1605.
503. Sun, W., D. Wang, Z. Zhai, R. Gao, and K. Jiao. 2009. Direct electrochemistry of hemoglobin immobilized in the sodium alginate and SiO_2 nanoparticles bio-nanocomposite film on a carbon ionic liquid electrode. *J. Iran. Chem. Soc*. 6:412–419.
504. Yu, Q., Y. Liu, X.-Y. Liu, X.-D. Zeng, S.-L. Luo, and W.-Z. Wei. 2010. Simultaneous determination of dihydroxybenzene isomers at MWCNTs/beta-cyclodextrin modified CILE in the presence of cetylpyridinium bromide. *Electroanalysis* 22:1012–1018.
505. Wang, Y., H.-Y. Xiong, X.-H. Zhang, and S.-F. Wang. 2010. Electrochemical study of *Aloe-emodin* on an ionic liquid-type carbon paste electrode. *Microchim. Acta* 169:255–260.
506. Li, X.-Q., R.-J. Zhao, Y. Wang, X.-Y. Sun, W. Sun, C.-Z. Zhao, and K. Jiao. 2010. An electrochemical biosensor based on Nafion-ionic liquid and a myoglobin-modified carbon paste electrode. *Electrochim. Acta* 55:2173–2178.
507. Guo, C.-X., Z.-S. Lu, Y. Lei, and C.-M. Li. 2010. Ionic liquid-graphene composite for ultratrace explosive trinitrotoluene detection. *Electrochem. Commun*. 12:1237–1240.
508. Zhu, Z.-H., X. Li, Y. Zeng, and W. Sun. 2010. Ordered mesoporous carbon modified carbon ionic liquid electrode for the electrochemical detection of double-stranded DNA. *Biosens. Bioelectron*. 25:2313–2317.

509. Norouzi, P., S.Z. Rafiei, F. Faridbod, M. Adibi, and M.R. Ganjali. 2010. Er(3+)-carbon paste electrode based on new nano-composite. *Int. J. Electrochem. Sci*. 5(2010):367–376.
510. Ganjali, M.R., H. Ganjali, M. Hosseini, and P. Norouzi. 2010. A novel nano-composite Tb(3+) carbon paste electrode. *Int. J. Electrochem. Sci*. 5:967–977.
511. Faridbod, F., M.R. Ganjali, M. Pirali Hamedani, and P. Norouzi. 2010. MWCNTs-ionic liquids-ionophore-graphite nanocomposite based sensor for selective determination of ytterbium(III) ion. *Int. J. Electrochem. Sci*. 5:1103–1112.
512. Li, X.-Q., Y. Wang, X.-Y. Sun, T.-R. Zhan, and W. Sun. 2010. Direct electrochemistry of hemoglobin entrapped in dextran film on a carbon ionic liquid electrode. *J. Chem. Sci*. 122:271–278.
513. Xia, F.-Q, X. Zhang, C.-L. Zhou, D.-Z. Sun, Y.-M. Dong, and Z. Liu. 2010. Simultaneous determination of copper, lead, and cadmium at hexagonal mesoporous silica immobilized quercetin modified carbon paste electrode. *J. Automat. Methods Manag. Chem*. Article No. 824197.
514. Huang, K.-J., J.-Y. Sun, D.-J. Niu, W.-Z. Xie, and W. Wang. 2010. Direct electrochemistry and electrocatalysis of hemoglobin on carbon ionic liquid electrode. *Colloids Surf. B* 78:69–74.
515. Dong, T., J.-B. Du, M.-H. Cao, and C.-W. Hu, Chan. 2010. The electrochemical properties of 12-molybdophosphoric acid modified ionic liquid carbon paste electrode. *J. Cluster Sci*. 21:155–162.
516. Brezina, M. 1967. Polarographic reduction of oxygen on carbon electrode (in German). *Fresenius Z. Anal. Chem*. 224:74–84.
517. Bobbitt, J.M., J.F. Colaruotolo, and S.-J. Huang. 1973. Preparative graphite-paste electrode. *J. Electrochem. Soc*. 120:773–773.
518. Peng, T.-Z., H.-P. Li, and S.-W. Wang. 1993. Selective extraction and voltammetric determination of gold at a chemically modified carbon paste electrode. *Analyst (U.K.)* 118:1321–1324.
519. Sotomayor, M.D.P.T., A.A. Tanaka, and L.T. Kubota. 2002. Development of an enzymeless biosensor for the determination of phenolic compounds. *Anal. Chim. Acta* 455:215–223.
520. Efron, C. and M. Ariel. 1979. Lead dioxide-coated carbon paste electrodes. *Anal. Chim. Acta* 108:395–399.
521. Zielinska, R., E. Mulik, A. Michalska, S. Achmatowicz, and M. Maj Zurawska. 2002. All-solid-state planar miniature chloride ion-selective electrode. *Anal. Chim. Acta* 451:243–249.
522. Hernandez, L., P. Hernandez, M.H. Blanco, and M. Sanchez. 1988. Determination of copper(II) with a carbon paste electrode modified with an ion-exchange resin. *Analyst* 113:41–43.
523. Ulakhovich, N.A., D.Z. Zakieva, Y.G. Galyametdinov, and G.K. Budnikov. 1993. Voltammetric determination of cyanide by use of preconcentration at a carbon-paste electrode modified with liquid crystals. *J. Anal. Chem. (Russ.)*/transl. of *Zh. Anal. Khim*. 48:1048–1052.
524. Pandey, P.C. and H.H. Weetall. 1995. Peroxidase- and tetracyanoquinodimethane-modified graphite paste electrode for the measurement of glucose/lactate/glutamate using enzyme-packed bed reactor. *Anal. Biochem*. 224:428–433.
525. Prabhu, S.V., R.P. Baldwin, and L. Kryger. 1989. Preconcentration and determination of lead(II) at crown ether and cryptand containing chemically modified electrodes. *Electroanalysis* 1:13–21.
526. Yao, C.-L., K.-H. Park, and J.L. Bear. 1989. Chemically modified carbon paste electrode for chronoamperometric studies. Reduction of oxygen by tetrakis(m-2-anilinopyridinato) dirhodium(II,III) chloride. *Anal. Chem*. 61:279–282.
527. Švancara, I. 1987. The applicability of a carbon paste electrode as the integral part of a polarographic analyzer prototype proposed for stripping voltammetric techniques. *Report "SVOC"* (Student's scientific research activity in Czech). Pardubice, Czech Republic: University of Chemical Technology.
528. Galus, Z. and R.N. Adams. 1963. The investigation of the kinetics of moderately rapid electrode reactions using rotated disc electrodes (RDEs). *J. Phys. Chem*. 67:866–869.
529. Monien, H. and P. Jacob. 1971. Rotating carbon paste electrode for the inverse voltammetry in the picogram range. *Fresenius Z. Anal. Chem*. 255:33–34.
530. Neubert, G. and K.B. Prater. 1974. Electrooxidation of N,N-dimethylaniline: Electrochemical study at rotating disc electrodes. *J. Electrochem. Soc*. 121:745–752.
531. Itaya, K., I. Uchida, and S. Toshima. 1983. Mediated electron transfer reactions between redox centers in Prussian blue and reactants in solution. *J. Phys. Chem*. 87:105–112.
532. Alonso Vante, N., H. Tributsch, and O. Solorza Feria. 1995. Kinetics studies of oxygen reduction in acid medium on novel semiconducting transition metal chalcogenides. *Electrochim. Acta* 40:567–576.
533. Walcarius, A. and L. Lamberts L. 1997. Voltammetric response of the hexammino-ruthenium complex incorporated in zeolite-modified carbon paste electrode. *J. Electroanal. Chem*. 422:77–89.
534. Castellani, A.M. and Y. Gushikem. 2000. Electrochemical properties of a porphyrin-cobalt(II) adsorbed on silica-titania-phosphate composite surface prepared by the sol-gel method. *J. Coll. Interface Sci*. 230:195–199.

535. Pessoa, C.A., Y. Gushikem, and L.T. Kubota. 2001. Ferrocenecarboxylic acid adsorbed on Nb_2O_5 film grafted on a SiO_2 surface: NADH oxidation study. *Electrochim. Acta* 46:2499–2505.
536. Shamsipur, M., M. Najafi, M.R.M. Hosseini, and H. Sharghi. 2007. Electrocatalytic reduction of dioxygen, O_2, at carbon paste electrode modified with a novel cobalt(III) Schiffs base complex. *Electroanalysis* 19:1661–1667.
537. Mariame, C., M. El Rhazi, and I. Adraoui. 2009. Determination of traces of copper(II) by anodic stripping voltammetry at a rotated carbon paste disk electrode modified with poly(1,8-diaminonaphtalene). *J. Anal. Chem. (Russ.)* 64:632–636.
538. Ali Qureshi, G. and J. Lindquist. 1973. Liquid ion-exchange nitrate-selective electrode based on carbon paste. *Anal. Chim. Acta* 67:243–245.
539. Alonso Sedano, A.B., M.L. Tascon Garcia, M.D. Vazquez Barbado, and P. Sanchez Batanero. 2003. Electrochemical study of copper and bismuth compounds in the solid state by using voltammetry of immobilized microparticles: Application to $YBa_2Cu_3O_{7-x}$ and $Bi_2Sr_2CaCu_2O_{8-x}$ high transition temperature superconductors. *J. Solid State Electrochem*. 7:301–308.
540. Švancara, I., R. Metelka, and K. Vytřas. 2005. Piston-driven carbon paste electrode holders for electrochemical measurements. In *Sensing in Electroanalysis*, Eds. K. Vytřas and K. Kalcher, pp. 7–18. Pardubice, Czech Republic: University of Pardubice.
541. University of Pardubice, I. Švancara, R. Metelka, and K. Vytřas. 2010. Casing for carbon pastes for electrochemical measurements. *CZ Patent* registered at the Industrial Property Office of the Czech Rep., No. 301714/22.4.2010.
542. Ogorevc, B., X.-H. Cai, and I. Grabec. 1995. Determination of traces of copper by anodic stripping voltammetry after its preconcentration via an ion-exchange route at carbon paste electrodes modified with vermiculite. *Anal. Chim. Acta* 305:176–182.
543. Metrohm: Metrohm products: The whole world of ion analysis, http://products.metrohm.com/prod-62801020.aspx (accessed January 15, 2011).
544. BASi: Stationary voltametric electrodes & carbon paste, http://www.basinc.com/products/ec/sve.php and http://www.basinc.com/mans/carbon paste.pdf (both accessed January 15, 2011).
545. ALS–E-measuring chemical electrode and accessory/4. carbon paste, http://www.als-japan.com/1039.html (accessed January 15, 2011).
546. Rios, A., M.D. Luque de Castro, M. Valcarcel, and H.A. Mottola. 1987. Electrochemical determination of sulfur dioxide in air samples in closed-loop flow injection system. *Anal. Chem*. 59:666–670.
547. Bonakdar, M. and H.A. Mottola. 1989. Electrocatalysis at chemically modified electrodes. Detection/determination of redox gaseous species in continuous-flow systems. *Anal. Chim. Acta* 224:305–313.
548. Karolczak, M., R. Dreiling, R.N. Adams, L.J. Felice, and P.T. Kissinger. 1976. Electrochemical techniques for study of natural phenolic products and drugs in microliter volumes. *Anal. Lett*. 9:783–793.
549. Thomsen, E.J., L. Kryger, and R.P. Baldwin. 1988. Voltammetric determination of traces of nickel(II) with a medium exchange flow system and a chemically modified carbon paste electrode containing dimethylglyoxime. *Anal. Chem*. 60:151–155.
550. Stefan, R.I., R.G. Bokretsion, J.F. van Staden, and H.Y. Aboul-Enein. 2003. Immunosensor for the determination of azidothymidine. Its utilization as detector in a sequential injection analysis system. *Talanta* 59:883–887.
551. Yantasee, W., C. Timchalk, G.E. Fryxell, B.P. Dockendorff, and Y. Lin. 2005. Automated portable analyzer for lead(II) based on sequential flow injection and nano-structured electrochemical sensors. *Talanta* 68:256–261.
552. Wang, Y., Z.-Q. Liu, X.-Y, Hu, J.-L. Cao, F. Wang, Q. Xu, and C. Yang. 2009. On-line coupling of the sequential injection lab-on-valve to differential pulse anodic stripping voltammetry for determination of Pb(II) in water samples. *Talanta* 77:1203–1207.
553. Hoogvliet, J.C., J.M. Reijn, and W.P. Van Bennekom. 1991. Multichannel amperometric detection system for liquid chromatography and flow injection analysis. *Anal. Chem*. 63:2418–2423.
554. Rogers, K.R., J.Y. Becker, and J. Cembrano. 2000. Improved selective electrocatalytic oxidation of phenols by tyrosinase-based carbon paste electrode biosensor. *Electrochim. Acta* 45:4373–4379.
555. O'Shea, T.J. and S.M. Lunte. 1994. Chemically modified microelectrodes for capillary electrophoresis/electrochemistry. *Anal. Chem*. 66:307–311.
556. Labuda, J., A. Meister, P. Glaeser, and G. Werner. 1998. Metal oxide-modified carbon paste electrodes and microelectrodes for the detection of amino acids and their application to capillary electrophoresis. *Fresenius J. Anal. Chem*. 360:654–658.
557. Fu, C., L. Wang, and Y. Fang. 1999. Determination of oxalic acid in urine by co-electro-osmotic capillary electrophoresis with amperometric detection. *Talanta* 50:953–958.

558. Martin, R.S., A.J. Gawron, B.A. Fogarty, F.B. Regan, E. Dempsey, and S.M. Lunte. 2001. Carbon paste-based electrochemical detectors for microchip capillary electrophoresis/electrochemistry. *Analyst (U.K.)* 126:277–280.
559. Sun, X.-H., X.-R. Yang, and E.-K. Wang. 2003. Evaluation of a sol-gel derived carbon composite electrode as an amperometric detector for capillary electrophoresis. *J. Chromatogr. A* 991:109–116.
560. Yang, B.-Y., J.-Y. Mo, and R. Lai. 2005. Determination of nitrophenols of environment by dual-electrode and dual-channel electrochemical detection of capillary electrophoresis with polyvinylpyrrolidone modified carbon paste electrode. *Gaodeng Xuexiao Huaxue Xuebao* 26:227–230.
561. Cheng, X., Q.-J. Wang, S. Zhang, W.-D. Zhang, P.-G. He, and Y.-Z. Fang. 2007. Determination of four kinds of carbamate pesticides by capillary zone electrophoresis with amperometric detection at a polyamide-modified carbon paste electrode. *Talanta* 71:1083–1087.
562. Lee, K.-S., S.-H. Park, S.-Y. Won, and Y.-B. Shim. 2009. Electrophoretic total analysis of Tetracycline antibiotics with an amperometric microchip. *Electrophoresis* 30:3219–3227.
563. Wu, W.-M., X.-M. Yuan, X.-P. Wu, X.-C. Lin, and Z.-H. Xie. 2010. Analysis of phenolic xenoestrogens by pressurized capillary electrochromatography (CEC) with amperometric detection. *Electrophoresis* 31:1011–1018.
564. Dai, J. and G.R. Helz. 1988. Liquid chromatographic determination of nitrilotriacetic acid, ethylenediamine-tetraacetic acid, and related aminopolycarboxylic acids using an amperometric detector. *Anal. Chem*. 60:301–305.
565. Dominguez Sanchez, P., C.K. O'Sullivan, A.J. Miranda Ordierez, P. Tunon Blanco, and M.R. Smyth. 1994. Flow injection amperometric detection of aniline with a peroxidase modified carbon paste electrode. *Anal. Chim. Acta* 291:349–356.
566. Marcolino, J.L.H., M.F. Bergamini, M.F.S. Teixeira, E.T.G. Cavalheiro, and O.F. Filho. 2003. Flow injection amperometric determination of dipyrone in pharmaceutical formulations using a carbon paste electrode. *Farmaco (Brazil)* 58:999–1004.
567. Xu, Z.-M., Q. Yue, Z.-J. Zhuang, and D. Xiao. 2009. Flow injection amperometric determination of acetaminophen at a gold nanoparticle modified carbon paste electrode. *Microchim. Acta* 164:387–393.
568. Hynes, C.J., M. Bonakdar, and H.A. Mottola. 1989. Carbon paste electrode chemically modified by direct admixing of tris[4,7-diphenyl-1,10-phenanthroline]iron(II). *Electroanalysis* 1:155–160.
569. Ibrahim, H., Y.M. Issa, and H.M. Abu Shawish. 2004. Chemically modified CPE for the potentiometric determination of dicyclomine hydrochloride under batch and in FIA conditions. *Anal. Sci. (Jpn.)* 20:911–916.
570. Issa, Y.M., H. Ibrahim, and H.M. Abu Shawish. 2005. Carbon paste electrode for the potentiometric flow injection analysis of drotaverine hydrochloride in serum and urine. *Microchim. Acta* 150:47–54.
571. Chen, Y.-T., Z.-Y. Lin, J.-J. Sun, and G.-N. Chen. 2007. A new electrochemi-luminescent detection system equipped with an electrically heated carbon paste electrode for capillary electrophoresis. *Electrophoresis* 28:3250–3259.
572. Lin, Z.-Y., J.-J. Sun, J.-H. Chen, L. Guo, Y.-T. Chen, and G.-N. Chen. 2008. Electro-chemiluminescent biosensor for hypoxanthine based on the electrically heated carbon paste electrode modified with xanthine oxidase. *Anal. Chem*. 80:2826–2831.
573. Bonakdar, M., J.L. Vilchez, and H.A. Mottola. 1989. Bioamperometric sensors for phenol based on carbon paste electrodes. *J. Electroanal. Chem*. 266:47–55.
574. J. Kulys, P. Klitgaard, and H.E. Hansen. 1996. Bioelectrode response modulation caused by periodical carbon paste filling process. *Mater. Sci. Engineer. C* 4:39–44.
575. Miertus, S., J. Katrlik, A. Pizzariello, M. Stredansky, J. Svitel, and J. Svorc. 1998. Amperometric biosensors based on solid binding matrices applied in food monitoring. *Biosens. Bioelectron*. 13:911–923.
576. Ruzicka, J. and E.H. Hansen. 1980. Flow injection analysis. Principles, applications, and trends. *Anal. Chim. Acta* 114:19–44.
577. Stulik, K. and V. Pacakova. 1981. Electrochemical detection techniques in HPLC. *J. Electroanal. Chem*. 129:1–24.
578. Wang, J. 1990. Modified electrodes for electrochemical detection in flowing streams. *Anal. Chim. Acta* 234:41–48.
579. Baldwin, R.P. and K.N. Thomsen. 1991. Chemically modified electrodes in liquid chromatography detection. A review. *Talanta* 38:1–16.
580. Luque de Castro, M.D. and A. Izquierdo. 1991. Flow injection stripping analysis (a review). *Electroanalysis* 3:457–467.
581. Ruzicka, J. and E.H. Hansen. 2008. Retro-review of flow-injection analysis. *Trends Anal. Chem*. 27:390–393.
582. Desideri, P.G., L. Lepri, and D. Heimler. 1973. Electrochemical behavior of the aminobenzenesulfonic acids in aqueous solutions. *J. Electroanal. Chem*. 43:387–396.

583. Desideri, P.G., L. Lepri, and D. Heimler. 1974. Electrochemical behavior of the toluidines in aqueous solutions. Part II: p-Toluidine. *J. Electroanal. Chem*. 52:105–114.
584. Lvova, L., S.-S. Kim, A. Legin, Y. Vlasov, J.-S. Yang, G.S. Cha, and H. Nam. 2002. All-solid-state electronic tongue and its application for beverage analysis. *Anal. Chim. Acta* 468:303–314.
585. Švancara, I., P. Kotzian, M. Bartos, and K. Vytřas. 2005. Groove electrodes: A new alternative of using carbon paste in electroanalysis. *Electrochem. Commun*. 7:657–662.
586. Metelka, R., M. Zeravik, and K. Vytřas. 2008. The groove carbon paste electrode as a detector for FIA. In *Monitoring of Environmental Pollutants* (in Czech), Eds. K. Vytřas, J. Kellner, and J. Fischer, pp. 153–158. Pardubice, Czech Republic: University Press Center.
587. Metelka, R., M. Zeravik, and K. Vytřas. 2010. Carbon paste electrode containing dispersed bismuth powder for pH-measurements. In *Sensing in Electroanalysis*, Eds. K. Vytřas, K. Kalcher, and I. Švancara, pp. 257–267. Pardubice, Czech Republic: University Press Center.
588. Galus, Z., J.O. Schenk, and R.N. Adams. 1982. Electrochemical behavior of very small electrodes in solution. Double potential step, cyclic voltammetry, and chronopotentiometry with current reversal. *J. Electroanal. Chem*. 135:1–11.
589. Gasparini, R., M. Scarpa, F. Vianello, B. Mondovi, and A. Rigo. 1994. Renewable miniature enzyme-based sensing devices. *Anal. Chim. Acta* 294:299–304.
590. Dutra, R.F., K.A. Moreira, M.I.P. Oliveira, A.N. Araujo, M. Montenegro, J.L.L. Filho, and V.L. Silva. 2005. An inexpensive mini-biosensor for uric acid determination in human serum by flow-injection analysis. *Electroanalysis* 17:701–705.
591. Hason, S. and V. Vetterl. 2006. Amplified oligonucleotide sensing in microliter volumes containing copper ions by solution streaming. *Anal Chem*. 78:5179–5183.
592. Baldrianova, L., I. Švancara, and S. Sotiropoulos. 2007. Anodic stripping voltammetry at a new type of disposable bismuth-plated carbon paste mini-electrodes. *Anal. Chim. Acta* 599:249–255.
593. Conti, J.C., E. Strope, R.N. Adams, and C.A. Marsden. 1978. Voltammetry in brain tissue: Chronic recording of stimulated dopamine and 5-hydroxytryptamine. *Life Sci*. 23:2705–2715.
594. Cheng, H.Y., J. Schenk, R. Huff, and R.N. Adams. 1979. In-vivo electrochemistry: Behavior of microelectrodes in brain tissue. *J. Electroanal. Chem*. 100:23–31.
595. Lane, R.F., A.T. Hubbard, and C.D. Blaha. 1978. Brain dopaminergic neurons: In vivo electrochemical information concerning storage, metabolism, and release processes. *Bioelectrochem. Bioenerg*. 5:504–525.
596. Lane, R.F., A.T. Hubbard, and C.D. Blaha. 1979. Application of semidifferential electroanalysis to studies of neurotransmitters in the central nervous system. *J. Electroanal. Chem*. 95:117–122.
597. Brazell, M.P. and C.A. Marsden. 1982. Differential pulse voltammetry in the anesthetized rat: Identification of ascorbic acid, catechol, and indoleamine oxidation peaks in the striatum and frontal cortex. *Br. J. Pharmacol*. 75:539–547.
598. O'Neill, R.D., R.A. Gruenewald, M. Fillenz, and W.J. Albery. 1982. Linear sweep voltammetry with carbon paste electrodes in the rat striatum. *Neuroscience (U.K.)* 7:1945–1954.
599. O'Neill, R.D., M. Fillenz, and W.J. Albery. 1983. The development of linear sweep voltammetry with carbon paste electrodes in vivo. *J. Neurosci. Methods* 8:263–273.
600. Wang, J., L.D. Hutchins, S. Selim, and L.B. Cummins. 1984. Long voltammetric microelectrode for in-vivo monitoring of acetaminophen in primate species. *Biochem. Bioenerg*. 12:193–203.
601. Marsden, C.A., M.H. Joseph, Z.L. Kruk, N.T. Maidment, R.D. O'Neill, J.O. Schenk, and J.A. Stamford. 1988. In vivo voltammetry: Present electrodes and methods (a review). *Neuroscience (U.K.)* 25: 389–400.
602. Blaha, C.D. 1996. A critical assessment of electrochemical procedures applied to the measurement of dopamine and its metabolites during drug-induced and species-typical behaviours (a review). *Behav. Pharmacol*. 7:585–714.
603. Di Ciano, P., C.D. Blaha, and A.G. Phillips. 2002. Inhibition of dopamine efflux in the rat nucleus accumbens during abstinence after free access to d-amphetamine. *Behav. Brain Res*. 128:1–12.
604. O'Neill, R.D., J.P. Lowry, and M. Mas. 1998. Monitoring brain chemistry in vivo: Voltammetric techniques, sensors, and behavioral applications (a review). *Crit. Rev. Neurobiol*. 12:69–127.
605. O'Neill, R.D. 2005. Long-term monitoring of brain dopamine metabolism in vivo with carbon paste electrodes (a review). *Sensors* 5:317–342.
606. Lowry, J.P. and R.D. O'Neill. 2006. Neuroanalytical chemistry in-vivo using electrochemical sensors. In *The Encyclopedia of Sensors*, Vol. 6, Eds. C.A. Grimes, E.C. Dickey, and M.V. Pishko, pp. 501–524. Stevenson Ranch: American Scientific Publishers (ASP).
607. Zou, Y. and J.-W. Mo. 1999. Ensembles of carbon paste microelectrodes. *Anal. Chim. Acta* 382:145–150.

608. Wang, J., X. Zhang, C. Parrado, and G. Rivas. 1999. Controlled release of DNA from carbon-paste microelectrodes. *Electrochem. Commun*. 1:197–202.
609. Wang J., L. Chen, M. Jiang, and F. Lu. 1999. Myoglobin-containing carbon-paste enzyme microelectrodes for the biosensing of glucose under oxygen-deficit conditions. *Anal. Chem*. 71:5009–5011.
610. Wang, J., X. Zhang, and M. Prakash. 1999. Glucose microsensors based on carbon paste enzyme electrodes modified with cupric hexacyanoferrate. *Anal. Chim. Acta* 395:11–16.
611. Wang, J., L. Chen, and M.P. Chatrathi. 2000. Evaluation of different fluorocarbon oils for their internal oxygen supply in glucose microsensors operated under oxygen-deficit conditions. *Anal. Chim. Acta* 411:187–192.
612. Wang, J. and X. Zhang. 2001. Needle-type dual microsensor for the simultaneous monitoring of glucose and insulin. *Anal. Chem*. 73:844–847.
613. Wang, J. and J.M. Zadeii. 1988. Ensembles of carbon paste ultramicroelectrodes. *J. Electroanal. Chem*. 249:339–345.
614. Cheng, I.F, L.D. Whiteley, and C.R. Martin. 1989. Ultramicroelectrode ensembles. Comparison of experimental and theoretical responses and evaluation of electroanalytical detection limits. *Anal. Chem*. 61:762–766.
615. Oni, J., P. Westbroek, and T. Nyokong. 2001. Construction and characterization of carbon paste ultramicroelectrodes. *Electrochem. Commun*. 3:524–528.
616. Chouaib, F. and M.A. Dosal. 1998. The utilisation of a carbon paste electrode in analytical chemistry. *Rev. Soc. Quim. Mex*. 24:119–124.
617. Metelka, R., K. Vytřas, and A. Bobrowski. 2000. Effect of the modification of mercuric oxide on the properties of mercury films at HgO-modified carbon paste electrodes. *J. Solid State Electrochem*. 4:348–352.
618. Harak, D.W. and H.A. Mottola. 1995. Backscattered electron imaging of ligand-modified carbon paste surfaces by complexation with iron(II) and/or chemical deposition of gold. *Langmuir* 11:1605–1611.
619. Wang, J., L.H. Wu, and R. Li. 1989. Scanning electrochemical microscopic monitoring of biological processes. *J. Electroanal. Chem*. 272:285–292.
620. Flechsig, G.U., M. Kienbaum, and P. Gruendler. 2005. Ex situ atomic force microscopy of bismuth film deposition at carbon paste electrodes. *Electrochem. Commun*. 7:1091–1097.
621. Lubert, K.H., M. Guttmann, L. Beyer, and K. Kalcher. 2001. Experimental indications for the existence of different states of palladium(0) at the surface of carbon paste electrodes. *Electrochem. Commun*. 3:102–106.
622. Švancara, I., L. Baldrianova, M. Vlcek, R. Metelka, and K. Vytřas. 2005. A role of the plating regime in the deposition of bismuth films onto a carbon paste electrode. Microscopic study. *Electroanalysis* 17:120–126.
623. Švancara, I., R. Metelka, M. Stiburkova, J. Seidlova, G. Jansova, K. Vytřas, and B. Pihlar. 2002. Carbon paste electrodes and screen-printed sensors plated with mercury- and bismuth films in stripping voltammetry of heavy metals. *Sci. Pap. Univ. Pardubice Ser. A* 8:19–33.
624. Khoo, S.B. and S.X. Guo. 2002. Rapidly renewable and reproducible mercury film coated carbon paste electrode for anodic stripping voltammetry. *Electroanalysis* 14:813–822.
625. Švancara, I., M. Fairouz, K. Ismail, R. Metelka, and K. Vytřas. 2003. A contribution to the characterisation of mercury- and bismuth-film carbon paste electrodes in stripping voltammetry. *Sci. Pap. Univ. Pardubice Ser. A* 9:31–48.
626. Vytřas, K., I. Švancara, and R. Metelka 2002. A novelty in potentiometric stripping analysis: Total replacement of mercury by bismuth. *Electroanalysis* 14:1359–1364.
627. Švancara, I., M. Fairouz, K. Ismail, J. Sramkova, R. Metelka, and K. Vytřas. 2004. Applicability of electrochemical stripping analysis at mercury- and bismuth-film carbon paste electrodes to crude oil digests. *Sci. Pap. Univ. Pardubice Ser. A* 10:5–20.
628. Kizek, R., M. Masarik, K.J. Kramer, D. Potesil, M. Bailey, J.A. Howard, B. Klejdus et al. 2005. An analysis of avidin, biotin and their interaction at attomole levels by voltammetric and chromatographic techniques. *Anal. Bioanal. Chem*. 381:1167–1178.
629. Wang, J., X. Cai, C. Jonsson, and M. Balakrishnan. 1996. Adsorptive stripping potentiometry of DNA at electrochemically pretreated carbon paste electrodes. *Electroanalysis* 8:20–24.
630. Cai, X., G. Rivas, P.A.M. Farias, H. Shiraishi, J. Wang, and E. Palecek. 1996. Potentiometric stripping analysis of bioactive peptides at carbon electrodes down to subnanomolar concentrations. *Anal. Chim. Acta* 332:49–57.
631. Kaplan, J.D., J.H. Marsh, and S.W. Orchard. 1993. Voltammetric characterization of activated carbons in modified carbon paste electrodes. *Electroanalysis* 5:509–516.

632. Biniak, S., M. Pakula, W. Darlewski, A. Swiatkowski, and P. Kula. 2009. Powdered activated carbon and carbon paste electrodes: Comparison of electrochemical behaviour. *J. Appl. Electrochem*. 39:593–600.
633. Huang, X., J.J. Pot, and W.T. Kok. 1995. Electrochemical characteristics of conductive carbon cement as matrix for chemically modified electrodes. *Anal. Chim. Acta* 300:5–14.
634. El Maslout, A., A. Benayada, H. Oudda, J. Bessiere, and Y. Pillet. 1996. In situ determination of hydrogenophosphate ion activity in concentrated H_3PO_4 solutions. *Analusis (Bruxelles)* 24:182–185.
635. Cai, X., K. Kalcher, G. Koelbl, C.G. Neuhold, W. Diewald, and B. Ogorevc. 1995. Electrocatalytic reduction of hydrogen peroxide on a palladium-modified carbon paste electrode. *Electroanalysis* 7:340–345.
636. Xu, G.B. and S.J. Dong. 1999. Chemiluminescent determination of luminol and hydrogen peroxide using hematin immobilized in the bulk of a carbon paste electrode. *Electroanalysis* 11:1180–1184.
637. Elsuccary, S.A.A., I. Švancara, R. Metelka, L. Baldrianova, M.E.M. Hassouna, and K. Vytřas. 2003. Applicability of bismuth film carbon paste electrodes in highly alkaline media. *Sci. Pap. Univ. Pardubice Ser. A* 9:5–17.
638. Konvalina, J., I. Švancara, K. Vytřas, and K. Kalcher. 1997. Study of conditions for voltammetric determinations of iodine at carbon paste electrodes. *Sci. Pap. Univ. Pardubice Ser. A* 3:153–162.
639. Švancara, I., J. Konvalina, K. Schachl, K. Kalcher, and K. Vytřas. 1998. Stripping voltammetric determination of iodide with synergistic accumulation at a carbon paste electrode. *Electroanalysis* 10:435–441.
640. Kitagawa, T., H. Takao, and Y. Fujikawa. 1966. Voltammetry at solid electrodes. Part I: Fundamental studies with a carbon paste electrode. *Bunseki Kagaku* 15:446–451.
641. Kitagawa, T. and S. Tsushima. 1966. Voltammetry at solid electrodes. Part II: Anodic oxidation of ethylenediaminetetraacetic acid and its related compounds at a carbon paste electrode. *Bunseki Kagaku* 15:452–458.
642. Taylor, R.J. and A.A. Humffray. 1973. Electrochemical studies on glassy carbon electrodes. I. Electron transfer kinetics. *J. Electroanal. Chem*. 42:347–354.
643. Taliene, V.R., T. Ruzgas, V. Razumas, and J. Kulys. 1994. Chronoamperometric and cyclic voltammetric study of carbon paste electrodes using ferricyanide and ferrocenemonocarboxylic acid. *J. Electroanal. Chem*. 372:85–89.
644. Kulys, J., L. Gorton, E. Dominguez, J. Emneus, and H. Jarskog. 1994. Electrochemical characterization of carbon pastes modified with proteins and polycations. *J. Electroanal. Chem*. 372:49–55.
645. Kulys, J. 1999. Personal communication.
646. Chicharro, M., A. Zapardiel, E. Bermejo, J.A. Perez, and L. Hernandez. 1994. Ephedrine determination in human urine using a carbon paste electrode modified with C18 bonded silica gel. *Anal. Lett*. 27:1809–1831.
647. Wang, J., Q. Chen, and M. Pedrero. 1995. Highly selective biosensing of lactate at lactate oxidase containing rhodium-dispersed carbon paste electrodes. *Anal. Chim. Acta* 304:41–46.
648. O'Shea, T.J., D. Leech, M.R. Smyth, and J.G. Vos. 1992. Determination of nitrite based on mediated oxidation at a carbon paste electrode modified with a ruthenium polymer. *Talanta* 39:443–447.
649. Pravda, M., O. Adeyoju, E.I. Iwuoha, J.G. Vos, M.R. Smyth, and K. Vytřas. 1995. Amperometric glucose biosensors based on an osmium (2+/3+) redox polymer-mediated electron transfer at carbon paste electrodes. *Electroanalysis* 7:619–625.
650. Paredes, P.A., J. Parellada, V.M. Fernandez, I. Katakis, and E. Dominguez. 1997. Amperometric mediated carbon paste biosensor based on D-fructose dehydrogenase for the determination of fructose in food analysis. *Biosens. Bioelectron*. 12:1233–1243.
651. Ruiz, M.A., P. Yanez Sedeno, and J.M. Pingarron. 1994. Voltammetric determination of the antioxidant tert-butylhydroxytoluene (BHT) at a carbon paste electrode modified with nickel phthalocyanine. *Electroanalysis* 6:475–479.
652. Cookeas, E.G. and C.E. Efstathiou. 1994. Flow injection amperometric determination of thiocyanate and selenocyanate at a cobalt phthalocyanine modified carbon paste electrode. *Analyst (U.K.)* 119:1607–1612.
653. Novakova, M., K. Kalcher, K. Schachl, A. Komersova, M. Bartos, and K. Vytřas. 1997. Voltammetric determination of ascorbic acid in food-stuff using modified carbon paste electrodes. *Sci. Pap. Univ. Pardubice Ser. A* 3:139–151.
654. Alvarez Gonzalez, M.I., S.B. Saidman, M.J. Lobo Castanon, A.J. Miranda Ordieres, and P. Tunon Blanco 2000. Electrocatalytic detection of NADH and glycerol by NAD+-modified carbon electrodes. *Anal. Chem*. 72:520–527.
655. Amini, M.K., S. Shahrokhian, S. Tangestaninejad, and V. Mirkhani. 2001. Iron(II) phthalocyanine-modified carbon-paste electrode for potentiometric detection of ascorbic acid. *Anal. Biochem*. 290:277–282.
656. Chen, H.Y., A.-M. Yu, J. Han, and M. Yz. 1995. Catalytic oxidation of NADH at a methylene green chemically modified electrode and FIA applications. *Anal. Lett*. 28:1579–1591.

657. Gosser, D.K., Jr. 1993. The cyclic Voltammetric Experiment. In *Cyclic Voltammetry: Simulation and Analysis of Reaction Mechanisms*, Chapter 2, pp. 27–69. New York: VCH Publishers.
658. Galus, Z. 1969. *Fundamentals of Electrochemical Analysis*, 2nd Rev. Edn., New York: Ellis Horwood.
659. Nishiyama, K., K. Inada, and I. Taniguchi. 2010. Selective determination of uric acid, tryptophan, and serotonin at glassy carbon paste electrode. *Electrochemistry (Tokyo, Jpn.)* 78:165–169.
660. Liu, Y., J. Huang, H. Hou, and T. You. 2008. Simultaneous determination of dopamine, ascorbic acid and uric acid with electrospun carbon nanofibers modified electrode. *Electrochem. Commun*. 10:1431–1434.
661. Rivas, G.A., M.D. Rubianes, M.L. Pedano, N.F. Ferreyra, G.L. Luque, M.C. Rodriguez, and S.A. Miscoria. 2007. Carbon nanotubes paste electrodes. A new alternative for the development of electrochemical sensors. *Electroanalysis* 19:823–831.
662. Wang, J. 2005. Carbon-nanotube based electrochemical biosensors: A review. *Electroanalysis* 17:7–14.
663. Liu, H., P. He, Z. Li, Y. Liu, J. Li, L. Zheng, and J. Li. 2005. The inherent capacitive behavior of imidazolium-based room-temperature ionic liquids at carbon paste electrode. *Electrochem. Solid State Lett*. 8:J17–J19.
664. Sun, W., R. Gao, X. Li, D. Wang, M. Yang, and K. Jiao. 2008. Fabrication and electrochemical behavior of hemoglobin modified carbon ionic liquid electrode. *Electroanalysis* 20:1048–1054.
665. Jiang, Q., W. Sun, and K. Jiao. 2010. Electrochemical behavior and determination of L-tryptophan on carbon ionic liquid electrode. *J. Anal. Chem*. 65:648–651.
666. Ikeda, T., H. Hamada, and M. Senda. 1986. Electrocatalytic oxidation of glucose at a glucose oxidase-immobilized benzoquinone-mixed carbon paste electrode. *Agric. Biol. Chem*. 50:883–890.
667. Ikeda, T., K. Miki, F. Fushimi, and M. Senda. 1988. Amperometric D-gluconate sensor using D-gluconate dehydrogenase from bacterial membranes. *Agric. Biol. Chem*. 52:1557–1563.
668. Andrieux, C.P., P. Audebert, P. Bacchi, and B. Divisia-Blohorn. 1996. Parameters regulating kinetics of amperometric biosensor made of enzymatic carbon paste and Nafion gel. *Sens. Mater*. 8:137–146.
669. Švancara, I., M. Fairouz, K. Ismail, R. Metelka, and K. Vytřas. 2004. A contribution to the characterization of mercury- and bismuth-film carbon paste electrodes in stripping voltammetry. *Sci. Pap. Univ. Pardubice Ser. A* 9:31–47.
670. Švancara, I., L. Baldrianova, E. Tesarova, S.B. Hocevar, S.A.A. Elsuccary, A. Economou, S. Sotiropoulos, B. Ogorevc, and K. Vytřas. 2006. Recent advances in anodic stripping voltammetry with bismuth-modified carbon paste electrodes. *Electroanalysis* 18:177–185.
671. Švancara, I., R. Metelka, and E. Tesarova. 2006. Stripping voltammetry at mercury film plated carbon paste- and screen-printed electrodes. Ten years of advanced laboratory practice for students at the University of Pardubice. *Sci. Pap. Univ. Pardubice Ser. A* 11:343–361.
672. Švancara, I., L. Baldrianova, E. Tesarova, T. Mikysek, and K. Vytřas. 2007. Anodic stripping voltammetry at bismuth-modified electrodes in ammonia-buffered media. *Sci. Pap. Univ. Pardubice Ser. A* 12:5–19.
673. Vytřas, K. and I. Švancara. 1994. Applications of carbon paste electrodes in electroanalysis. *Chem. Listy* 88:412–422.
674. Paneli, M.G. and A. Voulgaropoulos. 1993. Applications of adsorptive stripping voltammetry in the determination of trace and ultratrace metals. *Electroanalysis* 5:355–373.
675. Lovric, M. 2002. Stripping voltammetry. In *Electroanalytical Methods; Guide to Experiments and Applications*, Ed. F. Scholz, pp. 200–203. Berlin, Germany: Springer.
676. Wang, J. and B.A. Freiha. 1984. Preconcentration of uric acid at a carbon paste electrode. *Bioelectrochem. Bioenerg*. 12:225–234.
677. Ding, Y., J. Li, and J. Fei. 2005. Adsorptive catalytic voltammetry of physcion in the presence of dissolved oxygen at a carbon paste electrode. *Microchim. Acta* 150:125–130.
678. El Ries, M.A., A.A. Wassel, N.T. Abdel Ghani, and M.A. El Shall. 2005. Electrochemical adsorptive behavior of some fluoroquinolones at carbon paste electrode. *Anal. Sci*. 21:1249–1254.
679. Girousi, S.T., D.K. Alexiadou, and A.K. Ioannou. 2008. An electroanalytical study of the drug proflavine. *Microchim. Acta* 160:435–439.
680. Nemcova, L., J. Zima, and J. Barek. 2009. Determination of 5-amino-6-nitroquinoline at a carbon paste electrode. *Collect. Czech. Chem. Commun*. 74:1477–1488.
681. Jemelkova, Z., J. Zima, and J. Barek. 2009. Voltammetric and amperometric determination of doxorubicin using carbon paste electrodes. *Collect. Czech. Chem. Commun*. 74:1503–1515.
682. Ruiz Barrio, M.A. and J.M. Pingarron Corrazon. 1992. Voltammetric determination of pentachlorophenol with a silica gel-modified carbon paste electrode. *Fresenius J. Anal. Chem*. 344:34–38.
683. Baldwin, R.P., J.K. Christensen, and L. Kryger. 1986. Voltammetric determination of traces of nickel(II) at a chemically modified electrode based on dimethylglyoxime-containing carbon paste. *Anal. Chem*. 58:1790–1798.

684. Trojanowicz, M. and W. Matuszewski. 1989. Potentiometric stripping determination of nickel at a dimethylglyoxime-containing graphite paste electrode. *Talanta* 36:680–682.
685. Li, J., S. Liu, Z. Yan, X. Mao, and P. Gao. 2006. Adsorptive voltammetric studies on the cerium(III)-alizarin complexon complex at a carbon paste electrode. *Microchim. Acta* 154:241–246.
686. Li, Y.H., Q.L. Zhao, and M.H. Huang. 2007. Adsorptive anodic stripping voltammetry of zirconium(IV)-alizarin red S complex at a carbon paste electrode. *Microchim. Acta* 157:245–249.
687. Liu, N. and J.F. Song. 2005. Catalytic adsorptive stripping voltammetric determination of copper(II) on a carbon paste electrode. *Anal. Bioanal. Chem*. 383:358–364.
688. Li, Y.H., Y.X. Wang, and M.H. Huang. 2008. Determination of trace vanadium by adsorptive stripping voltammetry at a carbon paste electrode. *Electroanalysis* 20:1440–1444.
689. Li, Y.H., Q.L. Zhao, and M.H. Huang. 2005. Cathodic adsorptive voltammetry of the gallium-alizarin red S complex at a carbon paste electrode. *Electroanalysis* 17:343–347.
690. Li, Y.H., H.Q. Xie, and F.Q. Zhou. 2005. Alizarin violet modified carbon paste electrode for the determination of trace silver(I) by adsorptive voltammetry. *Talanta* 67:28–33.
691. Li, J., S. Liu, X. Mao, P. Gao, and Z. Yan. 2004. Trace determination of rare earths by adsorption voltammetry at a carbon paste electrode. *J. Electroanal. Chem*. 561:137–142.
692. Guo, H., Y. Li, P. Xiao, and N. He. 2005. Determination of trace amount of bismuth(III) by adsorptive anodic stripping voltammetry at carbon paste electrode. *Anal. Chim. Acta* 534:143–147.
693. Guo, H., Y. Li, X. Chen, L. Nie, and N. He. 2005. Determination of trace antimony(III) by adsorption voltammetry at carbon paste electrode. *Sensors* 5:284–292.
694. Li, Y.H., H.Q. Xie, F.Q. Zhou, and H.S. Guo. 2006. Determination of trace tin by anodic stripping voltammetry at a carbon paste electrode. *Electroanalysis* 18:976–980.
695. Švancara, I., P. Foret, and K. Vytřas. 2004. A study on the determination of chromium as chromate at a carbon paste electrode modified with surfactants. *Talanta* 64:844–852.
696. Lu, G., X. Wu, Y. Lan, and S. Yao. 1999. Studies on 1:12 phosphomolybdic heteropoly anion film modified carbon paste electrode. *Talanta* 49:511–515.
697. Švancara, I. and K. Vytřas. 2001. Determination of iodide in potassium iodide dosage tablets using cathodic stripping voltammetry with a carbon paste electrode. *Sci. Pap. Univ. Pardubice Ser. A* 7:5–15.
698. Sousa, M.d.F., O.E.S. Godinho, and L.M. Aleixo. 1995. An indirect voltammetric approach for the determination of cyanide at a chemically modified electrode. *Electroanalysis* 7:1095–1097.
699. Lefèvre, G., A. Walcarius, and J. Bessière. 1999. Voltammetric investigation of iodide sorption on cuprite dispersed into a carbon paste electrode. *Electrochim. Acta* 44:1817–1826.
700. Walcarius, A., T. Barbaise, and J. Bessière. 1997. Factors affecting the analytical applications of zeolite-modified electrodes. Preconcentration of electroactive species. *Anal. Chim. Acta* 340:61–76.
701. Walcarius, A., N. Luthi, J.L. Blin, B.L. Su, and L. Lamberts. 1999. Electrochemical evaluation of polysiloxane-immobilized amine ligands for the accumulation of copper(II) species. *Electrochim. Acta* 44:4601–4610.
702. Walcarius, A., M. Etienne, and C. Delacote. 2004. Uptake of inorganic HgII by organically modified silicates: Influence of pH and chloride concentration on the binding pathways and electrochemical monitoring of the processes. *Anal. Chim. Acta* 508:87–98.
703. Attia, A.K. 2010. Determination of antihypertensive drug moexipril hydrochloride based on the enhancement effect of sodium dodecyl sulfate at carbon paste electrode. *Talanta* 81:25–29.
704. Stadlober, M., K. Kalcher, G. Raber, and C. Neuhold. 1996. Anodic stripping voltammetric determination of titanium(IV) using a carbon paste electrode modified with cetyltrimethylammonium bromide. *Talanta* 43:1915–1924.
705. Stadlober, M., K. Kalcher, and G. Raber. 1997. A new method for the voltammetric determination of molybdenum(VI) using carbon paste electrodes modified in situ with cetyltrimethylammonium bromide. *Anal. Chim. Acta* 350:319–328.
706. Stadlober, M., K. Kalcher, and G. Raber. 1997. Anodic stripping voltammetric determination of vanadium(V) using a carbon paste electrode modified in situ with cetyltrimethylammonium bromide. *Electroanalysis* 9:225–230.
707. Abbas, M.N.E.-D. 2003. Chemically modified carbon paste electrode for iodide determination on the basis of cetyltrimethylammonium iodide ion-pair. *Anal. Sci*. 19:229–233.
708. Wang, J., B. Greene, and C. Morgan. 1984. Carbon paste electrodes modified with cation-exchange resin in differential pulse voltammetry. *Anal. Chim. Acta* 158:15–22.
709. Jezkova, J., J. Musilova, and K. Vytřas. 1997. Potentiometry with perchlorate and fluoroborate ion-selective carbon paste electrodes. *Electroanalysis* 9:1433–1436.

710. Konvalina, J. and K. Vytřas. 2001. Reductive determination of gold at a carbon paste electrode using constant-current stripping analysis. *Chem. Listy* 95:505–508.
711. Vytřas, K. and J. Konvalina. 1998. New possibilities of potentiometric stripping analysis based on ion-pair formation and accumulation of analyte at carbon paste electrodes. Preliminary note. *Electroanalysis* 10:787–790.
712. Metelka, R., S. Slavikova, and K. Vytřas. 2002. Determination of arsenate and organic arsenic via potentiometric titration of its heteropoly anions. *Talanta* 58:147–151.
713. Gellon, H., P.S. Gonzalez, and C.A. Fontan. 2003. Square wave anodic stripping determination of silver using a carbon paste electrode modified with a strong acid ion-exchanger. *Anal. Lett*. 36:2749–2765.
714. Bergamini, M.F., S.I. Vital, A.L. Santos, and N.R. Stradiotto. 2006. Lead ions determination in ethanol fuel by differential pulse anodic stripping voltammetry using a carbon paste electrode modified with ion-exchange resin Amberlite IR120. *Ecletica Quim*. 31:45–52.
715. Navratilova, Z. and P. Kula. 2003. Clay modified electrodes: Present applications and prospects. *Electroanalysis* 15:837–846.
716. Navratilova, Z. and P. Kula. 2000. Cation and anion exchange on clay modified electrodes. *J. Solid State Electrochem*. 4:342–347.
717. Walcarius, A. 1999. Zeolite-modified electrodes in electroanalytical chemistry. *Anal. Chim. Acta* 384:1–16.
718. Walcarius, A. 2008. Electroanalytical applications of microporous zeolites and mesoporous (organo) silicas: Recent trends. *Electroanalysis* 20:711–738.
719. Ganesan, V. and A. Walcarius. 2008. Ion exchange and ion exchange voltammetry with functionalized mesoporous silica materials. *Mater. Sci. Eng. B* 149:123–132.
720. Labuda, J. 1992. Chemically modified electrodes as sensors in analytical chemistry. *Selective Electrode Rev*. 14:33–86.
721. Rezaei, B. and S. Damiri. 2008. Multiwalled carbon nanotubes modified electrode as a sensor for adsorptive stripping voltammetric determination of hydrochlorothiazide. *IEEE Sens. J*. 8:1523–1529.
722. Anik, U. and M. Cubukcu. 2008. Examination of the electroanalytic performance of carbon nanotube (CNT) modified carbon paste electrodes as xanthine biosensor transducers. *Turk. J. Chem*. 32:711–719.
723. Sun, W., Y. Li, Y. Duan, and K. Jiao. 2008. Direct electrocatalytic oxidation of adenine and guanine on carbon ionic liquid electrode and the simultaneous determination. *Biosens. Bioelectron*. 24:988–993.
724. Chulkina, L.S., S.I. Sinyakova, and E.K. Vul'fson. 1970. Optimum composition of carbon paste electrodes for inverse voltammetric determinations of nanogram amounts of substances. *Zh. Anal. Khim*. 25:1268–1272.
725. Shul, G. and M. Opallo. 2005. Ion transfer across liquid–liquid interface coupled to electrochemical redox reaction at carbon paste electrode. *Electrochem. Commun*. 7:194–198.
726. Barek, J., J. Cvacka, A. Muck, V. Quaiserova, and J. Zima. 2001. Electrochemical methods for monitoring of environmental carcinogens. *Fresenius J. Anal. Chem*. 369:556–562.
727. Abu Zuhri, A.Z. and W. Voelter. 1998. Applications of adsorptive stripping voltammetry for the trace analysis of metals, pharmaceuticals, and biomolecules. *Fresenius J. Anal. Chem*. 360:1–9.
728. Ozkan, S.A., B. Uslu, and H.Y. Aboul-Enein. 2003. Analysis of pharmaceuticals and biological fluids using modern electroanalytical techniques. *Crit. Rev. Anal. Chem*. 33:155–181.
729. Radi, A. 1998. Preconcentration and voltammetric determination of indomethacin at carbon paste electrodes. *Electroanalysis* 10:103–106.
730. Shamsipur, M. and K. Farhadi. 2000. Adsorptive stripping voltammetric determination of ketoconazole in pharmaceutical preparations and urine using carbon paste electrodes. *Analyst* 125:1639–1643.
731. Peng, T., Z. Yang, and R. Lu. 1990. Adsorptive/extractive voltammetry for determining clozapine at carbon paste electrodes. *Gaodeng Xuexiao Huaxue Xuebao* 11:1067–1071.
732. Wang, J., B.A. Freiha, and B.K. Deshmukh. 1985. Adsorptive/extractive stripping voltammetry of phenothiazine compounds at carbon paste electrodes. *Bioelectrochem. Bioenerg*. 14:457–467.
733. Neuhold, C.G., K. Kalcher, X. Cai, and G. Raber. 1996. Catalytic determination of perchlorate using a modified carbon paste electrode. *Anal. Lett*. 29:1685–1704.
734. Kalcher, K. 1986. A new method for the voltammetric determination of nitrite. *Talanta* 33:489–494.
735. He, Q., J. Fei, and S. Hu. 2003. Voltammetric method based on an ion-pairing reaction for the determination of trace amount of iodide at carbon-paste electrodes. *Anal. Sci*. 19:681–686.
736. Galik, M., M. Cholota, I. Švancara, A. Bobrowski, and K. Vytřas. 2006. A study on stripping voltammetric determination of osmium(IV) at a carbon paste electrode modified in situ with cationic surfactants. *Electroanalysis* 18:2218–2224.

737. Švancara, I., I. Cermakova, K. Vytřas, W. Gossler, and K. Kalcher. 1999. Cationic surfactants as modifiers for carbon paste electrodes. Application to the determination of iodide. *Sci. Pap. Univ. Pardubice Ser. A* 5:95–108.
738. Mascarenhas, R.J., K.V. Reddy, B.E. Kumaraswamy, B.S. Sherigara, and V. Lakshminarayan. 2005. Electrochemical oxidation of L-dopa at a carbon paste electrode. *Bull. Electrochem*. 21:341–345.
739. Mascarenhas, R.J., I.N. Namboothiri, B.S. Sherigara, and B.E. Kumaraswamy. 2006. Electro-reductive study of beta-nitrostyrene in surfactant medium at wax impregnated carbon paste electrode. *Bull. Electrochem*. 22:253–256.
740. Yi, H. and C. Li. 2007. Voltammetric determination of ciprofloxacin based on the enhancement effect of cetyltrimethylammonium bromide (CTAB) at carbon paste electrode. *Russ. J. Electrochem*. 43:1377–1381.
741. Hegde, R.N., R.R. Hosamani, and S.T. Nandibewoor. 2009. Electrochemical oxidation and determination of theophylline at a carbon paste electrode using cetyltrimethyl ammonium bromide as enhancing agent. *Anal. Lett*. 42:2665–2682.
742. Teixeira, M.F.S., F.C. Moraes, O. Fatibello-Filho, and N. Bocchi. 2001. Voltammetric determination of lithium ions in pharmaceutical formulation using a l-MnO_2-modified carbon-paste electrode. *Anal. Chim. Acta* 443:249–255.
743. Lefèvre, G., J. Bessière, and A. Walcarius. 1999. Cuprite-modified electrode for the detection of iodide species. *Sens. Actuators B Chem*. B59:113–117.
744. Ojani, R., J.B. Raoof, and P.S. Afagh. 2004. Electropolymerization of 1-naphthylamine at the surface and bulk of CPE. *Bull. Electrochem*. 20:251–259.
745. Stefan-van Staden, R.I., J.F. van Staden, and H.Y. Aboul Enein. 2007. Enantioselective Biosensors. In *Chiral Separation Techniques: A Practical Approach*, Chapter 13, Ed. G. Subramanian. Weinheim, Germany: Wiley/VCH.
746. Stefan, R.I., R.G. Bokretsion, J.F. van Staden, and H.Y. Aboul Enein. 2003. Determination of L- and D-enantiomers of methotrexate using amperometric biosensors. *Talanta* 60:983–990.
747. Aboul Enein, H.Y., R.I. Stefan, and G.L. Radu. 1999. Biosensor for enantioselective analysis of S-Cilazapril, S-Trandolapril, and S-Pentopril. *Pharm. Develop. Technol*. 4:251–255.
748. Maistrenko, V.N., G.K. Budnikov, and V.N. Gusakov. 1996. New possibilities in voltammetry: Extraction into the electrode bulk. *J. Anal. Chem*. 51:942–948.
749. Abelairas, A., M.J. Puertollano, R.M. Alonso, M.P. Elizalde, R.M. Jimenez, and M. Huebra. 1994. Voltammetric study of the extractant 4-methyl-N-quinolin-8-yl-benzenesulfonamide at a carbon paste electrode. *Analyst* 119:303–306.
750. Zhang, Y., X. Lu, K. Zhu, Z. Wang, and J. Kang. 2002. Voltammetric detection of traces of copper using a carbon paste electrode modified with tetraphenylporphyrin. *Anal. Lett*. 35:369–381.
751. Wang, J. and B.A. Freiha. 1983. Preconcentration and differential pulse voltammetry of butylated hydroxyanisole at a carbon paste electrode. *Anal. Chim. Acta* 154:87–94.
752. Shangguan, X. and J. Zheng. 2009. Direct electron transfer and electrocatalysis of myoglobin based on its direct immobilization on carbon ionic liquid electrode. *Electroanalysis* 21:881–886.
753. Walcarius, A., L. Lamberts, and E.G. Derouane. 1993. The methyl viologen incorporated zeolite modified carbon paste electrode. Part 1. Electrochemical behavior in aqueous media. Effects of supporting electrolyte and immersion time. *Electrochim. Acta* 38:2257–2266.
754. Wang, J. and A. Walcarius. 1996. Zeolite containing oxidase-based carbon paste biosensors. *J. Electroanal. Chem*. 404:237–242.
755. Walcarius, A., P. Mariaulle, and L. Lamberts. 2003. Zeolite-modified solid carbon paste electrodes. *J. Solid State Electrochem*. 7:671–677.
756. Murray, R.W. 1980. Chemically modified electrodes. *Acc. Chem. Res*. 13:135–141.
757. Murray, R.W. 1984. Chemically modified electrodes. In *Electroanalytical Chemistry*, Vol. 13, Ed. A.J. Bard, pp. 191–368. New York: Marcel Dekker.
758. Murray, R.W., A.G. Ewing, and R.A. Durst. 1987. Chemically modified electrodes. Molecular design for electrochemistry. *Anal. Chem*. 59:379A–385A.
759. Wang, J. 1988. Voltammetry following non-electrolytic preconcentration. In *Electroanalytical Chemistry*, Vol. 16, Chapt. 1, Ed. A.J. Bard. pp. 1–89, New York: Marcel Dekker.
760. Watkins, B.F., J.R. Behling, E. Kariv, and L.L. Miller. 1975. Chiral electrode. *J. Am. Chem. Soc*. 97:3549–3550.
761. Horner, L. and W. Brich. 1977. Studies on the occurrence of hydrogen transfer, 42. Electroreduction of prochiral aryl ketones on surface-modified carbon electrodes. *Justus Liebigs Ann. Chem*. 8:1354–1364.

762. Cai, X., K. Kalcher, C. Neuhold, and B. Ogorevc. 1990. An improved voltammetric method for the determination of trace amounts of uric acid with electrochemically pretreated carbon paste electrodes. *Talanta* 41:407–413.
763. Barek, J., K. Peckova, and V. Vyskocil. 2008. Adsorptive stripping voltammetry of environmental carcinogens. *Curr. Anal. Chem*. 4:242–249.
764. Parra, V., T. Del Cano, M.L. Rodriguez-Mendez, J.A. de Saja, and R.F. Aroca. 2004. Electrochemical characterization of two perylenetetracarboxylic diimides: Langmuir-Blodgett films and carbon paste electrodes. *Chem. Mater*. 16:358–364.
765. Arrieta, A., M.L. Rodriguez-Mendez, and J.A. de Saja. 2003. Langmuir-Blodgett film and carbon paste electrodes based on phthalocyanines as sensing units for taste. *Sens. Actuators B* B95:357–365.
766. Xu, G.-Y., K. Jiao, J.-S. Fan, and B. Zhang. 2007. Immobilizing DNA on cetyltrimethyl ammonium bromide cationic membrane for the detection of specific gene related to NPT II. *Asian J. Chem*. 19:4161–4172.
767. Han, X., J. Ma, and Z. Gao. 2007. Electrocatalytic oxidation of ascorbic acid at cetyl pyridinium bromide-self-assembly monolayers in situ modified carbon paste electrodes. *Ningxia Daxue Xuebao, Ziran Kexueban* 28:147–150.
768. Grundler, P. 2007. *Chemical Sensors. An Introduction for Scientists and Engineers*, 1st Edn., Berlin, Germany: Springer. ISBN-10 3540457429; ISBN-13 978-3540457428.
769. Yantasee, W., G.E. Fryxell, M.M. Conner, and Y. Lin. 2005. Nanostructured electrochemical sensors based on functionalized nanoporous silica for voltammetric analysis of lead, mercury, and copper. *J. Nanosci. Nanotechnol*. 5:1537–1540.
770. Yantasee, W., Y.-H. Lin, G.E. Fryxell, and Z.-M. Wang. 2004. Carbon paste electrode modified with carbamoylphosphonic acid functionalized mesoporous silica: A new mercury-free sensor for uranium detection. *Electroanalysis* 16:870–873.
771. Yantasee, W., Y.-H. Lin, G.E. Fryxell, and B.J. Busche. 2004. Simultaneous detection of cadmium, copper, and lead using a carbon paste electrode modified with carbamoyl-phosphonic acid self-assembled monolayer on mesoporous silica (SAMMS). *Anal. Chim. Acta* 502:207–212.
772. Yantasee, W., Y.H. Lin, T.S. Zemanian, and G.E. Fryxell. 2003. Voltammetric detection of lead(II) and mercury(II) using a carbon paste electrode modified with thiol self-assembled monolayer on mesoporous silica (SAMMS). *Analyst (U.K.)* 128:467–462.
773. Ferancova, A. and J. Labuda. 2001. Cyclodextrins as electrode modifiers. *Fresenius J. Anal. Chem*. 370:1–10.
774. Mashhadizadeh, M.H., K. Eskandari, A. Foroumadi, and A. Shafiee. 2008. Self-assembled mercapto-compound-gold-nanoparticle-modified carbon paste electrode for potentiometric determination of cadmium(II). *Electroanalysis* 20:1891–1896.
775. Granero, A.M., H. Fernandez, E. Agostini, and M.A. Zon. 2008. An amperometric biosensor for trans-resveratrol determination in aqueous solutions by means of carbon paste electrodes modified with peroxidase basic isoenzymes from Brassica napus. *Electroanalysis* 20:858–864.
776. Takatsy, A., B. Csoka, L. Nagy, and G. Nagy. 2006. Periodically interrupted amperometry at membrane coated electrodes: A simplified pulsed amperometry. *Talanta* 69:281–285.
777. Kinoshita, H. 2005. Amperometric assay of glutathione in whole blood and serum. *Bunseki Kagaku* 54:71–74.
778. Ciucu, A.A., C. Negulescu, and R.P. Baldwin. 2003. Detection of pesticides using an amperometric biosensor based on ferrophthalocyanine chemically modified carbon paste electrode and immobilized bienzymatic system. *Biosens. Bioelectron*. 18:303–310.
779. Forzani, E.S., M.E. Bernardi, A.M. Sisti, J.A. Zarzur, and V.M. Solis. 2002. Indirect determination of pepsin activity in human seric protein samples by polyphenol oxidase electrodes. *Anal. Chim. Acta* 460:163–175.
780. Ikeda, T., K. Kato, M. Maeda, H. Tatsumi, K. Kano, and K. Matsushita. 1997. Electrocatalytic properties of *Acetobacter aceti* cells immobilized on electrodes for the quinone-mediated oxidation of ethanol. *J. Electroanal. Chem*. 430:197–204.
781. Bergmann, W., R. Rudolph, and U. Spohn. 199. A bienzyme modified carbon paste electrode for amperometric detection of pyruvate. *Anal. Chim. Acta* 394:233–241.
782. Bu, H.Z., S.R. Mikkelsen, and A.M. English. 1998. NAD(P)H sensors based on enzyme entrapment in ferrocene-containing polyacrylamide-based redox gels *Anal. Chem*. 70:4320–4325.
783. Mullor, S.G., M. Sanchez-Cabezudo, A.J.M. Ordieres, and B.L. Ruiz. 1996. Alcohol biosensor based on alcohol dehydrogenase and Meldola Blue immobilized into a carbon paste electrode. *Talanta* 43:779–784.
784. Lobo, M.J., A.J. Miranda, and P. Tunon. 1996. A comparative study of some phenoxazine and phenothiazine modified carbon paste electrodes for ethanol determination. *Electroanalysis* 8:591–596.

785. Bu, H.Z., S.R. Mikkelsen, and A.M. English. 1995. Characterization of a ferrocene-containing polyacrylamide-based redox gel for biosensor use. *Anal. Chem*. 67:4071–4076.
786. Takayama, K., T. Kurosaki, T. Ikeda, and T. Nagasawa. 1995. Bioelectrocatalytic hydroxylation of nicotinic acid at an electrode modified with immobilized bacterial cells of *Pseudomonas fluorescens* in the presence of electron transfer mediators. *J. Electroanal. Chem*. 381:47–53.
787. Amako, K., H. Yanai, T. Ikeda, T. Shiraishi, M. Takahashi, and K. Asada. 1993. Dimethyl-benzoquinone-mediated photoelectrochemical oxidation of water at a carbon paste electrode coated with photosystem II membranes. *J. Electroanal. Chem*. 362:71–77.
788. Ikeda, T., Y. Hashimoto, M. Senda, and Y. Isono. 1991. Nucleoside oxidase-modified carbon paste electrode containing quinone: Cathodic current response to nucleosides. *Electroanalysis* 3:891–897.
789. Bontempelli, G., N. Comisso, R. Toniolo, and G. Schiavon. 1997. Electroanalytical sensors for nonconducting media based on electrodes supported on perfluorinated ion-exchange membranes. *Electroanalysis* 9:433–443.
790. Harth, R., D. Ozer, J. Hayon, R. Ydgar, and A. Bettelheim. 1994. Application of ionically conductive polymers of perfluorosulfonic acid coatings and membranes in solid-state electrochemistry. *Curr. Top. Electrochem*. 3:531–543.
791. Ugo, P., L.M. Moretto, and F. Vezza. 2002. Ionomer-coated electrodes and nanoelectrode ensembles as electrochemical environmental sensors: Recent advances and prospects. *Chem. Phys. Chem*. 3:917–925.
792. Leech, D. 1996. Analytical applications of polymer-modified electrodes. *Electroact. Polym. Electrochem*. 2:269–296.
793. Mount, A.R. 1997. Transmission line models for modified electrodes. *Res. Chem. Kinet*. 4:1–29.
794. Bott, A.W. 2001. Electrochemical techniques for the characterization of redox polymers. *Curr. Sep*. 19:71–75.
795. Deronzier, A. and J.C. Moutet. 1994. Functionalized polypyrroles as versatile molecular materials for electrode modification. *Curr. Top. Electrochem*. 3:159–200.
796. Cosnier, S., C. Gondran, and A. Senillou. 1999. Functionalized polypyrroles: A sophisticated glue for the immobilization and electrical wiring of enzymes. *Synth. Met*. 102:1366–1369.
797. Cosnier, S. 2000. Biosensors based on immobilization of biomolecules by electrogenerated polymer films. New perspectives. *Appl. Biochem. Biotechnol*. 89:127–138.
798. Bobacka, J., A. Ivaska, and A. Lewenstam. 2003. Potentiometric ion sensors based on conducting polymers. *Electroanalysis* 15:366–374.
799. Kalcher, K. 1986. Voltammetric behavior of gold at a dithizone-modified carbon-paste electrode. *Fresenius J. Anal. Chem*. 325:181–185.
800. Cai, X., K. Kalcher, W. Diewald, C. Neuhold, and R.J. Magee. 1993. Voltammetric determination of trace amounts of mercury with a carbon paste electrode modified with an anion-exchanger. *Fresenius J. Anal. Chem*. 345:25–31.
801. Talaber, C., K. Kalcher, G. Koelbl, G. Raber, and X.-H. Cai. 1992, Voltammetric determination of gold with a carbon paste electrode modified with Rhodamine B hexadecyl ester. *Sci. Int. (Lahore)* 4:347–350.
802. Kalcher, K. 1985. Voltammetric determination of trace amounts of gold with a chemically modified carbon paste electrode. *Anal. Chim. Acta* 177:175–182.
803. Kalcher, K. 1986. Voltammetry of hexacyanoferrates using a chemically modified carbon-paste electrode. *Analyst (U.K.)* 111:625–630.
804. Neuhold, C.G., K. Kalcher, W. Diewald, X.-H. Cai, and G. Raber. 1994. Voltammetric determination of nitrate with a modified carbon paste electrode. *Electroanalysis* 6:227–236.
805. Wu, W.S., M.S. Uddin, H. Chi, and K. Hidajat. 1994. Electrochemically assisted metal uptake by cation exchange based chemically modified electrodes. *J. Appl. Electrochem*. 24:548–553.
806. Kalcher, K. 1985. Voltammetrische bestimmung von Iodid mit einer mit Ionenaustauschern modifizierten Kohlepasteelektrode. *Fresenius Z. Anal. Chem*. 321:666–670.
807. Hernandez, L., J.M. Melguizo, M.H. Blanco, and P. Hernandez. 1989. Determination of cadmium(II) with a carbon paste electrode modified with an ion-exchange resin. *Analyst* 114:397–399.
808. Escribano, M.T.S., J.R. Prokopio, J.M.P. Macias, and L. Hernandez. 1989. Determination of lead in rainwater and human urine with a carbon paste electrode modified with a chelating resin. *Int. J. Environ. Anal. Chem*. 37:107–115.
809. Kalcher, K., H. Greschonig, and R. Pietsch. 1987. Extractive preconcentration of gold with carbon paste electrodes modified with organophosphorus compounds. *Fresen. Z. Anal. Chem*. 327:513–517.
810. K. Kalcher. 1986. Voltammetric determination of bismuth with carbon paste electrodes modified with alkylmercaptans. *Fresenius Z. Anal. Chem*. 325:186–190.

811. Cai, X., B. Ogorevc, G. Tavcar, and K. Kalcher. 1995. Insoluble inorganic salts as carbon paste electrode modifiers for preconcentration and voltammetric determination of oxalic acid. *Electroanalysis* 7:639–643.
812. Renger, F., I. Švancara, and M. Suska. 1992/93. Voltammetric determination of nickel(II) and cobalt(II) at a carbon paste electrode and its application under expedition conditions. *Sb. Ved. Pr., Vys. Sk. Chemickotechnol., Pardubice* 56:5–19.
813. Li, J., Z. Yan, F. Yan, J. Fei, and L. Yi. 2007. Study on anodic adsorptive voltammetry of palladium-dimethyl glyoxime complex at a carbon paste electrode. *Yejin Fenxi* 27:23–26.
814. Holgado, T.M., J.M.P. Macias, and L.H. Hernandez. 1995. Voltammetric determination of lead with a chemically modified carbon paste electrode with diphenyl-thiocarbazone. *Anal. Chim. Acta* 309:117–122.
815. Vasquez, M.D., M.L. Tascon, and L. Deban. 2006. Determination of Pb(II) with a dithizone-modified carbon paste electrode. *J. Environ. Sci*. 41:2735–2742.
816. Raber, G., K. Kalcher, C.G. Neuhold, C. Talaber, and G. Koelbl. 1995. Adsorptive stripping voltammetry of palladium(II) with thioridazine in situ modified carbon paste electrodes. *Electroanalysis* 7:138–142.
817. Stadlober, M., K. Kalcher, and G. Raber. 1997. Voltammetric determination of titanium, vanadium, and molybdenum using a carbon paste electrode modified with cetyl-trimethylammonium bromide. *Sci. Pap. Univ. Pardubice, Ser. A* 3:103–137.
818. Koelbl, G., K. Kalcher, and A. Voulgaropoulos. 1992. Voltammetric determination of gold with a Rhodamine B-modified carbon paste electrode. *Fresenius J. Anal. Chem*. 342:83–86.
819. Brainina, Kh.Z., A.V. Chernysheva, N.Y. Stozhko, and L.N. Kalnyshevskaya. 1989. In situ modified electrodes in stripping voltammetry. *Analyst* 114:173–180.
820. Brainina, Kh.Z., N.A. Malakhova, and N.Y. Stojko. 2000. Stripping voltammetry in environmental and food analysis. *Fresenius J. Anal. Chem*. 368:307–325.
821. Abu-Shawish, H.M. and S.M. Saadeh. 2007. Chemically modified carbon paste electrode for potentiometric analysis of cyproheptadine hydrochloride in serum and urine. *Anal. Chem. Indian J*. 4:20–27.
822. Abu Shawish, H.M. 2008. Potentiometric response (to chlorpheniramine maleate) at modified carbon paste electrode based on mixed ion-exchangers. *Electroanalysis* 20:491–497.
823. Lorenzo, E., E. Alda, P. Hernandez, M.H. Blanco, and L. Hernandez. 1988. Voltammetric determination of nitrobenzene with a chemically modified carbon paste electrode. Application to wines, beers, and cider. *Fresenius Z. Anal. Chem*. 330:139–142.
824. Hernandez, L., P. Hernandez, and Z. Sosa. 1988. Determination of phenol by differential-pulse voltammetry with a sepiolite-modified carbon paste electrode. *Fresenius Z. Anal. Chem* 331:525–527.
825. Hernandez, P., J. Vicente, and L. Hernandez. 1989. Determination of tetramethrin (neo-pynamin) by differential pulse voltammetry with a carbon paste electrode modified with sepiolite. *Fresenius Z. Anal. Chem* 334:550–553.
826. Hernandez, L., P. Hernandez, E. Lorenzo, and Z. Sosa Ferrera. 1988. Comparative study of the electrochemical behavior of sepiolite- and hectorite-modified carbon paste electrodes in the determination of dinocap. *Analyst* 113:621–623.
827. Hernandez, L., E. Gonzales, and P. Hernandez. 1988. Determination of Clozapine by adsorptive anodic voltammetry using glassy carbon and modified carbon paste electrodes. *Analyst (U.K.)* 113:1715–1718.
828. Hernandez, P., E. Alda, and L. Hernandez. 1987. Determination of mercury(II) using a modified electrode with zeolite. *Fresenius Z. Anal. Chem*. 327:676–678.
829. Murr, N.E., M. Kerkeni, A. Sellami, and Y.B. Taarit. 1988. The zeolite-modified carbon paste electrode. *J. Electroanal. Chem*. 246:461–465.
830. Shaw, B.R., K.E. Creasy, C.J. Lanzcyncki, J.A. Sargeant, and M. Tirhado. 1988. Voltammetric response of zeolite-modified electrodes. *J. Electrochem. Soc*. 135:869–875.
831. Walcarius, A. 1998. Analytical applications of silica-modified electrodes. A comprehensive review. *Electroanalysis* 10:1217–1235.
832. Sugawara, K., A. Terauchi, N. Kamiya, G. Hirabayashi, and H. Kuramitz. 2008. Voltammetric behaviors of wheat-germ agglutinin on a chitin-modified carbon-paste electrode. *Anal. Sci*. 24:583–587.
833. Lan, Y., G. Lu, X. Wu, S. Yao, F. Song, and H. Xu. 1999. Determination of trace nitrite with a chitin-containing carbon paste electrode. *Fenxi Shiyanshi*. 18:27–30.
834. Lan, Y., G. Lu, S. Yao, and F. Song. 1998. Determination of trace copper by chitin-modified carbon paste electrode. *Fenxi Huaxue* 26:1192–1195.
835. Rodrigues, C.A., V.T. de Favere, E. Stadler, and M.C.M. Laranjeira. 1994. Pre-concentration of anions on poly(N-acetyl-D-glucosamine) derivative-modified carbon paste electrode. *J. Brazil. Chem. Soc*. 4:14–16.

836. Bai, Z.P., T. Nakamura, and K. Izutsu. 1990. Enhanced voltammetric waves of iron(III)-EDTA at a chitin-containing carbon paste electrode and its analytical application. *Electroanalysis* 2:75.
837. Navratilova, Z. and P. Kula. 1998. Carbon paste electrodes modified with clays and humic acids. *Sci. Pap. Univ. Pardubice Ser. A Faculty Chem. Techn*. 3:195–206.
838. Wang, J., N. Naser, L. Angnes, H. Wu, and L. Chen. Metal-dispersed carbon paste electrodes. *Anal. Chem*. 64:1285–1288.
839. Sanchez, A., A. Zapardiel, F.L. de Prado, E. Bermejo, M. Moreno, J.A. Perez Lopez, and M. Chicharro. 2007. Flow injection analysis of Maleic hydrazide using an electrochemical sensor based on palladium-dispersed carbon paste electrode. *Electroanalysis* 19:1683–1688.
840. Matakova, R.N., R.F. Yulmetova, and A.I. Zebreva. 1984. Carbon paste electrodes for the study of metallic catalysts. *Zhurnal Analiticheskoi Khimii* 39:1200–1205.
841. Raoof, J.B., M.A. Karimi, S.R. Hosseini, and S. Mangelizadeh. 2010. Cetyltrimethylammonium bromide effect on highly electrocatalysis of methanol oxidation based on nickel particles electrodeposited into poly(m-toluidine) film on the carbon paste electrode. *J. Electroanal. Chem*. 638:33–38.
842. Beyene, N.W., P. Kotzian, K. Schachl, H. Alemu, E. Turkusic, A. Copra, H. Moderegger, I. Švancara, K. Vytřas, and K. Kalcher. 2004. (Bio)sensors based on manganese dioxide-modified carbon substrates: Retrospections, further improvements and applications. *Talanta* 64:1151–1159.
843. Garjonyte, R. and A. Malinauskas. 1998. Electrocatalytic reactions of hydrogen peroxide at carbon paste electrodes modified by some metal hexacyanoferrates. *Sens. Actuators B* B46:236–241.
844. Itaya, K., I. Uchida, and S. Toshima. 1984. Catalysis of the reduction of molecular oxygen at mixed valence complex modified electrodes of Prussian blue analogs. *Nippon Kagaku Kaishi* 11:1849–1853.
845. Boyer, A., K. Kalcher, and R. Pietsch. 1990. Voltammetric behavior of perborate on Prussian blue-modified carbon paste electrodes. *Electroanalysis* 2:155–161.
846. Weissenbacher, M., K. Kalcher, H. Greschonig, W. Ng, W.-H. Chan, and A.N. Voulgaropoulos. 1992. Electrochemical behavior of persulfate on carbon paste electrodes modified with Prussian blue and analogous compounds. *Fresenius J. Anal. Chem*. 344:87–92.
847. Gomez de Rio, M.I., C. De la Fuente, J.A. Acuna, M.D. Vazquez Barbado, M. Tascon Garcia, S. de Vicente Perez, and P. Sanchez Batanero. 1995. Determination of nitrites by using an electrocatalytic method on Prussian Blue chemically carbon paste electrode. *Quim Anal. (Barcelona)* 14:108–111.
848. Moscone, D., D. D'Ottavi, D. Compagnone, G. Palleschi, and A. Amine. 2001. Construction and analytical characterization of Prussian blue-based carbon paste electrodes and their assembly as oxidase enzyme sensors. *Anal. Chem*. 73:2529–2535.
849. Ivama, V.M. and S.H.P. Serrano. 2003. Rhodium-Prussian blue modified carbon paste electrode (Rh-PBMCPE) for amperometric detection of hydrogen peroxide. *J. Brazil. Chem. Soc*. 14:551–555.
850. Li, J., X. Wei, and Y. Yuan. 2009. Synthesis of magnetic nanoparticles composed by Prussian blue and glucose oxidase for preparing highly sensitive and selective glucose biosensor. *Sens. Actuators B* B139:400–406.
851. Lin, M.S., J.S. Lai, and J.S. Wang. 2002. Nickel(II) hexacyanoferrate based glucose biosensor. *Huaxue* 60:483–493.
852. Zaldivar, G.A.P. and Y. Gushikem. 1992. Tin(IV) oxide grafted on a silica gel surface as a conducting substrate base for nickel hexacyanoferrate. *J. Electroanal. Chem*. 337:165–174.
853. Nossol, E. and A.J.G. Zarbin. 2009. A simple and innovative route to prepare a novel carbon nanotube/Prussian blue electrode and its utilization as a highly sensitive H_2O_2 amperometric sensor. *Adv. Funct. Mater*. 19:3980–3986.
854. Dicks, J.M., W.J. Aston, G. Davis, and A.P.F. Turner. 1986. Mediated amperometric biosensors for D-galactose, glycolate and L-amino acids based on a ferrocene-modified carbon paste electrode. *Anal. Chim. Acta* 182:103–112.
855. Miki, K., T. Ikeda, S. Todoriki, and M. Senda. 1989. Bioelectrocatalysis at NAD-dependent dehydrogenase and diaphorase-modified carbon paste electrodes containing mediators. *Anal. Sci*. 5:269–274.
856. Hale, P.D., T. Inagaki, H.S. Lee, H.I. Karan, Y. Okamoto, and T.A. Skotheim. 1990. Amperometric glycolate sensors based on glycolate oxidase and polymeric electron transfer mediators. *Anal. Chim. Acta* 228:31–37.
857. Wang, J., L.H. Wu, R. Li, and J. Sanchez. 1990. Mixed ferrocene-glucose oxidase-carbon-paste electrode for amperometric determination of glucose. *Anal. Chim. Acta* 228:251–257.
858. Okuma, H., H. Takahashi, S. Sekimukai, K. Kawahara, and R. Akahoshi. 1991. Mediated amperometric biosensor for hypoxanthine based on a hydroxymethyl ferrocene-modified carbon paste electrode. *Anal. Chim. Acta* 244:161–164.

859. Beh, S.K., G.J. Moody, and J.D.R. Thomas. 1991. Studies on enzyme electrodes with ferrocene and carbon paste bound with cellulose triacetate. *Analyst* 116:459–462.
860. Dominguez Sanchez, P., A.J. Miranada Ordieres, A. Costa Garcia, and P. Tunon Blanco. 1991. Peroxidase-ferrocene modified carbon paste electrode as an amperometric sensor for the hydrogen peroxide assay. *Electroanalysis* 3:281–285.
861. Mizutani, F., A. Okuda, S. Yabuki, and T. Katsura. 1991. Glucose-sensing electrode based on carbon paste containing PEG-attached enzyme and ferrocene. *Chem. Sens*. 7(Suppl. A):17–20.
862. Hale, P.D., H.L. Lan, L.I. Boguslavsky, H.I. Karan, Y. Okamoto, and T.A. Skotheim. 1991. Amperometric glucose sensors based on ferrocene-modified poly(ethylene oxide) and glucose oxidase. *Anal. Chim. Acta* 251:121–128.
863. Kulys, J., W. Schuhmann, and H.L. Schmidt. 1992. Carbon-paste electrodes with incorporated lactate oxidase and mediators. *Anal. Lett*. 25:1011–1024.
864. Lin, M.S., M. Hare, and G.A. Rechnitz. 1992. Multienzyme containing tissue-based and ferrocene-mediated bioelectrode for the determination of polyamines. *Electroanalysis* 4:521–525.
865. Andrieux, C.P., P. Audebert, B. Divisia-Blohorn, and S. Linquette-Maillet. 1993. A new glucose sensor made of a Nafion-gel-layer covered carbon paste. *J. Electroanal. Chem*. 353:289–296.
866. Ciszewski, A. and Z. Gorski. 1995. Stripping measurements of hydrogen peroxide based on biocatalytic accumulation at a horseradish peroxidase/ferrocene/carbon paste electrode. *Electroanalysis* 7:495–497.
867. Oungpipat, W., P.W. Alexander, and P. Southwell-Keely. 1995. A reagentless amperometric biosensor for hydrogen peroxide determination based on asparagus tissue and ferrocene mediation. *Anal. Chim. Acta* 309:35–45.
868. Chi, Q.J., W. Gopel, T. Ruzgas, L. Gorton, and P. Heiduschka. 1997. Effects of pretreatments and modifiers on electrochemical properties of carbon paste electrodes. *Electroanalysis* 9:357–365.
869. Nakabayashi, Y., M. Wakuda, and H. Imai. 1998. Amperometric glucose sensors fabricated by electrochemical polymerization of phenols on carbon paste electrodes containing ferrocene as an electron transfer mediator. *Anal. Sci*. 14:1069–1076.
870. Guorong, Z., W. Xiaolei, S. Xingwang, and S. Tianling. 2000. β-Cyclodextrin-ferrocene inclusion complex modified carbon paste electrode for amperometric determination of ascorbic acid. *Talanta* 51:1019–1025.
871. Nakabayashi, Y. and H. Yoshikawa. 2000. Amperometric biosensors for sensing of hydrogen peroxide based on electron transfer between horseradish peroxidase and ferrocene as a mediator. *Anal. Sci*. 16:609–613.
872. Boujtita, M. and N. El Murr. 2000. Ferrocene-mediated carbon paste electrode modified with D-fructose dehydrogenase for batch mode measurement of D-fructose. *Appl. Biochem. Biotechnol*. 89:55–66.
873. Wang, J., J.-W. Mo, S. Li, and J. Porter. 2001. Comparison of oxygen-rich and mediator-based glucose-oxidase carbon-paste electrodes. *Anal. Chim. Acta* 441:183–189.
874. Raoof, J.B., R. Ojani, and A. Kiani. 2001. Carbon paste electrode spiked with ferrocene carboxylic acid and its application to the electrocatalytic determination of ascorbic acid. *J. Electroanal. Chem*. 515:45–51.
875. Ramirez-Molina, C., M. Boujtita, and N. El Murr. 2003. New strategy for dehydrogenase amperometric biosensors using surfactant to enhance the sensitivity of diaphorase/ferrocene modified carbon paste electrodes for electrocatalytic oxidation of NADH. *Electroanalysis* 15:1095–1100.
876. Serban, S. and N. El Murr. 2004. Synergetic effect for NADH oxidation of ferrocene and zeolite in modified carbon paste electrodes. New approach for dehydrogenase based biosensors. *Biosens. Bioelectron*. 20:161–166.
877. Raoof, J.B., R. Ojani, and M. Kolbadinezhad. 2005. Differential pulse voltammetry determination of L-cysteine with ferrocene-modified carbon paste electrode. *Bull. Chem. Soc. Jpn*. 78:818–826.
878. Delacote, C., J.-P. Bouillon, and A. Walcarius. 2006. Voltammetric response of ferrocene-grafted mesoporous silica. *Electrochim. Acta* 51:6373–6383.
879. Raoof, J.B., R. Ojani, and H. Karimi-Maleh. 2007. Electrocatalytic determination of sulfite at the surface of a new ferrocene derivative-modified carbon paste electrode. *Int. J. Electrochem. Sci*. 2:257–269.
880. Raoof, J.B., R. Ojani, and F. Chekin. 2007. Electrochemical analysis of D-penicillamine using a carbon paste electrode modified with ferrocene carboxylic acid. *Electroanalysis* 19:1883–1889.
881. Kamyabi, M.A. and F. Aghajanloo. 2009. Electrocatalytic response of dopamine at a carbon paste electrode modified with ferrocene. *Croat. Chem. Acta* 82:599–606.
882. Korfhage, K.M., K. Ravichandran, and R.P. Baldwin. 1984. Phthalocyanine-containing chemically modified electrodes for electrochemical detection in liquid chromatography/flow injection systems. *Anal. Chem*. 56:1514–1517.

883. Halbert, M.K. and R.P. Baldwin. 1985. Electrocatalytic and analytical response of cobalt phthalocyanine containing carbon paste electrodes toward sulfhydryl compounds. *Anal. Chem*. 57:591–595.
884. Halbert, M.K. and R.P. Baldwin. 1985. Determination of cysteine and glutathione in plasma and blood by liquid chromatography with electrochemical detection using a chemically modified electrode containing cobalt phthalocyanine. *J. Chromatogr. Biomed. Appl*. 345:43–49.
885. Santos, L.M. and R.P. Baldwin. 1986. Electrocatalytic response of cobalt phthalocyanine chemically modified electrodes toward oxalic acid and α-keto acids. *Anal. Chem*. 58:848–852.
886. Linders, C.R., G.J. Patriarche, J.M. Kauffmann, and G.G. Guilbault. 1986. Electrochemical study of thiols and disulfides using modified electrodes. *Anal. Lett*. 19:193–203.
887. Linders, C.R., B.J. Vincke, and G.J. Patriarche. 1986. Catalase like activity of iron phthalocyanine incorporated in a carbon paste electrode. *Anal. Lett*. 19:1831–1837.
888. Linders, C.R., J.M. Kauffmann, and G.J. Patriarche. 1986. Modified electrodes based on cobalt(II) phthalocyanine. Applications to the determination of organic sulfur compounds. *J. Pharm. Belgique* 41:373–379.
889. Santos, L.M. and R.P. Baldwin. 1987. Liquid chromatography/electrochemical detection of carbohydrates at a cobalt phthalocyanine containing chemically modified electrode. *Anal. Chem*. 59:1766–1770.
890. Santos, L.M. and R.P. Baldwin. 1988. Electrochemistry and chromatographic detection of monosaccharides, disaccharides, and related compounds at an electrocatalytic chemically modified electrode. *Anal. Chim. Acta* 206:85–96.
891. Tolbert, A.M., R.P. Baldwin, and L.M. Santos. 1989. Electrochemical detection of ribonucleotides at a carbon paste electrode containing cobalt phthalocyanine. *Anal. Lett*. 22:683–702.
892. Tolbert, A.M. and R.P. Baldwin. 1989. Liquid chromatography and electrochemical detection of alditols and acidic sugars at a cobalt phthalocyanine-containing chemically modified electrode. *Electroanalysis* 1:389–395.
893. Skladal, P. 1991. Determination of organophosphate and carbamate pesticides using a cobalt phthalocyanine-modified carbon paste electrode and a cholinesterase enzyme membrane. *Anal. Chim. Acta* 252:11–15.
894. Wang, J., L. Angnes, C. Liang, and O. Evans. 1991. Electrocatalysis and amperometric detection of organic peroxides at modified carbon-paste electrodes. *Talanta* 38:1077–1081.
895. Ruiz, M.A., M.P. Calvo, and J.M. Pingarron. 1994. Catalytic-voltammetric determination of the antioxidant tert-butylhydroxyanisole (BHA) at a nickel phthalocyanine modified carbon paste electrode. *Talanta* 41:289–294.
896. Qi, X.-H. and R.P. Baldwin. 1993. Liquid chromatography and electrochemical detection of organic peroxides by reduction at an iron phthalocyanine chemically modified electrode. *Electroanalysis* 5:547–554.
897. Fernandez Sanchez, C., A.J. Reviejo, and J.M. Pingarron. 1995. Voltammetric determination of the herbicides Thiram and Disulfiram with a cobalt phthalocyanine modified carbon paste electrode. *Analusis (Bruxelles)* 23:319–324.
898. Ozsoz, M., A. Erdem, E. Kilinc, and L. Gokgunnec. 1996. Mushroom-based cobalt phthalocyanine dispersed amperometric biosensor for the determination of phenolic compounds. *Electroanalysis* 8:147–150.
899. Mafatle, T.J. and T. Nyokong. 1996. Electrocatalytic oxidation of cysteine by molybdenum(V) phthalocyanine complexes. *J. Electroanal. Chem*. 408:213–218.
900. Santamaria, M.C., M.D.V. Barbado, M.L.T. Garcia, and P.S. Batanero. 1998. Determination of hydrogen peroxide by voltammetric techniques at carbon paste electrodes modified with transition metal phthalocyanines. *Quim. Anal. (Barcelona)* 17:147–152.
901. Nunes, G.S., D. Barcelo, B.S. Grabaric, J.M. Diaz-Cruz, and M.L. Ribeiro. 1999. Evaluation of a highly sensitive amperometric biosensor with low cholinesterase charge immobilized on a chemically modified carbon paste electrode for trace determination of carbamates in fruit, vegetable and water samples. *Anal. Chim. Acta* 399:37–49.
902. Cookeas, E.G. and C.E. Efstathiou. 2000. Flow injection-pulse amperometric detection of ephedrine at a cobalt phthalocyanine modified carbon paste electrode. *Analyst* 125:1147–1150.
903. Oni, J. and T. Nyokong. 2001. Simultaneous voltammetric determination of dopamine and serotonin on carbon paste electrodes modified with iron(II) phthalocyanine complexes. *Anal. Chim. Acta* 434:9–21.
904. Chicharro, M., A. Zapardiel, E. Bermejo, M. Moreno, and E. Madrid. 2002. Electro-catalytic amperometric determination of Amitrole using a cobalt phthalocyanine-modified carbon paste electrode. *Anal. Bioanal. Chem*. 373:277–283.
905. Chicharro, M., A. Zapardiel, E. Bermejo, E. Madrid, and C. Rodriguez. 2002. Flow injection analysis of Aziprotryne using an electrochemical sensor based on cobalt phthalocyanine modified carbon paste. *Electroanalysis* 14:892–898.

906. Oni, J., P. Westbroek, and T. Nyokong. 2002. Voltammetric detection of vitamin B1 at carbon paste electrodes and its determination in tablets. *Electroanalysis* 14:1165–1168.
907. Abbaspour, A., M.A. Mehrgardi, and R. Kia. 2004. Electrocatalytic oxidation of guanine and ss-DNA at a cobalt (II) phthalocyanine modified carbon paste electrode. *J. Electroanal. Chem*. 568:261–266.
908. Shahrokhian, S., A. Hamzehloei, A. Thaghani, and S.R. Mousavi. 2004. Electrocatalytic oxidation of 2-thiouracil and 2-thiobarbituric acid at a carbon-paste electrode modified with cobalt phthalocyanine. *Electroanalysis* 16:915–921.
909. Ozoemena, K.I., R.I. Stefan, and T. Nyokong. 2004. Determination of 2′,3′-dideoxyinosine using iron (II) phthalocyanine modified carbon paste electrode. *Anal. Lett*. 37:2641–2648.
910. Tahirovic, I., K. Kalcher, A. Sapcanin, Z. Pujic, and S. Muzaferovic. 2004. Utilization of butyrylthiocholine enzyme sensor for the detection of cholinesterase inhibitors in natural samples. *Pharmacia* 15:45–57.
911. Ozoemena, K.I., R.I. Stefan-van Staden, and T. Nyokong. 2009. Metallophthalocyanine based carbon paste electrodes for the determination of 2′,3′-dideoxyinosine. *Electroanalysis* 21:1651–1654.
912. Santos, W.J.R., A.L. Sousa, M.P.T. Sotomayor, F.S. Damos, S.M.C.N. Tanaka, L.T. Kubota, and A.A. Tanaka. 2009. Manganese phthalocyanine as a biomimetic electrocatalyst for phenols in the development of an amperometric sensor. *J. Braz. Chem. Soc*. 20:1180–1187.
913. Shahrokhian, S., M. Ghalkhani, and M.K. Amini. 2009. Application of carbon-paste electrode modified with iron phthalocyanine for voltammetric determination of epinephrine in the presence of ascorbic acid and uric acid. *Sens. Actuators B* B137:669–675.
914. Debnath, C., P. Saha, and A. Ortner. 2009. Electrocatalytic and analytical response of cobalt phthalocyanine modified carbon paste electrodes towards anti-malarial endoperoxide Artemisinin. *Electroanalysis* 21:657–661.
915. Yin, H.-S., Y.-L. Zhou, and S.-Y. Ai. 2009. Preparation and characteristic of cobalt phthalo-cyanine modified carbon paste electrode for bisphenol-A detection. *J. Electroanal. Chem*. 626:80–88.
916. Naik, R.R., E. Niranjana, B.E.K. Swamy, B.S. Sherigara, and H. Jayadevappa. 2008. Surfactant induced iron (II) phthalocyanine modified carbon paste electrode for simultaneous detection of ascorbic acid, dopamine and uric acid. *Int. J. Electrochem. Sci*. 3:1574–1583.
917. Conceicao, C.D.C., R.C. Faria, O. Fatibello, and A.A. Tanaka. 2008. Electrocatalytic oxidation and voltammetric determination of hydrazine in industrial boiler feed water using a cobalt phthalocyanine-modified electrode. *Anal. Lett*. 41:1010–1021.
918. Parra, V., A.A. Arrieta, J.A. Fernandez-Escudero, M.L. Rodriguez-Mendez, and J.A. De Saja. 2006. Electronic tongue based on chemically modified electrodes and voltammetry for the detection of adulterations in wines. *Sens. Actuators B* B118:448–453.
919. Parra, V., A.A. Arrieta, J.A. Fernandez-Escudero, H. Garcia, C. Apetrei, M.L. Rodriguez-Mendez, and J.A. de Saja. 2006. E-tongue based on a hybrid array of voltammetric sensors based on phthalocyanines, perylene derivatives and conducting polymers: Discrimination capability towards red wines elaborated with different varieties of grapes. *Sens. Actuators B* B115:54–61.
920. Raoof, J.B., R. Ojani, and M. Baghayeri. 2009. Simultaneous electrochemical determination of glutathione and tryptophan on a nano-TiO_2/ferrocene carboxylic acid modified carbon paste electrode. *Sens. Actuators B* B143:261–269.
921. Li, J., L.T. Xiao, X.M. Liu, G.M. Zeng, G.H. Huang, G.L. Shen, and R.Q. Yu. 2003. Amperometric biosensor with HRP immobilized on a sandwiched nano-Au/polymerized m-phenylenediamine film and ferrocene mediator. *Anal. Bioanal. Chem*. 376:902–907.
922. Gorton, L., H.I. Karan, P.D. Hale, T. Inagaki, Y. Okamoto, and T.A. Skotheim. 1990. A glucose electrode based on carbon paste chemically modified with a ferrocene-containing siloxane polymer and glucose oxidase, coated with a poly(ester-sulfonic acid) cation-exchanger. *Anal. Chim. Acta* 228:23–30.
923. Milagres, B.G., L.T. Kubota, and G. de Oliveira Neto. 1996. Immobilized ferrocene and glucose oxidase on titanium(IV) oxide grafted onto a silica gel surface and its application as an amperometric glucose biosensor. *Electroanalysis* 8:489–493.
924. Patel, H., X. Li, and H.I. Karan. 2003. Amperometric glucose sensors based on ferrocene containing polymeric electron transfer systems—A preliminary report. *Biosens. Bioelectron*. 18:1073–1076.
925. Qi, X., R.P. Baldwin, H. Li, and T.F. Guarr. 1991. Electrocatalytic amperometric detection at polymeric cobalt phthalocyanine electrodes. *Electroanalysis* 3:119–124.
926. Bashkin, J.K. and P.J. Kinlen. 1990. Oxygen-stable ferrocene reference electrodes. *Inorg. Chem*. 29:4507–4509.
927. Hammouti, B., A. Benayada, and A. Elmaslout. 1997. Realization of ferrocene reference electrode. Part I: In concentrated phosphoric acid media. *Bull. Electrochem*. 13:466–469.

928. Hammouti, B., A. Elmaslout, A. Benayada, and H. Oudda. 2004. Realisation of ferrocene reference electrode in isoacidic H_3PO_4, H_2SO_4 and HCl mixtures. *Trans. SAEST* 39:81–83.
929. Shahrokhian, S., M.K. Amini, I. Mohammadpoor-Baltork, and S. Tangestaninejad. 2000. Potentiometric detection of 2-mercaptobenzimidazole and 2-mercapto-benzothiazole at cobalt phthalocyanine modified carbon-paste electrode. *Electroanalysis* 12:863–867.
930. Amini, M.K., S. Shahrokhian, and Tangestaninejad. 1999. Cobalt phthalocyanine modified carbon paste electrode as a potentiometric sensor for determination of ascorbic acid. *J. Sci. Islam. Rep. Iran* 10:218–222.
931. Shahrokhian, S. and J. Yazdani. 2003. Electrocatalytic oxidation of thioglycolic acid at carbon paste electrode modified with cobalt phthalocyanine: Application as a potentiometric sensor. *Electrochim. Acta* 48:4143–4148.
932. Yang, G.-J., K. Wang, J.-J. Xu, and H.-Y. Chen. 2004. Determination of Theophylline in drugs and tea on nanosized cobalt phthalocyanine particles modified carbon paste electrode. *Anal. Lett*. 37:629–643.
933. Yang, G.J., J.J. Xu, K. Wang, and H.Y. Chen. 2006. Electrocatalytic oxidation of dopamine and ascorbic acid on carbon paste electrode modified with nanosized cobalt phthalocyanine particles: Simultaneous determination in the presence of CTAB. *Electroanalysis* 18:282–290.
934. Siswana, M., K.I. Ozoemena, and T. Nyokong. 2006. Electrocatalytic behaviour of carbon paste electrode modified with iron(II) phthalocyanine (FePc) nanoparticles towards the detection of Amitrole. *Talanta* 69:1136–1142.
935. Persson, B., H.L. Lan, L. Gorton, Y. Okamoto, P.D. Hale, L.I. Boguslavsky, and T. Skotheim. 1993. Amperometric biosensors based on electrocatalytic regeneration of NAD+ at redox polymer-modified electrodes. *Biosens. Bioelectron*. 8:81–88.
936. Habermuller, K., M. Mosbach, and W. Schuhmann. 2000. Electron-transfer mechanisms in amperometric biosensors. *Fresenius J. Anal. Chem*. 366:560–568.
937. Shu, H.C., B. Mattiasson, B. Persson, G. Nagy, L. Gorton, S. Sahni, L. Geng, L. Boguslavsky, and T. Skotheim. 1995. A reagentless amperometric electrode based on carbon paste, chemically modified with D-lactate dehydrogenase, NAD^+, and mediator containing polymer for D-lactic acid analysis. Part I. Construction, composition, and characterization. *Biotechnol. Bioeng*. 46:270–279.
938. Huan, Z., B. Persson, L. Gorton, S. Sahni, T. Skotheim, and P. Barlett. 1996. Redox polymers for electrocatalytic oxidation of NADH—Cationic styrene and ethylenimine polymers. *Electroanalysis* 8:575–581.
939. Jeffries, C., N. Pasco, K. Baronian, and L. Gorton. 1997. Evaluation of a thermophile enzyme for a carbon paste amperometric biosensor: L-glutamate dehydrogenase. *Biosens. Bioelectron*. 12:225–232.
940. Jezkova, J., E.I. Iwuoha, M.R. Smyth, and K. Vytřas. 1997. Stabilization of an osmium bis-bipyridyl polymer-modified carbon paste amperometric glucose biosensor using polyethyleneimine. *Electroanalysis* 9:978–984.
941. Adachi, N., D. Ishikawa, N. Sato, and H. Okuma. 2009. Electrochemical behavior of GOD-modified AuNPs/carbon paste electrode. *Mater. Technol. (Jpn.)* 27:75–80.
942. Huan, D.L., S.H. Zuo, and M.B. Lan. 2007. Glucose biosensors based on carbon paste electrodes modified by ferrocene and Au nanoparticles. *Huadong Ligong Daxue Xuebao, Ziran Kexueban* 33:822–826.
943. Cubukcu, M., S. Timur, and U. Anik. 2007. Examination of performance of glassy carbon paste electrode modified with gold nanoparticle and xanthine oxidase for xanthine and hypoxanthine detection. *Talanta* 74:434–439.
944. Wang, F.-C., R. Yuan, and Y.-Q. Chai. 2007. A new amperometric biosensor for hydrogen peroxide determination based on HRP-nanogold-PTH-nanogold-modified carbon paste electrodes. *Eur. Food Res. Technol*. 225:95–104.
945. Aguei, L., J. Manso, P. Yanez-Sedeno, and J.M. Pingarron. 2006. Amperometric biosensor for hypoxanthine based on immobilized xanthine oxidase on nanocrystal gold-carbon paste electrodes. *Sens. Actuators B* 113:272–280.
946. Miscoria, S.A., G.D. Barrera, and G.A. Rivas. 2005. Enzymatic biosensor based on carbon paste electrodes modified with gold nanoparticles and polyphenol oxidase. *Electroanalysis* 17:1578–1582.
947. Aguei, L., C. Pena-Farfal, P. Yanez-Sedeno, and J.M. Pingarron. 2007. Electrochemical determination of homocysteine at a gold nanoparticle-modified electrode. *Talanta* 74:412–420.
948. Liu, S.-Q. and H.-X. Ju. 2003. Nitrite reduction and detection at a carbon paste electrode containing hemoglobin and colloidal gold. *Analyst* 128:1420–1424.
949. Liu, S. and H. Ju. 2003. Electrocatalysis via direct electrochemistry of myoglobin immobilized on colloidal gold nanoparticles. *Electroanalysis* 15:1488–1493.
950. Huang, K.J., J.Y. Sun, C.X. Xu, D.J. Niu, and W.Z. Xie. 2010. A disposable immunosensor based on gold colloid modified chitosan nanoparticles-entrapped carbon paste electrode. *Microchim. Acta* 168:51–58.

951. Du, D., X. Xu, S. Wang, and A. Zhang. 2007. Reagentless amperometric carbohydrate antigen 19–9 immunosensor based on direct electrochemistry of immobilized horseradish peroxidase. *Talanta* 71:1257–1262.
952. Tang, D., R. Yuan, and Y. Chai. 2006. Electrochemical immuno-bioanalysis for carcinoma antigen 125 based on thionine and gold nanoparticles-modified carbon paste interface. *Anal. Chim. Acta* 564:158–165.
953. Huang, D., H. Liu, B. Zhang, K. Jiao, and X. Fu. 2009. Highly sensitive electrochemical detection of sequence-specific DNA of 35S promoter of cauliflower mosaic virus gene using CdSe quantum dots and gold nanoparticles. *Microchim. Acta* 165:243–248.
954. Zhang, Y., T. Yang, N. Zhou, W. Zhang, and K. Jiao. 2008. Nano Au/TiO_2 hollow microsphere membranes for the improved sensitivity of detecting specific DNA sequences related to transgenes in transgenic plants. *Sci. China B: Chem*. 51:1066–1073.
955. Pan, J. 2007. Voltammetric detection of DNA hybridization using a non-competitive enzyme linked assay. *Biochem. Eng. J*. 35:183–190.
956. Du, D., S. Liu, J. Chen, H. Ju, H. Lian, and J. Li. 2005. Colloidal gold nanoparticle modified carbon paste interface for studies of tumor cell adhesion and viability. *Biomaterials* 26:6487–6495.
957. Mashhadizadeh, M.H., H. Khani, A. Foroumadi, and P. Sagharichi. 2010. Comparative studies of mercapto thiadiazoles self-assembled on gold nanoparticle as ionophores for Cu(II) carbon paste sensors. *Anal. Chim. Acta* 665:208–214.
958. Mashhadizadeh, M.H. and H. Khani. 2010. Sol-gel-Au nanoparticle modified carbon paste electrode for potentiometric determination of Al(III) at the sub-ppb level. *Anal. Methods* 2:24–31.
959. Mashhadizadeh, M.H., K. Eskandari, A. Foroumadi, and A. Shafiee. 2008. Copper(II) modified carbon paste electrodes based on self-assembled mercapto compounds-gold-nanoparticle. *Talanta* 76:497–502.
960. Heli, H., F. Faramarzi, A. Jabbari, A. Parsaei, and A.A. Moosavi Movahedi. 2010. Electrooxidation and determination of Etidronate using copper nanoparticles and microparticles modified carbon paste electrodes. *J. Braz. Chem. Soc*. 21:16–24.
961. Heli, H., M. Zarghan, A. Jabbari, A. Parsaei, and A.A. Moosavi Movahedi. 2010. Electrocatalytic oxidation of the antiviral drug Acyclovir on a copper nanoparticles-modified carbon paste electrode. *J. Solid State Electrochem*. 14:787–795.
962. Heli, H., A. Jabbari, M. Zarghan, and A.A. Moosavi-Movahedi. 2009. Copper nanoparticles-carbon microparticles nanocomposite for electrooxidation and sensitive detection of sotalol. *Sens. Actuators B* B140:245–251.
963. Heli, H., M. Hajjizadeh, A. Jabbari, and A.A. Moosavi-Movahedi. 2009. Fine steps of electrocatalytic oxidation and sensitive detection of some amino acids on copper nanoparticles. *Anal. Biochem*. 388:81–90.
964. Heli, H., M. Hajjizadeh, A. Jabbari, and A.A. Moosavi-Movahedi. 2009. Copper nanoparticles-modified carbon paste transducer as a biosensor for determination of acetylcholine. *Biosens. Bioelectron*. 24:2328–2333.
965. Valentini, F., V. Biagiotti, C. Lete, G. Palleschi, and J. Wang. 2007. The electrochemical detection of ammonia in drinking water based on multi-walled carbon nanotube/copper nanoparticle composite paste electrodes. *Sens. Actuators B* B128:326–333.
966. Zhang, X. and X. Hu. 2005. Electrochemical determination of amino acid with carbon paste electrode modified by copper nanoparticles. *Yangzhou Daxue Xuebao, Ziran Kexueban* 8:16–20.
967. Brondani, D., C. Weber Scheeren, J. Dupont, and I. Cruz Vieira. 2009. Biosensor based on platinum nanoparticles dispersed in ionic liquid and laccase for determination of adrenaline. *Sens. Actuators B* B140:252–259.
968. Yoon, J.-H., G. Muthuraman, S.-B. Yoon, and M.-S. Won. 2007. Pt-nanoparticle incorporated carbon paste electrode for the determination of Cu(II) ion by anodic stripping voltammetry. *Electroanalysis* 19:1160–1166.
969. Huang, J., Y. Liu, H. Hou, and T. You. 2008. Simultaneous electrochemical determination of dopamine, uric acid and ascorbic acid using palladium nanoparticle-loaded carbon nanofibers modified electrode. *Biosens. Bioelectron*. 24:632–637.
970. Remita, H., P.F. Siril, I.M. Mbomekalle, B. Keita, and L. Nadjo. 2006. Activity evaluation of carbon paste electrodes loaded with platinum nanoparticles prepared in different radiolytic conditions. *J. Solid State Electrochem*. 10:506–511.
971. Shaidarova, L.G., I.A. Chelnokova, A.V. Gedmina, G.K. Budnikov, S.A. Ziganshina, A.A. Mozhanova, and A.A. Bukharaev. 2006. Electrooxidation of oxalic acid at a carbon-paste electrode with deposited palladium nanoparticles. *J. Anal. Chem*. 61:375–381.

972. Li, W. and S. Luo. 2009. Preparation of Ni nanoparticle-ionic liquid modified carbon paste electrode and detection of dopamine. *Fenxi Ceshi Xuebao* 28:1287–1290.
973. You, T. and Y. Liu. 2009. Method for preparing nonenzymatic glucose sensor from nickel nanoparticle/carbon nanofiber composite by electrospinning. *Faming Zhuanli Shenqing Gongkai Shuomingshu*. 10 pp. CODEN: CN 101603941 A 20091216.
974. Sun, W., X. Li, P. Qin, and K. Jiao. 2009. Electrodeposition of Co nanoparticles on the carbon ionic liquid electrode as a platform for myoglobin electrochemical biosensor. *J. Phys. Chem. C* 113:11294–11300.
975. Liu, Y., H. Teng, H. Hou, and T. You. 2009. Nonenzymatic glucose sensor based on renewable electrospun Ni nanoparticle-loaded carbon nanofiber paste electrode. *Biosens. Bioelectron*. 24:3329–3334.
976. Lai, G.S., H.L. Zhang, and D.Y. Han. 2008. Electrocatalytic response of dopamine at an iron nanoparticles-Nafion-modified carbon paste electrode. *Anal. Lett*. 41:3088–3099.
977. Wang, C.-Y. and X.-Y. Hu. 2005. Determination of Benorilate in pharmaceutical formulations and its metabolite in urine at a carbon paste electrode modified by silver nanoparticles. *Talanta* 67:625–633.
978. Wen, W., Y.-M. Tan, H.-Y. Xiong, and S.-F. Wang. 2010. Voltammetric and spectroscopic investigations of the interaction between colchicine and bovine serum albumin. *Intern. J. Electrochem. Sci*. 5:232–241.
979. Gao, H.-L. and J.-P. Li. 2008. Amperometric immunosensor based on magnetic inorganic bio-nanoparticles sensing films. *Fenxi Huaxue* 36:1614–1618.
980. Li, J. and H. Gao. 2008. A renewable potentiometric immunosensor based on Fe_3O_4 nanoparticles immobilized anti-IgG. *Electroanalysis* 20:881–887.
981. Yuan, Y.-H. and J.-P. Li. 2007. Biosensor based on immobilizing horseradish peroxidase on Fe_3O_4 nanoparticles. *Fenxi Huaxue* 35:1078–1082.
982. Fu, X.H. 2008. Magnetic-controlled non-competitive enzyme-linked voltammetric immunoassay for carcinoembryonic antigen. *Biochem. Eng. J*. 39:267–275.
983. Heli, H., S. Majdi, and N. Sattarahmady. 2010. Ultrasensitive sensing of N-acetyl–cysteine using an electrocatalytic transducer of nanoparticles of iron(III) oxide core-cobalt hexacyanoferrate shell. *Sens. Actuators B* B145:185–193.
984. Pham, T.T.H. and S.J. Sim. 2010. Electrochemical analysis of gold-coated magnetic nanoparticles for detecting immunological interaction. *J. Nanopart. Res*. 12:227–235.
985. Tang, D., R. Yuan, and Y. Chai. 2008. Magneto-controlled bioelectronics for the antigen-antibody interaction based on magnetic-core/gold-shell nanoparticles functionalized biomimetic interface. *Bioprocess Biosyst. Eng*. 31:55–61.
986. Qiu, J.D., M. Xiong, R.P. Liang, H.P. Peng, and F. Liu. 2009. Synthesis and characterization of ferrocene modified Fe_3O_4@Au magnetic nanoparticles and its application. *Biosens. Bioelectron*. 24:2649–2653.
987. Zhang, Y., G.M. Zeng, L. Tang, H.Y. Yu, and J.B. Li. 2007. Catechol biosensor based on immobilizing laccase to modified core-shell magnetic nanoparticles supported on carbon paste electrode. *Huanjing Kexue* 28:2320–2325.
988. Qiu, J., H. Peng, and R. Liang. 2007. Ferrocene-modified Fe_3O_4@SiO_2 magnetic nanoparticles as building blocks for construction of reagentless enzyme-based biosensors. *Electrochem. Commun*. 9:2734–2738.
979. Zhang, Y., G.-M. Zeng, L. Tang, D.-L. Huang, X.-Y. Jiang, and Y.-N. Chen. 2007. A hydroquinone biosensor using modified core-shell magnetic nanoparticles supported on carbon paste electrode. *Biosens. Bioelectron*. 22:2121–2126.
990. Liu, Z., Y. Liu, H. Yang, Y. Yang, G. Shen, and R. Yu. 2005. A phenol biosensor based on immobilizing tyrosinase to modified core-shell magnetic nanoparticles supported at a carbon paste electrode. *Anal. Chim. Acta* 533:3–9.
991. Mazloum-Ardakani, M., H. Beitollahi, M.A. Sheikh-Mohseni, H. Naeimi, and N. Taghavinia. 2010. Novel nanostructure electrochemical sensor for electrocatalytic determination of norepinephrine in the presence of high concentrations of acetaminophene and folic acid. *Appl. Catal. A* 378:195–201.
992. Mazloum-Ardakani, M., H. Rajabi, H. Beitollahi, B.B.F. Mirjalili, A. Akbari, and N. Taghavinia. 2010. Voltammetric determination of dopamine at the surface of TiO_2 nanoparticles modified carbon paste electrode. *Int. J. Electrochem. Sci*. 5:147–157.
993. Mazloum-Ardakani, M., H. Beitollahi, M.A.S. Mohseni, A. Benvidi, H. Naeimi, M. Nejati-Barzoki, and N. Taghavinia. 2010. Simultaneous determination of epinephrine and acetaminophen concentrations using a novel carbon paste electrode prepared with 2,2′-[1,2 butanediylbis(nitriloethylidyne)]-bis-hydroquinone and TiO_2 nanoparticles. *Colloids Surf. B* 76:82–87.
994. Lin, H., X. Ji, Q. Chen, Y. Zhou, C.E. Banks, and K. Wu. 2009. Mesoporous-TiO_2 nanoparticles based carbon paste electrodes exhibit enhanced electrochemical sensitivity for phenols. *Electrochem. Commun*. 11:1990–1995.

995. Mazloum Ardakani, M., A. Talebi, H. Naeimi, M. Nejati Barzoky, and N. Taghavinia. 2009. Fabrication of modified TiO_2 nanoparticle carbon paste electrode for simultaneous determination of dopamine, uric acid, and L-cysteine. *J. Solid State Electrochem*. 13:1433–1440.
996. Sun, W., X.Q. Li, and K. Jiao. 2008. Direct electron transfer of hemoglobin on a carbon ionic liquid electrode with TiO_2 nanoparticle as enhancer. *J. Chin. Chem. Soc. (Taiwan)* 55:1074–1079.
997. Mazloum Ardakani, M., Z. Taleat, H. Beitollahi, M. Salavati-Niasari, B.B.F. Mirjalili, and N. Taghavinia. 2008. Electrocatalytic oxidation and nanomolar determination of guanine at the surface of a molybdenum (VI) complex-TiO_2 nanoparticle modified carbon paste electrode. *J. Electroanal. Chem*. 624:73–78.
998. Parham, H. and N. Rahbar. 2010. Square-wave voltammetric determination of Methyl-parathion at ZrO_2-nanoparticles modified carbon paste electrode. *J. Hazard. Mater*. 177:1077–1084.
999. Sun, D., X. Xie, and H. Zhang. 2010. Surface effects of mesoporous silica modified electrode and application in electrochemical detection of dopamine. *Colloids Surf. B* 75:88–92.
1000. Wang, J. and J. Liu. 1993. Fumed-silica containing carbon-paste dehydrogenase biosensors. *Anal. Chim. Acta* 284:385–391.
1001. Hrbac, J., V. Halouzka, R. Zboril, K. Papadopoulos, and T. Triantis. 2007. Carbon electrodes modified by nanoscopic iron(III) oxides to assemble chemical sensors for the amperometric detection of hydrogen peroxide. *Electroanalysis* 19:1850–1854.
1002. Kang, J.W., Z.F. Li, and X.Q. Lu. 2005. Electrocatalytic redox of 3-nitrobenzaldehyde thiosemicarbazone at nano-γ-Al_2O_3 modified electrodes. *Xibei Shifan Daxue Xuebao, Ziran Kexueban* 41:47–51.
1003. Reddy, S., B.E.K. Swamy, U. Chandra, B.S. Sherigara, and H. Jayadevappa. 2010. Synthesis of CdO nanoparticles and their modified carbon paste electrode for determination of dopamine and ascorbic acid by using cyclic voltammetry technique. *Int. J. Electrochem. Sci*. 5:10–17.
1004. Zhang, B., H. Liu, K. Jiao, X. Fu, and W. Sun. 2009. Detection for DNA specific sequences using the polarographic complex adsorptive wave of lead. *Qingdao Keji Daxue Xuebao, Ziran Kexueban* 30:95–100.
1005. Xie, J.K., K. Jiao, H. Liu, Q.X. Wang, S.F. Liu, and X. Fu. 2008. DNA electrochemical sensor based on PbSe nanoparticle for the sensitive detection of CaMV35S transgene gene sequence. *Fenxi Huaxue* 36:874–878.
1006. Xia, Q., X. Chen, K. Zhao, and J. Liu. 2008. Synthesis and characterizations of polycrystalline walnut-like CdS nanoparticle by solvothermal method with PVP as stabilizer. *Mater. Chem. Phys*. 111:98–105.
1007. Li, J.-P. and Y.-H. Yuan. 2006. Synthesis of magnetic prussian blue nanoparticles and the fabrication of chemically modified electrode. *Huaxue Xuebao* 64:261–265.
1008. Sheng, Q., Y. Shen, H. Zhang, and J. Zheng. 2006. Neodymium (III) hexacyanoferrate (II) nanoparticles induced by enzymatic reaction and their use in biosensing of glucose. *Electrochim. Acta* 53:4687–4692.
1009. Wang, J. and A.S. Arribas. 2006. Biocatalytically induced formation of cupric ferrocyanide nanoparticles and their application for electrochemical and optical biosensing of glucose. *Small* 2:129–134.
1010. Arribas, A.S., T. Vazquez, J. Wang, A. Mulchandani, and W. Chen. 2005. Electrochemical and optical bioassays of nerve agents based on the organophosphorus-hydrolase mediated growth of cupric ferrocyanide nanoparticles. *Electrochem. Commun*. 7:1371–1734.
1011. He, Q., D. Zheng, and S. Hu. 2009. Development of a novel serotonin sensor based on Na-montmorillonite nanoparticles modified carbon paste electrode. *Anal. Chem. Indian J*. 8:464–470.
1012. Khalilzadeh, B., M. Hasanzadeh, B. Bakhoday, A. Babaei, M. Hajjizadeh, and M. Zendehdel. 2009. Zeolite nanoparticle modified carbon paste electrode as a biosensor for simultaneous determination of dopamine and tryptophan. *J. Chin. Chem. Soc. (Taiwan)* 56:789–796.
1013. Li, X., X. Wang, G. Liu, and H. Lin. 2005. Study on preparation, electrochemistry actions of $[(C_2H_5)_4N]_4GeMo_{12}O_{40}$ nanoparticles bulk-modified carbon paste electrode. *Dongbei Shida Xuebao, Ziran Kexueban* 37:36–40.
1014. Wang, X., Z. Kang, Y. Lan, and E. Wang. 2003. Molybdovanadophosphate tetraethylammounium nanoparticle bulk-modified carbon paste electrode and its electrocatalysis toward the reduction of hydrogen peroxide. *Fenxi Huaxue* 31:941–944.
1015. Wang, X., Z. Kang, E. Wang, and C. Hu. 2002. Preparation, electrochemical property and application in chemically bulk-modified electrode of a hybrid inorganic–organic silicomolybdate nanoparticles. *Mater. Lett*. 56:393–396.
1016. Wang, X.-L., Z-.H. Kang, E.-B. Wang, and C.-W. Hu. 2002. Inorganic–organic hybrid 18-molybdodiphosphate nanoparticles bulk-modified carbon paste electrode and its electrocatalysis. *Chin. J. Chem*. 20:777–783.

1017. Bi, L.H., W.H. Zhou, H.Y. Wang, and S.Y. Dong. 2008. Preparation of nanoparticles of bipyridineruthenium and silicotungstate and application as electrochemiluminescence sensor. *Electroanalysis* 20:996–1001.
1018. Fritzen-Garcia, M.B., I.R.W.Z. Oliveira, B.G. Zanetti-Ramos, O. Fatibello-Filho, V. Soldi, A.A. Pasa, and T.B. Creczynski-Pasa. 2009. Carbon paste electrode modified with pine kernel peroxidase immobilized on pegylated polyurethane nanoparticles. *Sens. Actuators B* 139:570–575.
1019. de Oliveira, I.R.W.Z., M.B. Fritzen-Garcia, B.G. Zanetti-Ramos, O. Fatibello-Filho, A.A. Pasa, and T.B. Creczynski-Pasa. 2008. Pegylated polyurethane nanoparticles as support for a biosensor construction based on peroxidase extracted from pine kernel (*Araucaria angustifolia*). *ECS Trans*. 16:483–490.
1020. Zhu, Y.-C., J.-J. Guan, L. Cao, and J. Hao. 2010. Determination of trace iodide in iodised table salt on silver sulfate-modified carbon paste electrode by differential pulse voltammetry with electrochemical solid phase nano-extraction. *Talanta* 80:1234–1238.
1021. Liu, K.-E. and H.D. Abruna. 1989. Electroanalysis of aromatic aldehydes with modified carbon paste electrodes. *Anal. Chem*. 61:2599–2602.
1022. Blaha, C.D. and R.F. Lane. 1983. Chemically modified electrode for in vivo monitoring of brain catecholamines. *Brain Res. Bull*. 10:861–864.
1023. Broderick, P.A. 1985. In vivo electrochemical studies of rat striatal dopamine and serotonin release after morphine. *Life Sci*. 36:2269–2275.
1024. Lane, R.F., C.D. Blaha, and A.G. Phillips. 1986. In vivo electrochemical analysis of cholecystokinin-induced inhibition of dopamine release in the nucleus accumbens. *Brain Res*. 397:200–204.
1025. Lane, R.F., C.D. Blaha, and S.P. Hari. 1987. Electrochemistry in vivo: Monitoring dopamine release in the brain of the conscious, freely moving rat. *Brain Res. Bull*. 19:19–27.
1026. Glynn, G.E. and B.K. Tamamoto. 1989. In vivo neurochemical and anatomical heterogeneity of the dopamine uptake system in the rat caudate putamen. *Brain Res*. 481:235–241.
1027. Ormonde, D.E. and R.D. O'Neill. 1989. Altered response of carbon paste electrodes after contact with brain tissue. Implications for modified electrode use in vivo. *J. Electroanal. Chem*. 261:463–469.
1028. Lyne, P.D. and R.D. O'Neill. 1989. Selectivity of stearate-modified carbon paste electrodes for dopamine and ascorbic acid. *Anal. Chem*. 61:2323–2324.
1029. Gelbert, M.B. and D.J. Curran. 1986. Alternating current voltammetry of dopamine and ascorbic acid at carbon paste and stearic acid modified carbon paste electrodes. *Anal. Chem*. 58:1028–1032.
1030. Khodari, M., J.-M. Kauffmann, G.J. Patriarche, and M.A. Ghandour. 1989. Preconcentration and determination of promethazine at lipid-modified carbon paste electrodes. *Electroanalysis* 1:501–505.
1031. Itaya, K., I. Uchida, and V.D. Neff. 1986. Electrochemistry of polynuclear transition metal cyanides: Prussian blue and its analogues. *Acc. Chem. Res*. 19:162–168.
1032. Zen, J.M., A.S. Kumar, and H.W. Chen. 2001. Electrochemical behavior of stable cinder/prussian blue analogue and its mediated nitrite oxidation. *Electroanalysis* 13:1171–1178.
1033. Zen, J.M., A.S. Kumar, and H.W. Chen. 2000. Electrochemical formation of Prussian blue in natural iron-intercalated clay and cinder matrixes. *Electroanalysis* 12:542–545.
1034. Teixeira, M.F.S., A. Segnini, F.C. Moraes, L.H. Marcolino-Junior, O. Fatibello-Filho, and E.T.G. Cavalheiro. 2003. Determination of vitamin B6 (pyridoxine) in pharmaceutical preparations by cyclic voltammetry at a copper(II) hexacyan-ferrate(III) modified carbon paste electrode. *J. Braz. Chem. Soc*. 14:316–321.
1035. Wang, J., X. Zhang, and L. Chen. 2000. Comparison of glucose enzyme electrodes based on dispersed rhodium particles and cupric hexacyanoferrate within carbon paste transducers. *Electroanalysis* 12:1277–1281.
1036. Toito Suarez, W., L.H. Marcolino, Jr., and O. Fatibello-Filho. 2006. Voltammetric determination of N-acetylcysteine using a carbon paste electrode modified with copper(II) hexacyanoferrate(III). *Microchem. J*. 82:163–167.
1037. Ojani, R., J.B. Raoof, and B. Norouzi. 2008. Cu(II) hexacyanoferrate(III) modified carbon paste electrode: Application for electrocatalytic detection of nitrite. *Electroanalysis* 20:1996–2002.
1038. Abbaspour, A. and M.A. Mehrgardi. 2004. Electrocatalytic oxidation of guanine and DNA on a carbon paste electrode modified by cobalt hexacyanoferrate films. *Anal. Chem*. 76:5690–5696.
1039. Abbaspour, A. and M.A. Kamyabi. 2005. Electrocatalytic oxidation of hydrazine on a carbon paste electrode modified by hybrid hexacyanoferrates of copper and cobalt films. *J. Electroanal. Chem*. 576:73–83.
1040. Abbaspour, A. and A. Ghaffarinejad. 2008. Electrocatalytic oxidation of L-cysteine with a stable copper-cobalt hexacyanoferrate electrochemically modified carbon paste electrode. *Electrochim. Acta* 53:6643–6650.

1041. Siroueinejad, A., A. Abbaspour, and M. Shamsipur. 2009. Electrocatalytic oxidation and determination of sulfite with a novel copper-cobalt hexacyanoferrate modified carbon paste electrode. *Electroanalysis* 21:1387–1393.
1042. Shaidarova, L.G., S.A. Ziganshina, L.N. Tikhonova, and G.K. Budnikov. 2003. Electrocatalytic oxidation and flow-injection determination of sulfur-containing amino acids at graphite electrodes modified with a ruthenium hexacyanoferrate film. *J. Anal. Chem*. 58:1144–1150.
1043. Hosseinzadeh, R., R.E. Sabzi, and K. Ghasemlu. 2009. Effect of cetyltrimethyl ammonium bromide (CTAB) in determination of dopamine and ascorbic acid using carbon paste electrode modified with tin hexacyanoferrate. *Colloids Surf. B* 68:213–217.
1044. Farhadi, K., F. Kheiri, and M. Golzan. 2008. Th(IV)-hexacyanoferrate modified carbon paste electrode as a new electrocatalytic probe for simultaneous determination of ascorbic acid and dopamine from acidic media. *J. Braz. Chem. Soc*. 19:1405–1412.
1045. Sabzi, R.E., A. Hasanzadeh, K. Ghasemlu, and P. Heravi. 2007. Preparation and characterization of carbon paste electrode modified with tin and hexacyanoferrate ions. *J. Serb. Chem. Soc*. 72:993–1002.
1046. Sadakane, M. and E. Steckhan. 1998. Electrochemical properties of polyoxometalates as electrocatalysts. *Chem. Rev*. 98:219–237.
1047. Wang, X., E. Wang, and C. Hu. 2001. Hybrid inorganic–organic material containing 12-molybdophosphate bulk-modified carbon paste electrode. *Chem. Lett*. 1030–1031.
1048. Wang, X.L., E.B. Wang, Y. Lan, and C.W. Hu. 2002. Renewable PMo12-based inorganic–organic hybrid material bulk-modified carbon paste electrode: Preparation, electrochemistry and electrocatalysis. *Electroanalysis* 14:1116–1121.
1049. Han, Z., Y. Zhao, J. Peng, Y. Feng, J. Yin, and Q. Liu. 2005. The electrochemical behavior of Keggin polyoxometalate modified by tricyclic, aromatic entity. *Electroanalysis* 17:1097–1102.
1050. Han, Z., Y. Gao, J. Wang, and C. Hu. 2009. Preparation and electrochemistry properties of a new polyoxometalate-based supramolecular assembly. *Z. Anorg. Allg. Chem*. 635:2665–2670.
1051. Han, Z., Y. Zhao, J. Peng, Q. Liu, and E. Wang. 2005. Inorganic–organic hybrid polyoxometalate containing supramolecular helical chains: Preparation, characterization and application in chemically bulk-modified electrode. *Electrochim. Acta* 51:218–224.
1052. Ojani, R., M.S. Rahmanifar, and P. Naderi. 2008. Electrocatalytic reduction of nitrite by phosphotungstic heteropolyanion. Application for its simple and selective determination. *Electroanalysis* 20:1092–1098.
1053. Wang, X., J. Li, H. Hu, H. Lin, A. Tian, and Y. Chen. 2010. Two new organic–inorganic hybrids based on $[SiW_{12}O_{40}]_4$-anion: Hydrothermal syntheses, crystal structures, and electrochemical properties. *J. Inorg. Organomet. Polym. Mater*. 20:361–368.
1054. Zhang, L., H. Xue, N. Li, W. You, Z. Sun, and Z. Zhu. 2009. Hydrothermal synthesis and characterization of $3H_2[H_2PMo_8O_{30}]\cdot 4H_2O$ and its electrocatalysis toward the reduction of hydrogen peroxide. *Huaxue Yanjiu Yu Yingyong* 21:1408–1413.
1055. Mousty, C. 2004. Sensors and biosensors based on clay-modified electrodes—new trends. *Appl. Clay Sci*. 27:159–177.
1056. Mousty, C. 2010. Biosensing applications of clay-modified electrodes: A review. *Anal. Bioanal. Chem*. 396:315–325.
1057. Macha, S.M and A. Fitch. 1998. Clays as architectural units at modified electrodes. *Mikrochim. Acta* 128:1–18.
1058. Wang, J. and T. Martinez. 1989. Trace analysis at clay-modified carbon paste electrodes. *Electroanalysis* 1:167–172.
1059. Kula, P. and Z. Navratilova. 1996. Voltammetric copper(II) determination with a montmorillonite-modified carbon paste electrode. *Fresenius J. Anal. Chem*. 354:692–695.
1060. Raber, G., K. Kalcher, and M. Stadlober. 1998. New voltammetric methods for the determination of heavy metals using a montmorillonite modified carbon paste electrode. *Sci. Pap. Univ. Pardubice Ser. A* 3:163–193.
1061. Kula, P., Z. Navratilova, P. Kulova, and M. Kotoucek. 1999. Sorption and determination of Hg(II) on clay modified carbon paste electrodes. *Anal. Chim. Acta* 385:91–101.
1062. Navratilova, Z. and P. Kula. 2000. Determination of gold using clay modified carbon paste electrode. *Fresenius J. Anal. Chem*. 367:369–372.
1063. Kula, P. and Z. Navratilova. 2001. Anion exchange of gold chloro complexes on carbon paste electrode modified with montmorillonite for determination of gold in pharmaceuticals. *Electroanalysis* 13:795–798.
1064. Huang, W., C. Yang, and S. Zhang. 2002. Anodic stripping voltammetric determination of mercury by use of a sodium montmorillonite-modified carbon-paste electrode. *Anal. Bioanal. Chem*. 374:998–1001.

1065. Huang, W. 2004. Voltammetric determination of bismuth in water and nickel metal samples with a sodium montmorillonite (SWy-2) modified carbon paste electrode. *Microchim. Acta* 144:125–129.
1066. Huang, W., S. Zhang, and Y. Wu. 2006. Electrochemical behavior and detection of guanine using a sodium montmorillonite-modified carbon paste electrode. *Russ. J. Electrochem*. 42:153–156.
1067. Sun, D., C. Wan, G. Li, and K. Wu. 2007. Electrochemical determination of lead(II) using a montmorillonite calcium-modified carbon paste electrode. *Microchim. Acta* 158:255–260.
1068. Lin, H., G. Li, and K. Wu. 2007. Electrochemical determination of Sudan I using montmorillonite calcium modified carbon paste electrode. *Food Chem*. 107:531–536.
1069. Xu, G.Y., J.S. Fan, and K. Jiao. 2008. Immobilizing DNA on clay mineral modified carbon paste electrodes. *Appl. Clay Sci*. 40:119–123.
1070. Beltagi, A.M. 2009. Utilization of a montmorillonite-Ca-modified carbon paste electrode for the stripping voltammetric determination of diflunisal in its pharmaceutical formulations and human blood. *J. Appl. Electrochem*. 39:2375–2384.
1071. Hernandez, P., J. Vicente, M. Gonzalez, and L. Hernandez. 1990. Voltammetric determination of linuron at a carbon-paste electrode modified with sepiolite. *Talanta* 37:789–794.
1072. Hernandez, L., P. Hernandez, and E. Lorenzo. 1990. Direct determination of bentazepam in a biological sample with a sepiolite-modified carbon paste electrode. *Electroanalysis* 2:643–646.
1073. Chicharro, M., A. Zapardiel, E. Bermejo, J.A. Perez-Lopez, and L. Hernandez. 1995. Determination of ephedrine in human urine by square wave voltammetry with a sepiolite-modified carbon paste electrode. *Analusis (Bruxelles)* 23:131–134.
1074. Hernandez, L., P. Hernandez, M.H. Blanco, E. Lorenzo, and E. Alda. 1988. Determination of flunitrazepam by differential-pulse voltammetry using a bentonite-modified carbon paste electrode. *Analyst (U.K.)* 113:1719–1722.
1075. Naranjo Rodriguez, I., M. Barea Zamora, J.M. Barbera Salvador, J.A. Munoz Leyva, M.P. Hernandez Artiga, and J.L.H.H. de Cisneros. 1997. Voltammetric determination of 2-nitrophenol at a bentonite-modified carbon paste electrode. *Mikrochim. Acta* 126:87–92.
1076. Naranjo Rodriguez, I., J.A. Munoz Leyva, and J.L.H.H. de Cisneros. 1997. Use of a carbon paste modified electrode for the determination of 2-nitrophenol in a flow system by differential pulse voltammetry. *Anal. Chim. Acta* 344:167–173.
1077. Naranjo Rodriguez, I., J.A. Munoz Leyva, and J.L.H.H. de Cisneros. 1997. Use of a bentonite-modified carbon paste electrode for the determination of some phenols in a flow system by differential-pulse voltammetry. *Analyst (U.K.)* 122:601–604.
1078. Marchal, V., F. Barbier, F. Plassard, R. Faure, and O. Vittori. 1999. Determination of cadmium in bentonite clay mineral using a carbon paste electrode. *Fresenius J. Anal. Chem*. 363:710–712.
1079. Rezaei, B., M. Ghiaci, and M.E. Sedaghat. 2008. A selective modified bentonite-porphyrin carbon paste electrode for determination of Mn(II) by using anodic stripping voltammetry. *Sens. Actuators B* B131:439–447.
1080. Kalcher, K., I. Grabec, G. Raber, X. Cai, G. Tavcar, and B. Ogorevc. 1995. The vermiculite-modified carbon paste electrode as a model system for preconcentrating mono- and divalent cations. *J. Electroanal. Chem*. 386:149–156.
1081. Svegl, I.G., B. Ogorevc, and V. Hudnik. 1996. A methodological approach to the application of a vermiculite-modified carbon paste electrode in interaction studies: Influence of some pesticides on the uptake of Cu(II) from a solution to the solid phase. *Fresenius J. Anal. Chem*. 354:770–773.
1082. Svegl, I.G., M. Kolar, B. Ogorevc, and B. Pihlar. 1998. Vermiculite clay mineral as an effective carbon paste electrode modifier for the preconcentration and voltammetric determination of Hg(II) and Ag(I) ions. *Fresenius J. Anal. Chem*. 361:358–362.
1083. Oropeza, M.T., I. Gonzalez, M.M. Teutli-Leon, and L.F. Chazaro. 2005. Voltammetric study of cadmium-kaolinite system using modified carbon paste electrodes. In *Applications of Analytical Chemistry in Environmental Research*, Ed. M. Palomar, pp. 67–77. Trivandrum, India: Research Signpost.
1084. El Mhammedi, M.A., M. Bakasse, R. Najih, and A. Chtaini. 2009. A carbon paste electrode modified with kaolin for the detection of diquat. *Appl. Clay Sci*. 43:130–134.
1085. El Mhammedi, M.A., M. Achak, M. Bakasse, R. Bachirat, and A. Chtaini. 2010. Accumulation and trace measurement of paraquat at kaolin-modified carbon paste electrode. *Mater. Sci. Eng. C* 30:833–838.
1086. Ozkan, D., K. Kerman, B. Meric, P. Kara, H. Demirkan, M. Polverejan, T.J. Pinnavaia, and M. Ozsoz. 2002. Heterostructured fluorohectorite clay as an electrochemical sensor for the detection of 2,4-dichlorophenol and the herbicide 2,4-D. *Chem. Mater*. 14:1755–1761.
1087. Dilgin, Y., Z. Dursun, and G. Nisli. 2003. Flow injection amperometric determination of ascorbic acid using a photoelectrochemical reaction after immobilization of methylene blue on muscovite. *Turk. J. Chem*. 27:167–180.

1088. Tonle, I.K., E. Ngameni, D. Njopwouo, C. Carteret, and A. Walcarius. 2003. Functionalization of natural smectite-type clays by grafting with organosilanes: Physico-chemical characterization and application to mercury(II) uptake. *Phys. Chem. Chem. Phys*. 5:4951–4961.
1089. Tonle, I.K., E. Ngameni, and A. Walcarius. 2005. Preconcentration and voltammetric analysis of mercury(II) at a carbon paste electrode modified with natural smectite-type clays grafted with organic chelating groups. *Sens. Actuators B* B110:195–203.
1090. Tonle, I.K., E. Ngameni, H.L. Tcheumi, V. Tchieda, C. Carteret, and A. Walcarius. 2008. Sorption of methylene blue on an organoclay bearing thiol groups and application to electrochemical sensing of the dye. *Talanta* 74:489–497.
1091. Shan, D., S. Cosnier, and C. Mousty. 2003. Layered double hydroxides: An attractive material for electrochemical biosensor design. *Anal. Chem*. 75:3872–3879.
1092. Therias, S. and C. Mousty. 1995. Electrodes modified with synthetic anionic clays. *Appl. Clay Sci*. 10:147–162.
1093. Therias, S., C. Mousty, C. Forano, and J.P. Besse. 1996. Electrochemical transfer at anionic clay modified electrodes. Case of 2,2′-Azinobis(3-ethylbenzothiazoline-6-sulfonate). *Langmuir* 12:4914–4920.
1094. Labuda, J. and M. Hudakova. 1997. Hexacyanoferrate-anion exchanger-modified carbon paste electrodes. *Electroanalysis* 9:239–242.
1095. Domenech, A., A. Ribera, A. Cervilla, and E.L. Lopis. 1998. Electrochemistry of hydrotalcite-supported bis(2-mercapto-2,2-diphenyl-ethanoate) dioxymolybdate complexes. *J. Electroanal. Chem*. 458:31–41.
1096. Walcarius, A., G. Lefevre, J.P. Rapin, G. Renaudin, and M. Francois. 2001. Voltammetric detection of iodide after accumulation by Friedel's salt. *Electroanalysis* 13:313–320.
1097. Svegl, I.G. and B. Ogorevc. 2000. Soil-modified carbon paste electrode: A useful tool in environmental assessment of heavy metal ion binding interactions. *Fresenius J. Anal. Chem*. 367:701–706.
1098. Reddy, T.M. and S.J. Reddy. 2004. Differential Pulse Adsorptive stripping voltammetric determination of Nifedipine and Nimodipine in pharmaceutical formulations, urine, and serum samples by using a clay-modified carbon-paste electrode. *Anal. Lett*. 37:2079–2098.
1099. Hu, S. 1999. Electrocatalytic reduction of molecular oxygen on a sodium montmorillonite-methyl viologen carbon paste chemically modified electrode. *J. Electroanal. Chem*. 463:253–257.
1100. Yang, H., X. Zheng, W. Huang, and K. Wu. 2008. Modification of montmorillonite with cationic surfactant and application in electrochemical determination of 4-chlorophenol. *Colloids Surf. B* 65:281–284.
1101. Huang, W., D. Zhou, X. Liu, and X. Zheng. 2009. Electrochemical determination of phenol using CTAB-functionalized montmorillonite electrode. *Environ. Technol*. 30:701–706.
1102. Dias Filho, N.L., D.R. do Carmo, F. Gessner, and A.H. Rosa. 2005. Preparation of a clay-modified carbon paste electrode based on 2-thiazoline-2-thiol-hexadecylammonium sorption for the sensitive determination of mercury. *Anal. Sci*. 21:1309–1316.
1103. Dias Filho, N.L., D.R. do Carmo, and A.H. Rosa. 2006. Selective sorption of mercury(ii) from aqueous solution with an organically modified clay and its electroanalytical application. *Sep. Sci. Technol*. 41:733–746.
1104. Rolison, D.R. 1990. Zeolite-modified electrodes and electrode-modified zeolites. *Chem. Rev*. 90:867–878.
1105. Walcarius, A. 1995. Zeolite-modified electrodes: Analytical applications and prospects. *Electroanalysis* 8:971–986.
1106. Creasy, K.E. and B.R. Shaw. 1988. Simplex optimization of electroreduction of oxygen mediated by methyl viologen supported on zeolite-modified carbon paste electrode. *Electrochim. Acta* 33:551–556.
1107. Walcarius, A., L. Lamberts, and E.G. Derouane. 1993. The methyl viologen incorporated zeolite modified carbon paste electrode. Part 2. Ion exchange and electron transfer mechanism in aqueous medium. *Electrochim. Acta* 38:2267–2276.
1108. Wang, J. and A. Walcarius. 1996. Zeolite-modified carbon paste electrode for selective monitoring of dopamine. *J. Electroanal. Chem*. 407:183–187.
1109. Marko Varga, G., E. Burestedt, C.J. Svensson, J. Emneus, L. Gorton, T. Ruzgas, M. Lutz, and K.K. Unger. 1996. Effect of HY-zeolites on the performance of tyrosinase-modified carbon paste electrodes. *Electroanalysis* 8:1121–1126.
1110. Zou, M.-Z., H.-D. Xu, J. Lu, and Q.-H. Ru. 1997. Studies on zeolite modified electrode. Part I. Ascorbic acid sensor based on carbon paste electrode containing Fe(III)Y zeolite. *Chin. Chem. Lett*. 8:247–250.
1111. Walcarius, A. and L. Lamberts. 1998. The methylviologen-doped zeolite modified electrode as a new detector for suppressor free ion chromatography. *Anal. Lett*. 31:585–599.
1112. Guerra, S.V., C.R. Xavier, S. Nakagaki, and L.T. Kubota. 1998. Electrochemical behavior of copper porphyrin synthesized into zeolite cavity. A sensor for hydrazine. *Electroanalysis* 10:462–466.

1113. Guerra, S.V., L.T. Kubota, C.R. Xavier, and S. Nakagaki. 1999. Experimental optimization of selective hydrazine detection in flow injection analysis using a carbon paste electrode modified with copper porphyrin occluded into zeolite cavity. *Anal. Sci*. 15:1231–1234.
1114. Walcarius, A., P. Mariaulle, and L. Lamberts. 1999. Use of a zeolite-modified electrode for the study of the methylviologen-sodium ion-exchange in zeolite Y. *J. Electroanal. Chem*. 463:100–108.
1115. Walcarius, A. 1999. Factors affecting the analytical applications of zeolite modified electrodes: Indirect detection of nonelectroactive cations. *Anal. Chim. Acta* 388:79–91.
1116. Walcarius, A., P. Mariaulle, C. Louis, and L. Lamberts. 1999. Amperometric detection of nonelectroactive cations in electrolyte-free flow systems at zeolite modified electrodes. *Electroanalysis* 11:393–400.
1117. Walcarius, A., S. Rozanska, J. Bessiere, and J. Wang. 1999. Screen-printed zeolite-modified carbon electrodes. *Analyst* 124:1185–1190.
1118. Serban, S. and N. El Murr. 2003. Use of ferricinium exchanged zeolite for mediator stabilization and analytical performances enhancement of oxidase-based carbon paste biosensors. *Anal. Lett*. 36:1739–1753.
1119. Zhuang, Y., D. Zhang, and H. Ju. 2005. Sensitive determination of heroin based on electrogenerated chemiluminescence of tris(2,2′-bipyridyl)ruthenium(II) immobilized in zeolite Y modified carbon paste electrode. *Analyst* 130:534–540.
1120. Zendehdel, M., A. Babaei, and S. Alami. 2007. Intercalation of xylenol orange, morin and calmagite into NaY zeolite and their application in dye/zeolite modified electrode. *J. Inclusion Phenom. Macrocyclic Chem*. 59:345–349.
1121. Ardakani, M.M., Z. Akrami, H. Kazemian, and H.R. Zare. 2008. Accumulation and voltammetric determination of cobalt at zeolite-modified electrodes. *J. Anal. Chem*. 63:184–191.
1122. Babaei, A., M. Zendehdel, B. Khalilzadeh, and A. Taheri. 2008. Simultaneous determination of tryptophan, uric acid and ascorbic acid at iron(III) doped zeolite modified carbon paste electrode. *Colloids Surf. B* 66:226–232.
1123. Senthilkumar, S. and R. Saraswathi. 2009. Electrochemical sensing of cadmium and lead ions at zeolite-modified electrodes: Optimization and field measurements. *Sens. Actuators B* B141:65–75.
1124. Babaei, A., S. Mirzakhani, and B. Khalilzadeh. 2009. A sensitive simultaneous determination of epinephrine and tyrosine using an iron(III) doped zeolite-modified carbon paste electrode. *J. Braz. Chem. Soc*. 20:1862–1869.
1125. Babaei, A., B. Khalilzadeh, and M. Afrasiabi. 2010. A new sensor for the simultaneous determination of paracetamol and mefenamic acid in a pharmaceutical preparation and biological samples using copper(II) doped zeolite modified carbon paste electrode. *J. Appl. Electrochem*. 40:1537–1543.
1126. Teixeira, M.F.S., M.F. Bergamini, C.M.P. Marques, and N. Bocchi. 2004. Voltammetric determination of L-dopa using an electrode modified with trinuclear ruthenium ammine complex (Ru-red) supported on Y-type zeolite. *Talanta* 63:1083–1088.
1127. Chen, B., N.K. Goh, and L.S. Chia. 1996. Determination of copper by zeolite molecular sieve modified electrode. *Electrochim. Acta* 42:595–604.
1128. Gligor, D., L.M. Muresan, A. Dumitru, and I.C. Popescu. 2007. Electrochemical behavior of carbon paste electrodes modified with methylene green immobilized on two different X type zeolites. *J. Appl. Electrochem*. 37:261–267.
1129. Varodi, C., D. Gligor, and L.M. Muresan. 2007. Carbon paste electrodes modified with methylene blue immobilized on a synthetic zeolite. *Rev. Chim. (Roum.)* 52:81–88.
1130. Varodi, C., D. Gligor, A. Maicaneanu, and L.M. Muresan. 2007. Carbon paste electrode incorporating calcium-exchanged zeolite modified with methylene blue for amperometric detection of NADH. *Rev. Chim. (Roum.)* 58:890–894.
1131. Wang, J. and T. Martinez. 1988. Accumulation and voltammetric measurement of silver at zeolite-containing carbon-paste electrodes. *Anal. Chim. Acta* 207:95–102.
1132. Domenech, A., I. Casades, and H. Garcia. 1999. Electrochemical evidence for an impeded attack of water at anthracene and thianthrene radical ions located on the outermost layers of zeolites. *J. Org. Chem*. 64:3731–3735.
1133. Arvand, M., S. Sohrabnezhad, M.F. Mousavi, M. Shamsipur, and M.A. Zanjanchi. 2003. Electrochemical study of methylene blue incorporated into mordenite type zeolite and its application for amperometric determination of ascorbic acid in real samples. *Anal. Chim. Acta* 491:193–201.
1134. Arvand, M., M. Vaziri, and M. Vejdani. 2010. Electrochemical study of atenolol at a carbon paste electrode modified with mordenite type zeolite. *Mater. Sci. Eng. C* 30:709–714.
1135. Walcarius, A., V. Vromman, and J. Bessière. 1999. Flow injection indirect amperometric detection of ammonium ions using a clinoptilolite-modified electrode. *Sens. Actuators B* B56:136–143.

1136. Alpat, S., S.K. Alpat, and A. Telefoncu. 2005. A sensitive determination of dopamine in the presence of ascorbic acid using a nafion-coated clinoptilolite-modified carbon paste electrode. *Anal. Bioanal. Chem*. 383:695–700.
1137. Ardakani, M.M., M.A. Karimi, M.H. Mashhadizadeh, M. Pesteh, M.S. Azimi, and H. Kazemian. 2007. Potentiometric determination of monohydrogen arsenate by zeolite-modified carbon-paste electrode. *Int. J. Environ. Anal. Chem*. 87:285–294.
1138. Castro Martins, S., S. Khouzami, A. Tuel, Y. Ben Taarit, N. El Murr, and A. Sellami. 1993. Characterization of titanium silicalite using TS-1-modified carbon paste electrodes. *J. Electroanal. Chem*. 350:15–28.
1139. Castro Martins, S., A. Tuel, and Y. Ben Taarit. 1994. Characterization of titanium silicalites using cyclic voltammetry. *Stud. Surf. Sci. Catal*. 84:501–508.
1140. Arvand, M., M.A. Zanjanchi, and A. Islamnezhad. 2009. Zeolite-modified carbon-paste electrode as a selective voltammetric sensor for detection of tryptophan in pharmaceutical preparations. *Anal. Lett*. 42:727–738.
1141. Gligor, D., L. Muresan, and I.C. Popescu. 2004. Carbon paste electrodes incorporating methylene green-modified zeolite. *Acta Univ. Cibiniensis Ser. F (Roum.)* 7:29–35.
1142. Kilinc Alpat, S., U. Yuksel, and H. Akcay. 2005. Development of a novel carbon paste electrode containing a natural zeolite for the voltammetric determination of copper. *Electrochem. Commun*. 7:130–134.
1143. Zacahua Tlacuatl, G., J.J.C. Arellano, and A. Manzo-Robledo. 2009. Electrochemical characterization of carbon paste electrodes modified with natural zeolite. *Chem. Eng. Commun*. 196:1178–1188.
1144. Gligor, D., A. Maicaneanu, and A. Walcarius. 2010. Iron-enriched natural zeolite modified carbon paste electrode for H_2O_2 detection. *Electrochim. Acta* 55:4050–4056.
1145. Del Mar Cordero Rando, M., M. Barea Zamora, J.M. Barbera Salvador, I. Naranjo Rodriguez, J.A. Munoz Leyva, and J.L.H. de Cisneros. 1999. Electrochemical study of 4-nitrophenol at a modified carbon paste electrode. *Mikrochim. Acta* 132:7–11.
1146. Del Mar Cordero Rando, M., I. Naranjo Rodriguez, and J. H.H. de Cisneros. 1998. Voltammetric study of 2-methyl-4,6-dinitrophenol at a modified carbon paste electrode. *Anal. Chim. Acta* 370:231–238.
1147. Naranjo-Rodriguez, I., J.A. MunozLeyva, and J.L.H. de Cisneros. 2003. Flow injection study of 2,4,6-trichlorophenol by differential pulse voltammetry at a zeolite-modified carbon paste electrode. *Bull. Electrochem*. 19:289–294.
1148. Mazloum Ardakani, M., Z. Akrami, H. Kazemian, and H.R. Zare. 2009. Preconcentration and electroanalysis of copper at zeolite modified carbon paste electrode. *Int. J. Electrochem. Sci*. 4:308–319.
1149. Ejhieh, A.N. and N. Masoudipour. 2010. Application of a new potentiometric method for determination of phosphate based on a surfactant-modified zeolite carbon-paste electrode (SMZ-CPE). *Anal. Chim. Acta* 658:68–74.
1150. Stara, V. and M. Kopanica. 1989. Chemically modified carbon paste and carbon composite electrodes. *Electroanalysis* 1:251–256.
1151. Kopanica, M. and V. Stara. 1991. Silica gel-modified carbon composite electrodes. *Electroanalysis* 3:13–16.
1152. Barrio, R.J., Z. Gomez de Balugera, and M. Aranzazu Goicolea. 1993. Utilization of a silica-modified carbon paste electrode for the direct determination of todralazine in biological fluids. *Anal. Chim. Acta* 273:93–99.
1153. Wang, J. and N. Naser. 1994. Improved performance of carbon paste amperometric biosensors through the incorporation of fumed silica. *Electroanalysis* 6:571–575.
1154. Fernandez de Betono, S., A. Arranz, A. Cid, J.M. Moreda, and J.F. Arranz. 1995. Voltammetric determination of chloridazone with a silica-modified carbon paste electrode. *Quim. Anal*. 14:112–116.
1155. Arranz, A., M.F. Villalba, S. de Betono, J.M. Moreda, and J.F. Arranz. 1997. Anodic voltammetric assay of the herbicide Metamitron on a carbon paste electrode. *Fresenius J. Anal. Chem*. 357:768–772.
1156. Arranz, A., S.F. De Betono, J.M. Moreda, A. Cid, and J.F. Arranz. 1997. Preconcentration and voltammetric determination of the herbicide metamitron with a silica-modified carbon paste electrode. *Mikrochim. Acta* 127:273–279.
1157. Walcarius, A. and J. Bessiere. 1997. Silica-modified carbon paste electrode for copper determination in ammoniacal medium. *Electroanalysis* 9:707–713.
1158. Walcarius, A., C. Despas, and J. Bessière. 1999. Selective monitoring of Cu(II) species using a silica modified carbon paste electrode. *Anal. Chim. Acta* 385:79–89.
1159. Borgo, C.A., R.T. Ferrari, L.M.S. Colpini, C.M.M. Costa, M.L. Baesso, and A.C. Bento. 1999. Voltammetric response of a copper(II) complex incorporated silica modified carbon-paste electrode. *Anal. Chim. Acta* 385:103–109.

1160. Bond, A.M., W. Miao, T.D. Smith, and J. Jamis. 1999. Voltammetric reduction of mercury(II), silver(I), lead(II) and copper(II) ions adsorbed onto a new form of mesoporous silica. *Anal. Chim. Acta* 396:203–213.
1161. Walcarius, A., J. Devoy, and J. Bessière. 2000. Silica-modified electrode for the selective detection of mercury. *J. Solid State Electrochem*. 4:330–336.
1162. Meyer, A., S. Hoeffler, and K. Fischer. 2006. Influence of the physical properties and handling of silica gel modified carbon paste electrodes on the phase transfer of solved Cu(II) ions. *Anal. Chim. Acta* 571:105–112.
1163. Nasri, Z. and E. Shams. 2009. Application of silica gel as an effective modifier for the voltammetric determination of dopamine in the presence of ascorbic acid and uric acid. *Electrochim. Acta* 54:7416–7421.
1164. Brinker, C. and G. Scherer. 1990. *Sol-Gel Science: The Physics and Chemistry of Sol-Gel Processing*. New York: Academic Press.
1165. Li, J.-N., S.-N. Tan, and H. Ge. 1996. Silica sol-gel immobilized amperometric biosensor for hydrogen peroxide. *Anal. Chim. Acta* 335:137–145.
1166. Li, J.-N., L.-S. Chia, N-K. Goh, and S.-N. Tan. 1998. Silica sol-gel immobilized amperometric biosensor for the determination of phenolic compounds. *Anal. Chim. Acta* 362:203–211.
1167. De Jesus, D.S., C.M.C.M. Couto, A.N. Araujo, and M.C.B.S. Montenegro. 2003. Amperometric biosensor based on monoamine oxidase (MAO) immobilized in sol-gel film for benzydamine determination in pharmaceuticals. *J. Pharm. Biomed. Anal*. 33:983–990.
1168. Wang, Q., G. Lu, and B. Yang. 2004. Myoglobin/sol-gel film modified electrode: Direct electrochemistry and electrochemical catalysis. *Langmuir* 20:1342–1347.
1169. Wang, Q., G. Lu, and B. Yang. 2004. Direct electrochemistry and electrocatalysis of hemoglobin immobilized on carbon paste electrode by silica sol-gel film. *Biosens. Bioelectron*. 19:1269–1275.
1170. Wang, Q., G. Lu, and B. Yang. 2004. Hydrogen peroxide biosensor based on direct electrochemistry of hemoglobin immobilized on carbon paste electrode by a silica sol-gel film. *Sens. Actuators B* B99:50–57.
1171. Ribeiro, E.S., Y. Gushikem, J.C. Biazzotto, and O.A. Serra. 2002. Electrochemical properties and dissolved oxygen reduction study on an iron(III)-tetra(o-ureaphenyl) porphyrinosilica matrix surface. *J. Porphyrins Phthalocyanines* 6:527–532.
1172. Toledo, M., A.M.S. Lucho, and Y. Gushikem. 2004. In situ preparation of Co phthalocyanine on a porous silica gel surface and the study of the electrochemical oxidation of oxalic acid. *J. Mater. Sci*. 39:6851–6854.
1173. Garcia, C.A.B., G. Oliveira Neto, L.T. Kubota, and L.A. Grandin. 1996. A new amperometric biosensor for fructose using a carbon paste electrode modified with silica gel coated with Meldola's Blue and fructose 5-dehydrogenase. *J. Electroanal. Chem*. 418:147–151.
1174. Kubota, L.T., B.G. Milagres, F. Gouvea, and G. de Oliveira. 1996. A modified carbon paste electrode with silica gel coated with Meldola's Blue and salicylate hydroxylase as a biosensor for salicylate. *Anal. Lett*. 29:893–910.
1175. Liu, H.-Y., Z.-N. Zhang, Y.-B. Fan, M. Dai, X.L. Zhang, J.-J. Wei, Z.-N. Qiu, H.-B. Li, and X.-X. Wu. 1997. Reagentless amperometric biosensor highly sensitive to hydrogen peroxide based on the incorporation of Meldola Blue, fumed silica, and horseradish peroxidase into carbon paste. *Fresenius J. Anal. Chem*. 357:297–301.
1176. Ferrari, R.T., L.M.S. Colpini, and C.M.M. Costa. 2003. Electrochemical characterization of CoHP-Si incorporated into a carbon paste electrode. *Microchim. Acta* 142:213–217.
1177. Gushikem, Y. and S.S. Rosatto. 2001. Metal oxide thin films grafted on silica gel surfaces: Recent advances on the analytical application of these materials. *J. Braz. Chem. Soc*. 12:695–705.
1178. Rocha, R.F., S.S. Rosatto, R.E. Bruns, and L.T. Kubota. 1997. Factorial design optimization of redox properties of methylene blue adsorbed on a modified silica gel surface. *J. Electroanal. Chem*. 433:73–76.
1179. Perez, E.F., L.T. Kubota, A.A. Tanaka, and G. Oliveira Neto. 1998. Anodic oxidation of cysteine catalyzed by nickel tetrasulfonated phthalocyanine immobilized on silica gel modified with titanium(IV) oxide. *Electrochim. Acta* 43:1665–1673.
1180. Perez, E.F., G. Oliveira Neto, A.A. Tanaka, and L.T. Kubota. 1998. Electrochemical sensor for hydrazine based on silica modified with nickel tetrasulfonated phthalocyanine. *Electroanalysis* 10:111–115.
1181. Rosatto, S.S., L.T. Kubota, and G. Oliveira Neto. 1999. Biosensor for phenol based on the direct electron transfer blocking of peroxidase immobilizing on silica-titanium. *Anal. Chim. Acta* 390:65–72.
1182. Perez, E.F., G. Oliveira Neto, and L.T. Kubota. 2001. Bi-enzymatic amperometric biosensor for oxalate. *Sens. Actuators B* B72:80–85.

1183. Castellani, A.M., J.E. Goncalves, and Y. Gushikem. 2002. The use of carbon paste electrodes modified with cobalt tetrasulfonated phthalocyanine adsorbed in silica/titania for the reduction of oxygen. *J. New Mater. Electrochem. Syst*. 5:169–172.
1184. Dias, S.L.P., S.T. Fujiwara, Y. Gushikem, and R.E. Bruns. 2002. Methylene blue immobilized on cellulose surfaces modified with titanium dioxide and titanium phosphate: Factorial design optimization of redox properties. *J. Electroanal. Chem*. 531:141–146.
1185. Ferreira, C.U., J.E. Goncalves, R.A.C. Goncalves, and A.J.B. De Oliveira. 2003. Electrochemical properties of Meldola's blue immobilized on silica/titania/antimonate prepared by sol-gel method. *J. New Mater. Electrochem. Syst*. 6:251–257.
1186. Arenas, L.T., D.S.F. Gay, C.C. Moro, S.L.P. Dias, D.S. Azambuja, T.M.H. Costa, E.V. Benvenutti, and Y. Gushikem. 2008. Brilliant yellow dye immobilized on silica and silica/titania based hybrid xerogels containing bridged positively charged 1,4-diazoniabicyclo[2.2.2]octane: Preparation, characterization and electrochemical properties study. *Microporous Mesoporous Mater*. 112:273–283.
1187. Peixoto, C.R.M., L.T. Kubota, and Y. Gushikem. 1995. Use of ruthenium-(ethylenedinitrito)-tetraacetic acid monohydrate ion immobilized on zirconium(IV) oxide coated silica gel surface as an amperometric sensor for oxygen in water. *Anal. Proc*. 32:503–505.
1188. Yamashita, M., S.S. Rosatto, and L.T. Kubota. 2002. Electrochemical comparative study of riboflavin, FMN and FAD immobilized on the silica gel modified with zirconium oxide. *J. Braz. Chem. Soc.* 13:635–641.
1189. Yamashita, M., C.A. Pessoa, and L.T. Kubota. 2003. Electrochemical behavior of pyrroloquinoline quinone immobilized on silica gel modified with zirconium oxide. *J. Coll. Interface Sci*. 263:99–105.
1190. Zaitseva, G., Y. Gushikem, E.S. Ribeiro, and S.S. Rosatto. 2002. Electrochemical property of methylene blue redox dye immobilized on porous silica-zirconia-antimonia mixed oxide. *Electrochim. Acta* 47:1469–1474.
1191. Pessoa, C.A. and Y. Gushikem. 2001. Cobalt porphyrins immobilized on niobium(V) oxide grafted on a silica gel surface: Study of the catalytic reduction of dissolved dioxygen. *J. Porphyrins Phthalocyanines* 5:537–544.
1192. Rosatto, S.S., P.T. Sotomayor, L.T. Kubota, and Y. Gushikem. 2002. SiO_2/Nb_2O_5 sol-gel as a support for HRP immobilization in biosensor preparation for phenol detection. *Electrochim. Acta* 47:4451–4458.
1193. Santos, A.d.S., L. Gorton, and L.T. Kubota. 2002. Nile blue adsorbed onto silica gel modified with niobium oxide for electrocatalytic oxidation of NADH. *Electrochim. Acta* 47:3351–3360.
1194. Santos, A.d.S., L. Gorton, and L.T. Kubota. 2002. Electrocatalytic NADH oxidation using an electrode based on meldola blue immobilized on silica coated with niobium oxide. *Electroanalysis* 14:805–812.
1195. Santos, A.d.S., A.C. Pereira, and L.T. Kubota. 2002. Electrochemical and electrocatalytic studies of toluidine blue immobilized on a silica gel surface coated with niobium oxide. *J. Braz. Chem. Soc*. 13:495–501.
1196. De Lucca, A.R., A.d.S. Santos, A.C. Pereira, and L.T. Kubota. 2002. Electrochemical behavior and electrocatalytic study of the methylene green coated on modified silica gel. *J. Colloid Interface Sci*. 254:113–119.
1197. Santos, A.d.S., R.S. Freire, and L.T. Kubota. 2003. Highly stable amperometric biosensor for ethanol based on Meldola's blue adsorbed on silica gel modified with niobium oxide. *J. Electroanal. Chem*. 547:135–142.
1198. Pereira, A.C., A.d.S. Santos, and L.T. Kubota. 2003. Electrochemical behavior of riboflavin immobilized on different matrices. *J. Colloid Interface Sci*. 265:351–358.
1199. Pereira, A.C., A.d.S. Santos, and L.T. Kubota. 2003. o-Phenylenediamine adsorbed onto silica gel modified with niobium oxide for electrocatalytic oxidation. *Electrochim. Acta* 48:3541–3550.
1200. Santos, A.d.S., N. Duran, and L.T. Kubota. 2005. Biosensor for H_2O_2 response based on horseradish peroxidase: Effect of different mediators adsorbed on silica gel modified with niobium oxide. *Electroanalysis* 17:1103–1111.
1201. Francisco, M.S., W.S. Cardoso, L.T. Kubota, and Y. Gushikem. 2007. Electrocatalytic oxidation of phenolic compounds using an electrode modified with Ni(II) porphyrin adsorbed on SiO_2/Nb_2O_5-phosphate synthesized by the sol-gel method. *J. Electroanal. Chem*. 602:29–36.
1202. Skeika, T., C. Marcovicz, S. Nakagaki, S.T. Fujiwara, K. Wohnrath, N. Nagata, and C.A. Pessoa. 2007. Electrochemical studies of an iron porphyrin immobilized on Nb_2O_5/SiO_2 and its application for simultaneous determination of dopamine and ascorbic acid using multivariate calibration methodology. *Electroanalysis* 19:2543–2550.
1203. Francisco, M.S., W.S. Cardoso, and Y. Gushikem. 2005. Carbon paste electrodes of the mixed oxide SiO_2/Nb_2O_5 prepared by the sol-gel method: Dissolved dioxygen sensor. *J. Electroanal. Chem*. 574:291–297.

1204. Ribeiro, E.S., S.L.P. Dias, S.T. Fujiwara, Y. Gushikem, and R.E. Bruns. 2003. Electrochemical study and complete factorial design of Toluidine Blue immobilized on SiO_2/Sb_2O_3 binary oxide. *J. Appl. Electrochem*. 33:1069–1075.
1205. Ribeiro, E.S., S.S. Rosatto, Y. Gushikem, and L.T. Kubota. 2003. Electrochemical study of Meldola's blue, methylene blue and toluidine blue immobilized on a SiO_2/Sb_2O_3 binary oxide matrix obtained by the sol-gel processing method. *J. Solid State Electrochem*. 7:665–670.
1206. Ribeiro, E.S., S.L.P. Dias, Y. Gushikem, and L.T. Kubota. 2004. Cobalt(II) porphyrin complex immobilized on the binary oxide SiO_2/Sb_2O_3: Electrochemical properties and dissolved oxygen reduction study. *Electrochim. Acta* 49:829–834.
1207. Cardoso, W.S., M.S. Francisco, R. Landers, and Y. Gushikem. 2005. Co(II)-porphyrin adsorbed on SiO_2/SnO_2/phosphate prepared by the sol-gel method. *Electrochim. Acta* 50:4378–4384.
1208. Cardoso, W.S. and Y. Gushikem. 2005. Electrocatalytic oxidation of nitrite on a carbon paste electrode modified with Co(II) porphyrin adsorbed on SiO_2/SnO_2/Phosphate prepared by the sol-gel method. *J. Electroanal. Chem*. 583:300–306.
1209. Ferrari de Castilho, R., E.B. Ribeiro de Souza, R.V.d.S. Alfaya, and A.A.d.S. Alfaya. 2008. Meldola's blue immobilized on a SiO_2/SnO_2/phosphate Xerogel, a new sensor for determination of ascorbic acid in medicine and commercial fruit juice. *Electroanalysis* 20:157–162.
1210. Ghiaci, M., B. Rezaei, and R.J. Kalbasi. 2007. Highly selective SiO_2-Al_2O_3 mixed-oxide modified carbon paste electrode for anodic stripping voltammetric determination of Pb(II). *Talanta* 73:37–45.
1211. Ghiaci, M., B. Rezaei, and M. Arshadi. 2009. Characterization of modified carbon paste electrode by using Salen Schiff base ligand immobilized on SiO_2-Al_2O_3 as a highly sensitive sensor for anodic stripping voltammetric determination of copper(II). *Sens. Actuators B* B139:494–500.
1212. Kubota, L.T., F. Gouvea, A.N. Andrade, B.G. Milagres, and G. Oliveira Neto. 1996. Electrochemical sensor for NADH based on Meldola's blue immobilized on silica gel modified with titanium phosphate. *Electrochim. Acta* 41:1465–1469.
1213. Kooshki, M. and E. Shams. 2007. Selective response of dopamine in the presence of ascorbic acid on carbon paste electrode modified with titanium phosphated silica gel. *Anal. Chim. Acta* 587:110–115.
1214. Shams, E., F. Alibeygi, and R. Torabi. 2006. Determination of nanomolar concentrations of Pb(II) using carbon paste electrode modified with zirconium phosphated amorphous silica. *Electroanalysis* 18:773–778.
1215. Shams, E. and R. Torabi. 2006. Determination of nanomolar concentrations of cadmium by anodic-stripping voltammetry at a carbon paste electrode modified with zirconium phosphated amorphous silica. *Sens. Actuators B* B117:86–92.
1216. Shams, E., A. Babaei, A.R. Taheri, and M. Kooshki. 2009. Voltammetric determination of dopamine at a zirconium phosphated silica gel modified carbon paste electrode. *Bioelectrochemistry* 75:83–88.
1217. Pereira, A.C., D.V. Macedo, A.d.S. Santos, and L.T. Kubota. 2006. Amperometric biosensor for lactate based on meldola's blue adsorbed on silica gel modified with niobium oxide. *Electroanalysis* 18:1208–1214.
1218. Wang, J. and Z. Taha. 1990. Catalytic oxidation and flow detection of carbohydrates at ruthenium dioxide modified electrodes. *Anal. Chem*. 62:1413–1416.
1219. Leech, D., J. Wang, and M.R. Smyth. 1990. Electrocatalytic detection of streptomycin and related antibiotics at ruthenium dioxide modified graphite-epoxy composite electrodes. *Analyst* 115:1447–1450.
1220. Leech, D., J. Wang, and M.R. Smyth. 1991. Electrocatalysis and flow detection of alcohols at ruthenium dioxide-modified electrodes. *Electroanalysis* 3:37–42.
1221. Chen, L., Z. Taha, and J. Wang. 1992. Modified graphite composite electrodes for fixed-potential amperometric detection of carbohydrates. *Curr. Sep*. 11:13–15.
1222. Lyons, M.E.G., C.A. Fitzgerald, and M.R. Smyth. 1994. Glucose oxidation at ruthenium dioxide based electrodes. *Analyst* 119:855–861.
1223. Wang, J. and Y. Lin. 1994. Electrocatalytic flow detection of amino acids at ruthenium dioxide-modified carbon electrodes. *Electroanalysis* 6:125–129.
1224. Dousikou, M.F., M.A. Koupparis, and C.E. Efstathiou. 2006. Determination of catalase-like activity in plants based on the amperometric monitoring of hydrogen peroxide consumption using a carbon paste electrode modified with ruthenium(IV) oxide. *Phytochem. Anal*. 17:255–261.
1225. Xie, Y. and C.O. Huber. 1991. Electrocatalysis and amperometric detection using an electrode made of copper oxide and carbon paste. *Anal. Chem*. 63:1714–1719.
1226. Kano, K., M. Torimura, Y. Esaka, M. Goto, and T. Ueda. 1994. Electrocatalytic oxidation of carbohydrates at copper(II)-modified electrodes and its application to flow-through detection. *J. Electroanal. Chem*. 372:137–143.

1227. Carjonyte, R. and A. Malinauskas. 1998. Amperometric sensor for hydrogen peroxide, based on Cu_2O or CuO modified carbon paste electrodes. *Fresenius J. Anal. Chem*. 360:122–123.
1228. Xu, J.-Z., J-J. Zhu, H. Wang, and H.-Y. Chen. 2003. Nano-sized copper oxide modified carbon paste electrodes as an amperometric sensor for Amikacin. *Anal. Lett*. 36:2723–2733.
1229. Dong, S., S. Zhang, X. Cheng, P. He, Q. Wang, and Y. Fang. 2007. Simultaneous determination of sugars and ascorbic acid by capillary zone electrophoresis with amperometric detection at a carbon paste electrode modified with polyethylene glycol and Cu_2O. *J. Chromatogr. A* 1161:327–333.
1230. Mannino, S., M.S. Cosio, and S. Ratti. 1993. Cobalt(II, III) oxide chemically modified electrode as amperometric detector in flow-injection systems. *Electroanalysis* 5:145–148.
1231. Cheng, X., S. Zhang, H. Zhang, Q. Wang, P. He, and Y. Fang. 2007. Determination of carbohydrates by capillary zone electrophoresis with amperometric detection at a nano-nickel oxide modified carbon paste electrode. *Food Chem*. 106:830–835.
1232. Schachl, K., H. Alemu, K. Kalcher, J. Jezkova, I. Švancara, and K. Vytřas. 1997. Flow injection determination of hydrogen peroxide using a carbon paste electrode modified with a manganese dioxide film. *Anal. Lett*. 30:2655–2673.
1233. Schachl, K., H. Alemu, K. Kalcher, J. Jezkova, I. Švancara, and K. Vytřas. 1997. Amperometric determination of hydrogen peroxide with a manganese dioxide-modified carbon paste electrode using flow injection analysis. *Analyst* 122:985–989.
1234. Schachl, K., E. Turkusic, A. Komersova, M. Bartos, H. Moderegger, I. Švancara, H. Alemu, K. Vytřas, M. Jimenez-Castro, and K. Kalcher. 2002. Amperometric determination of glucose with a carbon paste biosensor. *Coll. Czech. Chem. Commun*. 67:302–313.
1235. Zheng, X. and Z. Guo. 2000. Potentiometric determination of hydrogen peroxide at MnO_2-doped carbon paste electrode. *Talanta* 50:1157–1162.
1236. Teixeira, M.F.S., F.C. Moraes, E.T.G. Cavalheiro, and N. Bocchi. 2003. Differential pulse anodic voltammetric determination of lithium ions in pharmaceutical formulations using a carbon paste electrode modified with spinel-type manganese oxide. *J. Pharm. Biomed. Anal*. 31:537–543.
1237. Teixeira, M.F.S., M.F. Bergamini, and N. Bocchi. 2004. Lithium ions determination by selective preconcentration and differential pulse anodic stripping voltammetry using a carbon paste electrode modified with a spinel-type manganese oxide. *Talanta* 62:603–609.
1238. Teixeira, M.F.S., E.T.G. Cavalheiro, M.F. Bergamini, F.C. Moraes, and N. Bocchi. 2004. Use of carbon paste electrode modified with spinel-type manganese oxide as potentiometric sensor for lithium ions in flow injection analysis. *Electroanalysis* 16:633–639.
1239. Martinez, M.T., A.S. Lima, N. Bocchi, and M.F.S. Teixeira. 2009. Voltammetric performance and application of a sensor for sodium ions constructed with layered birnessite-type manganese oxide. *Talanta* 80:519–525.
1240. Teixeira, M.F.S., M.F. Bergamini, and N. Bocchi. 2010. Application of the potentiometric stripping analysis with constant current for the determination of lithium ions using a spinel-type manganese(IV) oxide-modified carbon paste electrode. *Curr. Anal. Chem*. 6:161–165.
1241. Correa de Melo, H., A.P. Seleghim, W.L. Polito, O. Fatibello-Filho, and I.C. Vieira. 2007. Simultaneous differential pulse voltammetric determination of L-dopa and carbidopa in pharmaceuticals using a carbon paste electrode modified with lead dioxide immobilized in a polyester resin. *J. Braz. Chem. Soc*. 18:797–803.
1242. Walcarius, A., J. Devoy, and J. Bessiere. 1999. Electrochemical recognition of selective mercury adsorption on minerals. *Environ. Sci. Technol*. 33:4278–4284.
1243. Navarro, P., C. Jambon, and O. Vittori. 1996. Electrochemical response of a carbon paste electrode containing an adsorbed species on incorporated alumina. *Fresenius J. Anal. Chem*. 356:476–479.
1244. Rani, S., A. Jayaraman, L.D. Sharma, G. Murali Dhar, and T.S.R. Prasada Rao. 2000. Cyclic voltammetric studies of alumina supported monometallic Pt and bimetallic Pt-Sn catalysts using carbon paste electrodes. *J. Electroanal. Chem*. 495:62–70.
1245. Zuo, S.-H., L.-F. Zhang, H.-H. Yuan, M-.B. Lan, G.A. Lawrance, and G. Wei. 2009. Electrochemical detection of DNA hybridization by using a zirconia modified renewable carbon paste electrode. *Bioelectrochemistry* 74:223–226.
1246. Wu, J., H. Liu, and Z. Lin. 2008. Electrochemical performance of a carbon nanotube/La-doped TiO_2 nanocomposite and its use for preparation of an electrochemical nicotinic acid sensor. *Sensors* 8:7085–7096.
1247. Wang, L.-H. 2000. Determination of zinc pyrithione in hair care products on metal oxides modified carbon electrodes. *Electroanalysis* 12:227–232.
1248. Shimizu, Y., A. Ishikawa, K. Iseki, and S. Takase. 2000. Perovskite-type oxide-based electrode: A new sensor for hydrogen-phosphate ion. *J. Electrochem. Soc*. 147:3931–3934.

1249. Luque, G.L., N.F. Ferreyra, A.G. Leyva, and G.A. Rivas. 2009. Characterization of carbon paste electrodes modified with manganese based perovskites-type oxides from the amperometric determination of hydrogen peroxide. *Sens. Actuators B* 142:331–336.
1250. Wang, Y., Y. Xu, L. Luo, Y. Ding, and X. Liu. 2010. Preparation of perovskite-type composite oxide $LaNi_{0.5}Ti_{0.5}O_3$-$NiFe_2O_4$ and its application in glucose biosensor. *J. Electroanal. Chem*. 642:35–40.
1251. Wang, L.H. and Z.S. Chen. 1997. Determination of thioglycolic acid and cysteine in hair-treatment products at ceramic carbon composite electrodes. *Electroanalysis* 9:1294–1297.
1252. Domenech Carbo, A., M.T. Domenech Carbo, J.V. Gimeno Adelantado, M. Moya Moreno, and F. Bosch Reig. 2000. Voltammetric identification of lead(II) and (IV) in medieval glazes in abrasion-modified carbon paste and polymer film electrodes. Application to the study of alterations in archaeological ceramic. *Electroanalysis* 12:120–127.
1253. Domenech Carbo, A., S. Sanchez Ramosa, M.T. Domenech Carbo, J.V. Gimeno Adelantado, F. Bosch Reig, D.J. Yusa Marco, and M.C. Sauri Peris. 2002. Electrochemical determination of the Fe(III)/Fe(II) ratio in archeological ceramic materials using carbon paste and composite electrodes. *Electroanalysis* 14:685–696.
1254. Wang, J., F. Lu, L. Angnes, J. Liu, H. Sakslund, Q. Chen, M. Pedrero, L. Chen, and O. Hammerich. 1995. Remarkably selective metalized-carbon amperometric biosensors. *Anal. Chim. Acta* 305:3–7.
1255. Pedrero, M., P. Mateo, C. Parrado, and J.M. Pingarron. 2000. Metallized graphite-ethylene/propylene/diene terpolymer composite electrodes as electrocatalytic amperometric detectors in flowing systems. *Quim. Anal*. 19:171–177.
1256. Wang, J., L. Fang, D. Lopez, and H. Tobias. 1993. Highly selective and sensitive amperometric biosensing of glucose at ruthenium-dispersed carbon paste enzyme electrodes. *Anal. Lett*. 26:1819–1830.
1257. Wang, J., E. Gonzalez Romero, and A.J. Reviejo. 1993. Improved alcohol biosensor based on ruthenium-dispersed carbon paste enzyme electrodes. *J. Electroanal. Chem*. 353:113–120.
1258. Wang, J., F. Lu, and D. Lopez. 1994. Tyrosinase-based ruthenium dispersed carbon paste biosensor for phenols. *Biosens. Bioelectron*. 9:9–15.
1259. Katsu, T., X. Yang, and G.A. Rechnitz. 1994. Amperometric biosensor for adenosine-5′-triphosphate based on a platinum-dispersed carbon paste enzyme electrode. *Anal. Lett*. 27:1215–1224.
1260. Wang, J., L. Chen, and J. Liu. 1997. Critical comparison of metalized and mediator-based carbon paste glucose biosensors. *Electroanalysis* 9:298–301.
1261. Wang, J., L. Chen, J. Liu, and F. Lu. 1996. Enhanced selectivity and sensitivity of first-generation enzyme electrodes based on the coupling of rhodinized carbon paste transducers and permselective poly(o-phenylenediamine) coatings. *Electroanalysis* 8:1127–1130.
1262. Wang, J., J. Liu, L. Chen, and F. Lu. 1994. Highly selective membrane-free, mediator-free glucose biosensor. *Anal. Chem*. 66:3600–3603.
1263. Wang, J., G. Rivas, and M. Chicharro. 1996. Iridium-dispersed carbon paste enzyme electrodes. *Electroanalysis* 8:434–437.
1264. Rivas, G.A. and B. Maestroni. 1997. Iridium-dispersed carbon paste amino acid oxidase electrodes. *Anal. Lett*. 30:489–501.
1265. Rubianes, M.D. and G.A. Rivas. 2000. Amperometric biosensor for phenols and catechols based on iridium-polyphenol oxidase-modified carbon paste. *Electroanalysis* 12:1159–1162.
1266. Liu, J., F. Lu, and J. Wang. 1999. Metal-alloy-dispersed carbon-paste enzyme electrodes for amperometric biosensing of glucose. *Electrochem. Commun*. 1:341–344.
1267. Liu, J. and J. Wang. 2001. A novel improved design for the first-generation glucose biosensor. *Food Technol. Biotechnol*. 39:55–58.
1268. Cai, X. and K. Kalcher. 1994. Studies on the electrocatalytic reduction of aliphatic aldehydes on palladium-modified carbon paste electrodes. *Electroanalysis* 6:397–404.
1269. Cai, X., K. Kalcher, J. Lintschinger, C.G. Neuhold, J. Tykarski, and B. Ogorevc. 1995. Electrocatalytic amperometric detection of hydroxylamine with a palladium-modified carbon paste electrode. *Electroanalysis* 7:556–559.
1270. Celej, M.S. and G.A. Rivas. 1998. Amperometric glucose biosensor based on gold-dispersed carbon paste. *Electroanalysis* 10:771–775.
1271. Ju, H., S. Liu, B. Ge, F. Lisdat, and F.W. Scheller. 2002. Electrochemistry of cytochrome c immobilized on colloidal gold modified carbon paste electrodes and its electrocatalytic activity. *Electroanalysis* 14:141–147.
1272. Liu, S.-Q. and H.-X. Ju. 2002. Renewable reagentless hydrogen peroxide sensor based on direct electron transfer of horseradish peroxidase immobilized on colloidal gold-modified electrode. *Anal. Biochem*. 307:110–116.

1273. Lei, C.-X., S.-Q. Hu, G.-L. Shen, and R.-Q. Yu. 2003. Immobilization of horseradish peroxidase to a nano-Au monolayer modified chitosan-entrapped carbon paste electrode for the detection of hydrogen peroxide. *Talanta* 59:981–988.
1274. Liu, S. and H. Ju. 2003. Reagentless glucose biosensor based on direct electron transfer of glucose oxidase immobilized on colloidal gold modified carbon paste electrode. *Biosens. Bioelectron*. 19:177–183.
1275. Liu, S., J. Yu, and H. Ju. 2003. Renewable phenol biosensor based on a tyrosinase-colloidal gold modified carbon paste electrode. *J. Electroanal. Chem*. 540:61–67.
1276. Chen, Z.-P., Z.-F. Peng, P. Zhang, X.-F. Jin, J.-H. Jiang, X.-B. Zhang, G.-L. Shen, and R.-Q. Yu. 2007. A sensitive immunosensor using colloidal gold as electrochemical label. *Talanta* 72:1800–1804.
1277. Mao, X., M. Baloda, A.S. Gurung, Y. Lin, and G. Liu. 2008. Multiplex electrochemical immunoassay using gold nanoparticle probes and immuno-chromatographic strips. *Electrochem. Commun*. 10:1636–1640.
1278. Xu, L., J. Du, N. He, Y. Deng, S. Li, and T. Wang. 2009. Anodic stripping voltammetry for detection of DNA hybridization with porous pseudo-carbon paste electrode by gold nanoparticle-catalyzed silver enhancement. *J. Nanosci. Nanotechnol*. 9:2698–2703.
1279. Behpour, M., E. Honarmand, and S.M. Ghoreishi. 2010. Nanogold-modified carbon paste electrode for the determination of atenolol in pharmaceutical formulations and urine by voltammetric methods. *Bull. Korean Chem. Soc*. 31:845–849.
1280. Xu, Y., C. Hu, and S. Hu. 2010. A reagentless nitric oxide biosensor based on the direct electrochemistry of hemoglobin adsorbed on the gold colloids modified carbon paste electrode. *Sens. Actuators, B* B148:253–258.
1281. Rodriguez, M.C. and G.A. Rivas. 2001. Highly selective first generation glucose biosensor based on carbon paste containing copper and glucose oxidase. *Electroanalysis* 13:1179–1184.
1282. Rubianes, M.D. and G.A. Rivas. 2003. Use of a melanin-type polymer to improve the selectivity of glucose biosensors. *Anal. Lett*. 36:1311–1323.
1283. Miscoria, S.A., G.D. Barrera, and G.A. Rivas. 2002. Analytical performance of a glucose biosensor prepared by immobilization of glucose oxidase and different metals into a carbon paste electrode. *Electroanalysis* 14:981–987.
1284. Beristain Ortiz, G., E. Hernandez Guevara, E. Reynoso Soto, I. Rivero Espejel, and M. Oropeza-Guzman 2009. Electrochemical characterization of CPEs modified with gold nanoparticles deposited by immersion. *ECS Trans*. 20:251–258.
1285. Pessoa, C.A., Y. Gushikem, and L.T. Kubota. 1997. Electrochemical study of methylene blue immobilized in zirconium phosphate. *Electroanalysis* 9:800–803.
1286. Pessoa, C.A., Y. Gushikem, L.T. Kubota, and L. Gorton. 1997. Preliminary electrochemical study of phenothiazines and phenoxazines immobilized on zirconium phosphate. *J. Electroanal. Chem*. 431:23–27.
1287. Munteanu, F.D., L.T. Kubota, and L. Gorton. 2001. Effect of pH on the catalytic electrooxidation of NADH using different two-electron mediators immobilized on zirconium phosphate. *J. Electroanal. Chem*. 509:2–10.
1288. Dilgin, Y., Z. Dursun, G. Nisli, and L. Gorton. 2005. Photoelectrochemical investigation of methylene blue immobilized on zirconium phosphate modified carbon paste electrode in flow injection system. *Anal. Chim. Acta* 542:162–168.
1289. Malinauskas, A., T. Ruzgas, and L. Gorton. 2000. Electrochemical study of the redox dyes Nile Blue and Toluidine Blue adsorbed on graphite and zirconium phosphate modified graphite. *J. Electroanal. Chem*. 484:55–63.
1290. Malinauskas, A., T. Ruzgas, and L. Gorton. 2000. Electrocatalytic oxidation of coenzyme NADH at carbon paste electrodes, modified with zirconium phosphate and some redox mediators. *J. Colloid Interface Sci*. 224:325–332.
1291. Malinauskas, A., T. Ruzgas, L. Gorton, and L.T. Kubota. 2000. A reagentless amperometric carbon paste based sensor for NADH. *Electroanalysis* 12:194–198.
1292. Malinauskas, A., T. Ruzgas, and L. Gorton. 1999. Tuning the redox potential of riboflavin by zirconium phosphate in carbon paste electrodes. *Bioelectrochem. Bioenerg*. 49:21–27.
1293. Kubota, L.T. and L. Gorton. 1999. Electrochemical investigations of the reaction mechanism and kinetics between NADH and riboflavin immobilized on amorphous zirconium phosphate. *J. Solid State Electrochem*. 3:370–379.
1294. Munteanu, F.D., M. Mosbach, A. Schulte, W. Schuhmann, and L. Gorton. 2002. Fast-scan cyclic voltammetry and scanning electrochemical microscopy studies of the pH-dependent dissolution of 2-electron mediators immobilized on zirconium phosphate containing carbon pastes. *Electroanalysis* 14:1479–1487.

1295. Munteanu, F.D., N. Mano, A. Kuhn, and L. Gorton. 2002. Mediator-modified electrodes for catalytic NADH oxidation: High rate constants at interesting overpotentials. *Bioelectrochemistry* 56:67–72.
1296. Munteanu, F.D., N. Mano, A. Kuhn, and L. Gorton. 2004. NADH electrooxidation using carbon paste electrodes modified with nitro-fluorenone derivatives immobilized on zirconium phosphate. *J. Electroanal. Chem*. 564:167–178.
1297. Munteanu, F.D., D. Dicu, I.C. Popescu, and L. Gorton. 2003. NADH oxidation using carbonaceous electrodes modified with dibenzo-dithia-diazapentacene. *Electroanalysis* 15:383–391.
1298. Dicu, D., F.D. Munteanu, I. Catalin Popescu, and L. Gorton. 2003. Indophenol and o-quinone derivatives immobilized on zirconium phosphate for NADH electro-oxidation. *Anal. Lett*. 36:1755–1779.
1299. Santiago, M.E., M.M. Velez, S. Borrero, A. Diaz, C.A. Casillas, C. Hofmann, A.R. Guadalupe, and J.L. Colon. 2006. NADH electrooxidation using bis(1,10-phenanthroline-5,6-dione) (2,2′-bipyridine)ruthenium(II)-exchanged zirconium phosphate modified carbon paste electrodes. *Electroanalysis* 18:559–572.
1300. Santiago, M.B., G.A. Daniel, A. David, B. Casanas, G. Hernandez, A.R. Guadalupe, and J.L. Colon. 2010. Effect of enzyme and cofactor immobilization on the response of ethanol oxidation in zirconium phosphate modified biosensors. *Electroanalysis* 22:1097–1105.
1301. El Mhammedi, M.A., M. Bakasse, and A. Chtaini. 2007. Electrochemical studies and square wave voltammetry of paraquat at natural phosphate modified carbon paste electrode. *J. Hazard. Mater*. 145:1–7.
1302. El Mhammedi, M.A., M. Bakasse, and A. Chtaini. 2007. Square-wave voltammetric determination of paraquat at carbon paste electrode modified with hydroxyapatite. *Electroanalysis* 19:1727–1733.
1303. El Mhammedi, M.A., M. Bakasse, and A. Chtaini. 2008. Investigation of square wave voltammetric detection of diquat at carbon paste electrode impregnated with $Ca_{10}(PO_4)_6F_2$: Application in natural water samples. *Mater. Chem. Phys*. 109:519–525.
1304. El Mhammedi, M.A. and A. Chtaini. 2008. Electrochemical studies of adsorption of paraquat onto $Ca_{10}(PO_4)_6(OH)_2$ from aqueous solution. *Leonardo J. Sci*. 25–34.
1305. El Mhammedi, M.A., M. Achak, M. Bakasse, and A. Chtaini. 2009. Electrochemical determination of para-nitrophenol at apatite-modified carbon paste electrode: Application in river water samples. *J. Hazard. Mater*. 163:323–328.
1306. El Mhammedi, M.A., M. Achak, and A. Chtaini. 2009. $Ca_{10}(PO_4)_6(OH)_2$-modified carbon-paste electrode for the determination of trace lead(II) by square-wave voltammetry. *J. Hazard. Mater*. 161:55–61.
1307. El Mhammedi, M.A., M. Achak, R. Najih, M. Bakasse, and A. Chtaini. 2009. Microextraction and trace determination of cadmium by square wave voltammetry at the carbon paste electrode impregnated with $Ca_{10}(PO_4)_6(OH)_2$. *Mater. Chem. Phys*. 115:567–571.
1308. Abdollahi, S. 1995. Preconcentration and determination of Pb^{2+} at an $AlPO_4$ containing carbon paste electrode. *Anal. Chim. Acta* 304:381–388.
1309. Bai, Y., Y.D. Wang, W.J. Zheng, and Y.S. Chen. 2008. Study on coordination of selenoamino acids with Ag+ at silver nitrate-modified carbon paste electrode. *Colloids Surf. B* 63:110–115.
1310. Guo, S.X. and S.B. Khoo. 1999. Copper(II) diethyldithiocarbamate modified carbon paste electrode for highly selective accumulation of cysteine. *Anal. Lett*. 32:689–700.
1311. Yeom, J.-S., M.-S. Won, and Y.-B. Shim. 1999. Voltammetric determination of the iodide ion with a quinine copper(II) complex modified carbon paste electrode. *J. Electroanal. Chem*. 463:16–23.
1312. Abbas, M.N. and G.A.E. Mostafa. 2003. New triiodomercurate-modified carbon paste electrode for the potentiometric determination of mercury. *Anal. Chim. Acta* 478:329–335.
1313. Tarmure, C., R. Sandulescu, and C. Ionescu. 2000. Voltammetric determination of lactate dehydrogenase using a carbon paste electrode. *J. Pharm. Biomed. Anal*. 22:355–361.
1314. Zhu, Y., S. Zhang, Y. Tang, M. Guo, C. Jin, and T. Qi. 2010. Electrochemical solid-phase nanoextraction of copper(II) on a magnesium oxinate-modified carbon paste electrode by cyclic voltammetry. *J. Solid State Electrochem*. 14:1609–1614.
1315. Bonifacio, V.G., L.H. Marcolino, M.F.S. Teixeira, and O. Fatibello-Filho. 2004. Voltammetric determination of isoprenaline in pharmaceutical preparations using a copper(II) hexacyanoferrate(III) modified carbon paste electrode. *Microchem. J*. 78:55–59.
1316. Dursun, Z. and G. Nisli. 2004. Voltammetric behavior of copper(I) oxide modified carbon paste electrode in the presence of cysteine and ascorbic acid. *Talanta* 63:873–878.
1317. Lazarin, A.M. and C. Airoldi. 2005. Synthesis and electrochemical properties of meldola blue intercalated into barium and calcium phosphates. *Sens. Actuators B* B107:446–453.
1318. Lazarin, A.M. and C. Airoldi. 2008. Methylene blue intercalated into calcium phosphate—Electrochemical properties and an ascorbic acid oxidation study. *Solid State Sci*. 10:1139–1144.
1319. Navratilova, Z. 1991. Mercury(II) voltammetry on a 1,5-diphenylcarbazide containing carbon paste electrode. *Electroanalysis* 3:799–802.

1320. Cai, X., K. Kalcher, J. Lintschinger, and C. Neuhold. 1993. Stripping voltammetric determination of trace amounts of mercury using a carbon paste electrode modified with 2-mercapto-4(3H)-quinazolinone. *Mikrochim. Acta* 112:135–146.
1321. Kannan, R., S.R. Rajagopalan, and V. Lakshminarayanan. 1995. Imidazole-modified C-paste electrode in the determination of trace amounts of mercury. *J. Electrochem. Soc. India* 44:90–96.
1322. Won, M.S., D.W. Moon, and Y.B. Shim. 1995. Determination of mercury and silver at a modified carbon paste electrode containing glyoxal bis(2-hydroxyanil). *Electroanalysis* 7:1171–1176.
1323. Khoo, S.B. and Q. Cai. 1996. Metal displacement at the zinc-diethyldithiocarbamate-modified carbon paste electrode for the selective preconcentration and stripping analysis of mercury(II). *Electroanalysis* 8:549–556.
1324. Gismera, M.J., D. Hueso, J.R. Procopio, and M.T. Sevilla. 2004. Ion-selective carbon paste electrode based on tetraethyl thiuram disulfide for copper(II) and mercury(II). *Anal. Chim. Acta* 524:347–353.
1325. Colilla, M., M.A. Mendiola, J.R. Procopio, and M.T. Sevilla. 2005. Application of a carbon paste electrode modified with a Schiff base ligand to mercury speciation in water. *Electroanalysis* 17:933–940.
1326. Mashhadizadeh, M.H., M. Talakesh, M. Peste, A. Momeni, H. Hamidian, and M. Mazlum. 2006. A novel modified carbon paste electrode for potentiometric determination of mercury(II) ion. *Electroanalysis* 18:2174–2179.
1327. Rizea, M.C., A.F. Danet, and S. Kalinowski. 2007. Determination of mercury (II) after its preconcentration on a carbon paste electrode modified with Cadion A. *Rev. Chim*. 58:266–269.
1328. Yeom, J.S., M.S. Won, S.N. Choi, and Y.B. Shim. 1990. Determination of silver(I) at a chemically modified electrode based on 2-iminocyclopentanedithiocarboxylic acid. *Bull. Korean Chem. Soc*. 11:200–205.
1329. Sugawara, K., S. Tanaka, and M. Taga. 1991. Voltammetry of silver(I) using a carbon-paste electrode modified with 2,2′-dithiodipyridine. *J. Electroanal. Chem*. 304:249–255.
1330. Cai, X., K. Kalcher, C. Neuhold, W. Goessler, I. Grabec, and B. Ogorevc. 1994. Studies on the voltammetric behavior of a 2-mercaptoimidazole containing carbon paste electrode: Determination of traces of silver. *Fresenius J. Anal. Chem*. 348:736–741.
1331. Khodari, M., M.M. Abou, and R. Fandy. 1994. Determination of Ag(I) with chemically modified carbon paste electrode based on 2,3-dicyano-1,4-naphthoquinone. *Talanta* 41:2179–2182.
1332. Guttmann, M., K.H. Lubert, and L. Beyer. 1996. Preconcentration and voltammetric behavior of Ag^+ at carbon paste electrodes modified by N-benzoyl-N′,N′-di-iso-butylthiourea. *Fresenius J. Anal. Chem*. 356:263–266.
1333. Won, M.S., J.S. Yeom, J.H. Yoon, E.D. Jeong, and Y.B. Shim. 2003. Determination of Ag(I) ion at a modified carbon paste electrode containing N,N′-diphenyl oxamide. *Bull. Korean Chem. Soc*. 24:948–952.
1334. Gismera, M.J., J.R. Procopio, M.T. Sevilla, and L. Hernandez. 2003. Copper(II) ion-selective electrodes based on dithiosalicylic and thiosalicylic acids. *Electroanalysis* 15:126–132.
1335. Mohadesi, A. and M.A. Taher. 2007. Stripping voltammetric determination of silver(I) at carbon paste electrode modified with 3-amino-2-mercaptoquinazolin-4(3H)-one. *Talanta* 71:615–619.
1336. Lee, I.C. and M.H. Cho. 1997. Stripping voltammetric determination of Ag(I) with carbon paste electrode modified with podand compounds. *J. Korean Chem. Soc*. 41:557–560.
1337. Prabhu, S.V., R.P. Baldwin, and L. Kryger. 1987. Chemical preconcentration and determination of copper at a chemically modified carbon-paste electrode containing 2,9-dimethyl-1,10-phenanthroline. *Anal. Chem*. 59:1074–1078.
1338. Sugawara, K., S. Tanaka, and M. Taga. 1991. Accumulation voltammetry of copper(II) using a carbon paste electrode modified with diquinolyl-8,8′-disulfide. *Analyst* 116:131–134.
1339. Sugawara, K., S. Tanaka, and M. Taga. 1992. Accumulation voltammetry of copper(II) at carbon-paste electrode containing salicylideneamino-2-thiophenol. *Fresenius J. Anal. Chem*. 342:65–69.
1340. Peng, T., L. Sheh, and G. Wang. 1996. Linear scan stripping voltammetry of copper(II) at the chemically modified carbon paste electrode. *Mikrochim. Acta* 122:125–132.
1341. Safavi, A., M. Pakniat, and N. Maleki. 1996. Design and construction of a flow system for determination of Cu(II) ions in water by means of a chemically modified carbon paste electrode. *Anal. Chim. Acta* 335:275–282.
1342. Qu, J., L. Meng, and K. Liu. 1999. Simultaneous determination of lead and copper by carbon paste electrode modified with pyruvaldehyde bis(N,N′-dibutyl thiosemicarbazone). *Anal. Lett*. 32:1991–2006.
1343. Abbaspour, A. and S.M.M. Moosavi. 2002. Chemically modified carbon paste electrode for determination of copper(II) by potentiometric method. *Talanta* 56:91–96.
1344. Danet, A.F., D. Neagu, M.P. Dondoi, and N. Iliescu. 2004. Anodic stripping voltammetric determination of copper(II) with salicylaldoxime carbon paste electrodes. *Rev. Chim*. 55:1–4.

1345. Jureviciute, I. and A. Malinauskas. 2004. Preparation of 2-mercaptobenzothiazole modified carbon paste electrode and its application to the stripping analysis of copper. *Chem. Anal. (Warsaw, Pol.)* 49:339–349.
1346. Chaisuksant, R., L. Pattanarat, and K. Grudpan. 2008. Naphthazarin modified carbon paste electrode for determination of copper(II). *Microchim. Acta* 162:181–188.
1347. Won, M.-S., J.-H. Park, and Y.-B. Shim. 1993. Determination of copper(I) ion with a chemically modified carbon paste electrode based on di(2-iminocyclopentylidinemercaptomethyl) disulfide. *Electroanalysis* 5:421–426.
1348. Won, M.-S., H.-J. Kim, and Y.-B. Shim. 1996. Differential pulse voltammetric determination of copper(I) ion with a rubeanic acid-modified carbon paste electrode. *Bull. Korean Chem. Soc*. 17:1142–1146.
1349. Peng, T., T. Zhe, G. Wang, and B. Shen. 1994. Differential pulse voltammetric determination of lead(II) with benzoin oxime-modified carbon paste electrodes. *Electroanalysis* 6:597–603.
1350. Liu, J.-G., F.-X. Xie, S.-Y. Zhang, Y.-P. Tian, and S.-S. Ni. 1998. Design, synthesis and characterization of a novel Schiff base bis(iminoantipyrine) and its modified electrode. *Chin. Chem. Lett*. 9:245–248.
1351. Rahmani, A., M.F. Mousavi, S.M. Golabi, M. Shamsipur, and H. Sharghi. 2004. Voltammetric determination of lead(II) using chemically modified carbon paste electrode with bis[1-hydroxy-9,10-anthraquinone-2-methyl]sulfide. *Chem. Anal*. 49:359–368.
1352. Adraoui, I., M. El Rhazi, A. Amine, L. Idrissi, A. Curulli, and G. Palleschi. 2005. Lead determination by anodic stripping voltammetry using a p-phenylenediamine modified carbon paste electrode. *Electroanalysis* 17:685–693.
1353. Vazquez, M.D., M.L. Tascon, and L. Deban. 2006. Determination of Pb(II) with a dithizone-modified carbon paste electrode. *J. Environ. Sci. Health A* 41:2735–2746.
1354. Gao, Z., P. Li, and Z. Zhao. 1991. Voltammetric determination of traces of cobalt(II) with a chemically modified carbon paste electrode. *Fresenius J. Anal. Chem*. 339:137–141.
1355. Gao, Z., G. Wang, P. Li, and Z. Zhao. 1991. Differential pulse voltammetric determination of cobalt with a perfluorinated sulfonated polymer-2,2-bipyridyl modified carbon paste electrode. *Anal. Chem*. 63:953–957.
1356. Suska, M. 1989. A study on suitability of solid electrodes for the determination of low concentrations of Ni and Co using stripping voltammetry method (in Czech). MSc dissertation, University of Chemical Technology, Pardubice, Czech Republic.
1357. Khan, M.R. 1998. 1-(2-Pyridylazo)-2-naphthol modified carbon paste electrode for trace cobalt(II) determination by differential pulse cathodic voltammetry. *Analyst* 123:1351–1357.
1358. Lu, X., Z. Wang, Z. Geng, J. Kang, and J. Gao. 2000. 2,4,6-tri(3,5-Dimethylpyrazoyl)-1,3,5-triazine modified carbon paste electrode for trace Cobalt(II) determination by differential pulse anodic stripping voltammetry. *Talanta* 52:411–416.
1359. Nateghi, M.R., A. Hadji-Shabani, and M. Fakheri. 2008. Determination of cobalt(II) at a 5-[(4-chlorophenyl)azo-N-(4′-methyl phenyl)]salicyl aldimine modified carbon paste electrode by differential pulse cathodic voltammetry. *Anal. Chem., Indian J*. 7:89–94.
1360. Bing, C., R. Deen, G.-N. Khang, C.-L. Sai, and L. Kryger. 1999. Chemical accumulation and voltammetric determination of traces of nickel(II) at glassy carbon electrodes modified with dimethyl glyoxime containing polymer coatings. *Talanta* 49:651–659.
1361. Tartarotti, F.O., M. Firmino de Oliveira, V.R. Balbo, and N.R. Stradiotto. 2006. Determination of nickel in fuel ethanol using a carbon paste modified electrode containing dimethylglyoxime. *Microchim. Acta* 155:397–401.
1362. Cai, X., K. Kalcher, C. Neuhold, W. Diewald, and R.J. Magee. 1993. Voltammetric determination of gold using a carbon paste electrode modified with thiobenzanilide. *Analyst* 118:53–57.
1363. Dos Santos Mattos, C., D. Ribeiro do Carmo, M. Firmino de Oliveira, and N.R. Stradiotto. 2008. Voltammetric determination of total iron in fuel ethanol using a 1,10 phenantroline/Nafion carbon paste-modified electrode. *Int. J. Electrochem. Sci*. 3:338–345.
1364. Gao, Z., P. Li, G. Wang, and Z. Zhao. 1990. Preconcentration and differential-pulse voltammetric determination of iron(II) with Nafion-1,10-phenanthroline-modified carbon paste electrodes. *Anal. Chim. Acta* 241:137–146.
1365. Gao, Z., P. Li, and Z. Zhao. 1991. Determination of iron(II) with chemically-modified carbon-paste electrodes. *Talanta* 38:1177–1184.
1366. Paniagua, A.R., M.D. Vazquez, M.L. Tascon, and P. Sanchez Batanero. 1993. Determination of chromium(VI) and chromium(III) by using a diphenylcarbazide-modified carbon paste electrode. *Electroanalysis* 5:155–163.
1367. Xu, J., Y. Kong, W. Wang, Z. Chen, and S. Yao. 2009. Determination of chromium(VI) in electronics materials using trioctylamine modified carbon paste electrode. *Anal. Sci*. 25:1427–1430.

1368. Ghaedi, M., A. Shokrollahi, A.R. Salimibeni, S. Noshadi, and S. Joybar. 2010. Preparation of a new chromium(III) selective electrode based on 1-[(2-hydroxy ethyl) amino]-4-methyl-9H-thioxanthen-9-one as a neutral carrier. *J. Hazard. Mater*. 178:157–163.
1369. Khoo, S.B., M.K. Soh, Q. Cai, M.R. Khan, and S.X. Guo. 1997. Differential pulse cathodic stripping voltammetric determination of manganese(II) and manganese(VII) at the 1-(2-pyridylazo)-2-naphthol-modified carbon paste electrode. *Electroanalysis* 9:45–51.
1370. Khoo, S.B. and J. Zhu. 1996. Determination of trace amounts of antimony(III) by differential-pulse anodic stripping voltammetry at a phenylfluorone-modified carbon paste electrode. *Analyst* 121:1983–1988.
1371. Wang, J., P. Tuzhi, R. Li, and J. Zadeii. 1989. Tropolone modified carbon paste electrodes for trace measurements of tin. *Anal. Lett*. 22:719–727.
1372. Cai, Q. and S.B. Khoo. 1995. Differential pulse stripping voltammetric determination of thallium with an 8-hydroxyquinoline-modified carbon paste electrode. *Electroanalysis* 7:379–385.
1373. Cai, Q. and S.B. Khoo. 1995. Determination of trace thallium after accumulation of thallium(III) at a 8-hydroxyquinoline-modified carbon paste electrode. *Analyst* 120:1047–1053.
1374. Gao, Z., K.S. Siow, and A. Ng. 1996. Catalytic voltammetric determination of molybdenum at a chemically modified carbon paste electrode. *Electroanalysis* 8:1183–1187.
1375. Ferri, T., F. Guidi, and R. Morabito. 1994. Carbon paste electrode and medium-exchange procedure in adsorptive cathodic stripping voltammetry of selenium(IV). *Electroanalysis* 6:1087–1093.
1376. Estevez Hernandez, O., I. Naranjo Rodriguez, J.L.H.H. de Cisneros, and E. Reguera. 2007. Evaluation of carbon paste electrodes modified with 1-furoylthioureas for the analysis of cadmium by differential pulse anodic stripping voltammetry. *Sens. Actuators B* B123:488–494.
1377. Javanbakht, M., H. Khoshsafar, M.R. Ganjali, P. Norouzi, and M. Adib. 2009. Adsorptive stripping voltammetric determination of nanomolar concentration of cerium(III) at a carbon paste electrode modified by N′-[(2-hydroxyphenyl) methylidene]-2-furohydrazide. *Electroanalysis* 21:1605–1610.
1378. Kwak, M.-K., D.-S. Park, M-.S. Won, and Y.-B. Shim. 1996. Anodic differential pulse voltammetric determination of iodide with a cinchonine-modified carbon paste electrode. *Electroanalysis* 8:680–684.
1379. Wang, J., J. Lu, D.D. Larson, and K. Olsen. 1995. Voltammetric sensor for uranium based on the propyl gallate-modified carbon paste electrode. *Electroanalysis* 7:247–250.
1380. Dick, R., H. Ruf, and H.J. Ache. 1989. Analytically useful stripping voltammetric behavior of technetium at a thenoyltrifluoroacetone-modified carbon paste electrode. *Electroanalysis* 1:81–85.
1381. Li, J., F. Yi, D. Shen, and J. Fei. 2002. Adsorptive stripping voltammetric study of scandium-alizarin complexan complex at a carbon paste electrode. *Anal. Lett*. 35:1361–1372.
1382. Zhang, J., J. Li, and P. Deng. 2001. Adsorption voltammetry of the scandium-alizarin red S complex onto a carbon paste electrode. *Talanta* 54:561–566.
1383. Shamsipur, M., G. Khayatian, S.Y. Kazemi, K. Niknam, and H. Sharghi. 2001. The synthesis of 1,4-diaza-2,3;8,9-dibenzo-7,10-dioxacyclododecane-5,12-dione and its use in calcium-selective carbon paste electrodes. *J. Inclusion Phenom. Macrocycl. Chem*. 40:303–307.
1384. Alemu, H. and B.S. Chandravanshi. 1998. Differential pulse anodic stripping voltammetric determination of copper(II) with N-phenylcinnamohydroxamic acid modified carbon paste electrodes. *Anal. Chim. Acta* 368:165–173.
1385. Alemu, H. and B.S. Chandravanshi. 1998. Electrochemical behavior of N-phenylcinnamohydroxamic acid incorporated into carbon paste electrode and adsorbed metal ions. *Electroanalysis* 10:116–120.
1386. Refera, T., B.S. Chandravanshi, and H. Alemu. 1998. Differential pulse anodic stripping voltammetric determination of cobalt(II) with N-p-chlorophenylcinnamo-hydroxamic acid modified carbon paste electrode. *Electroanalysis* 10:1038–1042.
1387. Degefa, T.H., B.S. Chandravanshi, and H. Alemu. 1999. Differential pulse anodic stripping voltammetric determination of lead(II) with N-p-chlorophenyl-cinnamohydroxamic acid modified carbon paste electrode. *Electroanalysis* 11:1305–1311.
1388. Fanta, K. and B.S. Chandravanshi. 2001. Differential pulse anodic stripping voltammetric determination of cadmium(II) with N-p-chlorophenylcinnamo-hydroxamic acid modified carbon paste electrode. *Electroanalysis* 13:484–492.
1389. Ghoneim, E.M. 2010. Simultaneous determination of Mn(II), Cu(II) and Fe(III) as 2-(5′-bromo-2′-pyridylazo)-5-diethylaminophenol complexes by adsorptive cathodic stripping voltammetry at a carbon paste electrode. *Talanta* 82:646–652.
1390. Wang, J. and Q. Chen. 1993. In situ elimination of metal inhibitory effects using ligand-containing carbon paste enzyme electrodes. *Anal. Chem*. 65:2698–2700.
1391. Wang, J. and M. Bonakdar. 1988. Preconcentration and voltammetric measurement of mercury with a crown ether-modified carbon-paste electrode. *Talanta* 35:277–280.

1392. Shaidarova, L.G., N.A. Ulakhovich, M.A. Al Gakhri, and G.K. Budnikov. 1993. Use of dibenzo-18-crown-6 as a modifier of a carbon-paste electrode for lead determination. *Izv. Vyss. Ucheb. Zaved., Khim. Khim. Tekhnol*. 36:51–54.
1393. Shaidarova, L.G., N.A. Ulakhovich, M.A. Al'-Gakhri, G.K. Budnikov, and A.N. Glebov. 1995. Use of carbon-paste electrodes modified with macrocyclic compounds in voltammetric analysis. *J. Anal. Chem*. 50:692–697.
1394. Shaidarova, L.G., I.L. Fedorova, N.A. Ulakhovich, and G.K. Budnikov. 1997. Stripping-voltammetric determination of some amino acids on a carbon-paste electrode modified by crown ethers. *J. Anal. Chem*. 52:238–241.
1395. Shaidarova, L.G., I.L. Fedorova, N.A. Ulakhovich, and G.K. Budnikov. 1998. Stripping voltammetry of biologically active organic compounds as host-guest complexes at electrodes modified with crown ether. *J. Anal. Chem*. 53:52–58.
1396. Kotkar, R.M. and A.K. Srivastava. 2006. Voltammetric determination of para-aminobenzoic acid using carbon paste electrode modified with macrocyclic compounds. *Sens. Actuators B* B119:524–530.
1397. Kotkar, R.M. and A.K. Srivastava. 2008. Electrochemical behavior of nicotinamide using carbon paste electrode modified with macrocyclic compounds. *J. Inclusion Phenom. Macrocyclic Chem*. 60:271–279.
1398. Desai, P.B., R.M. Kotkar, and A.K. Srivastava. 2008. Electrochemical behaviour of pyridoxine hydrochloride (vitamin B6) at carbon paste electrode modified with crown ethers. *J. Solid State Electrochem*. 12:1067–1075.
1399. Ijeri, V.S. and A.K. Srivastava. 2000. Voltammetric determination of copper at chemically modified electrodes based on crown ethers. *Fresenius J. Anal. Chem*. 367:373–377.
1400. Ijeri, V.S. and A.K. Srivastava. 2001. Voltammetric determination of lead at chemically modified electrodes based on crown ethers. *Anal. Sci*. 17:605–608.
1401. Srivastava, A.K. and R.R. Gaichore. 2010. Macrocyclic compounds based chemically modified electrodes for voltammetric determination of L-tryptophan using electrocatalytic oxidation. *Anal. Lett*. 43:1933–1950.
1402. Agrahari, S.K., S.D. Kumar, and A.K. Srivastava. 2009. Development of a carbon paste electrode containing benzo-15-crown-5 for trace determination of the uranyl ion by using a voltammetric technique. *J. AOAC Int*. 92:241–247.
1403. Tanaka, S. and H. Yoshida. 1989. Stripping voltammetry of silver(I) with a carbon-paste electrode modified with thiacrown compounds. *Talanta* 36:1044–1046.
1404. Ruiperez, J., M.A. Mendiola, M.T. Sevilla, J.R. Procopio, and L. Hernandez. 2002. Application of a macrocyclic thiohydrazone modified carbon paste electrode to copper speciation in water samples. *Electroanalysis* 14:532–539.
1405. Taraszewska, J., G. Roslonek, and W. Darlewski. 1994. Electrochemical behavior of nickel tetraazamacrocyclic complexes incorporated into carbon paste electrodes: Application in H_2O_2 electrocatalysis. *J. Electroanal. Chem*. 371:223–230.
1406. Jesus Gismera, M., M. Antonia Mendiola, J. Rodriguez Procopio, and M. Teresa Sevilla. 1999. Copper potentiometric sensors based on copper complexes containing thiohydrazone and thiosemicarbazone ligands. *Anal. Chim. Acta* 385:143–149.
1407. Pouretedal, H.R. and M.H. Keshavarz. 2005. Cyclam modified carbon paste electrode as a potentiometric sensor for determination of cobalt(II) ions. *Chem. Res. Chin. Univ*. 21:28–31.
1408. Kotkar, R.M., P.B. Desai, and A.K. Srivastava. 2007. Behavior of riboflavin on plain carbon paste and aza macrocycles based chemically modified electrodes. *Sens. Actuators, B* B124:90–98.
1409. Chung, T.D. and H. Kim. 1998. Electrochemistry of calixarene and its analytical applications. *J. Inclusion Phenom. Mol. Recogn. Chem*. 32:179–193.
1410. O'Connor, K.M., D.W.M. Arrigan, and G. Svehla. 1995. Calixarenes in electroanalysis. *Electroanalysis* 7:205–215.
1411. Kim, S.-H., M.-S. Won, and Y.-B. Shim. 1996. Determination of derivatives of phenol with a modified electrode containing b-cyclodextrin. *Bull. Korean Chem. Soc*. 17:342–347.
1412. Ferancova, A., E. Korgova, R. Miko, and J. Labuda. 2000. Determination of tricyclic antidepressants using a carbon paste electrode modified with b-cyclodextrin. *J. Electroanal. Chem*. 492:74–77.
1413. Ferancova, A., E. Korgova, J. Labuda, J. Zima, and J. Barek. 2002. Cyclodextrin modified carbon paste based electrodes as sensors for the determination of carcinogenic polycyclic aromatic amines. *Electroanalysis* 14:1668–1673.
1414. Yanez, C., L.J. Nunez Vergara, and J.A. Squella. 2002. Determination of nitrendipine with b-cyclodextrin modified carbon paste electrode. *Electroanalysis* 14:559–562.

1415. Roa Morales, G., T. Ramirez Silva, and L. Galicia. 2003. Carbon paste electrodes electrochemically modified with cyclodextrins. *J. Solid State Electrochem*. 7:355–360.
1416. Roa Morales, G., M.T. Ramirez Silva, M.A. Romero Romo, and L. Galicia. 2003. Determination of lead and cadmium using a polycyclodextrin-modified carbon paste electrode with anodic stripping voltammetry. *Anal. Bioanal. Chem*. 377:763–769.
1417. Reddy, T.M., M. Sreedhar, and S.J. Reddy. 2003. Electrochemical determination of sparfloxacin in pharmaceutical formulations and urine samples using a b-cyclodextrin modified carbon paste electrode. *Anal. Lett*. 36:1365–1379.
1418. Reddy, T.M., K. Balaji, and S.J. Reddy. 2007. Voltammetric behavior of some fluorinated quinolone antibacterial agents and their differential pulse voltammetric determination in drug formulations and urine samples using a beta-cyclodextrin-modified carbon-paste electrode. *J. Anal. Chem*. 62:168–175.
1419. El Hady, D. and N. El Maali. 2008. Selective square wave voltammetric determination of (+)-catechin in commercial tea samples using beta-cyclodextrin modified carbon paste electrode. *Microchim. Acta* 161:225–231.
1420. Ramirez Berriozabal, M., L. Galicia, S. Gutierrez-Granados, J.S. Cortes, and P. Herrasti. 2008. Selective electrochemical determination of uric acid in the presence of ascorbic acid using a carbon paste electrode modified with beta-cyclodextrin. *Electroanalysis* 20:1678–1683.
1421. Abbaspour, A. and A. Noori. 2008. Electrochemical studies on the oxidation of guanine and adenine at cyclodextrin modified electrodes. *Analyst* 133:1664–1672.
1422. Ortega, D.R., M.T.R. Silva, M.P. Pardave, G. Alarcon-Angeles, A.R. Hernandez, and M.R. Romo. 2009. Development a boron potentiometric determination methodology using a carbon paste electrode modified with a beta-cyclodextrin-azomethine-H inclusion complex. *ECS Trans*. 20:13–19.
1423. Roa Morales, G., M.T. Ramirez-Silva, R.L. Gonzalez, L. Galicia, and M. Romero-Romo. 2005. Electrochemical characterization and determination of mercury using carbon paste electrodes modified with cyclodextrins. *Electroanalysis* 17:694–700.
1424. Ferancova, A., M. Buckova, E. Korgova, O. Korbut, P. Gruendler, I. Waernmark, R. Stepan, J. Barek, J. Zima, and J. Labuda. 2005. Association interaction and voltammetric determination of 1-aminopyrene and 1-hydroxypyrene at cyclodextrin and DNA based electrochemical sensors. *Bioelectrochem*. 67:191–197.
1425. Ozoemena, K.I., R.I. Stefan, J.F. van Staden, and H.Y. Aboul-Enein. 2004. Utilization of maltodextrin based enantioselective, potentiometric membrane electrodes for the enantioselective assay of S-perindopril. *Talanta* 62:681–685.
1426. Barsoum, B.N., W.M. Watson, I.M. Mahdi, and E. Khalid. 2004. Electrometric assay for the determination of acetylcholine using a sensitive sensor based on carbon paste. *J. Electroanal. Chem*. 567:277–281.
1427. Roa Morales, G., M. T. Ramirez Silva, M. M. Romero Romo, and L. Galicia. 2005. Heavy metal determination by anodic stripping voltammetry with a carbon paste electrode modified with alpha-cyclodextrin. In *Applications of Analytical Chemistry in Environmental Research*, Ed. M. Palomar, pp. 57–66, Trivandrum, India: Research Signpost.
1428. Arrigan, D.W.M., G. Svehla, S.J. Harris, and M.A. McKervey. 1992. Stripping voltammetry with a polymeric calixarene modified carbon paste electrode. *Anal. Proc*. 29:27–29.
1429. Arrigan, D.W.M., G. Svehla, S.J. Harris, and M.A. McKervey. 1994. Use of calixarenes as modifiers of carbon paste electrodes for voltammetric analysis. *Electroanalysis* 6:97–106.
1430. Ijeri, V.S., M. Algarra, and A. Martins. 2004. Electrocatalytic determination of vitamin C using calixarene modified carbon paste electrodes. *Electroanalysis* 16:2082–2086.
1431. Canpolat, E.C., E. Sar, N.Y. Coskun, and H. Cankurtaran. 2007. Determination of trace amounts of copper in tap water samples with a calix[4]arene modified carbon paste electrode by differential pulse anodic stripping voltammetry. *Electroanalysis* 19:1109–1115.
1432. Vaze, V.D. and A.K. Srivastava. 2007. Electrochemical behavior of folic acid at calixarene based chemically modified electrodes and its determination by adsorptive stripping voltammetry. *Electrochim. Acta* 53:1713–1721.
1433. Raoof, J.B., R. Ojani, A. Alinezhad, and S.Z. Rezaie. 2010. Differential pulse anodic stripping voltammetry of silver(I) using p-isopropylcalix[6]arene modified carbon paste electrode. *Monatsh. Chem*. 141:279–284.
1434. Ikeda, T., I. Katasho, and M. Senda. 1985. Glucose oxidase-immobilized benzoquinone-mixed carbon paste electrode with pre-minigrid. *Anal. Sci*. 1:455–457.
1435. Ikeda, T., F. Matsushita, and M. Senda. 1990. D-Fructose dehydrogenase-modified carbon paste electrode containing p-benzoquinone as a mediated amperometric fructose sensor. *Agric. Biol. Chem*. 54:2919–2924.

1436. Ikeda, T., T. Shibata, and M. Senda. 1989. Amperometric enzyme electrode for maltose based on an oligosaccharide dehydrogenase-modified carbon paste electrode containing p-benzoquinone. *J. Electroanal. Chem*. 261:351–362.
1437. Ikeda, T., T. Shibata, S. Todoriki, M. Senda, and H. Kinoshita. 1990. Amperometric response to reducing carbohydrates of an enzyme electrode based on oligosaccharide dehydrogenase. Detection of lactose and a-amylase. *Anal. Chim. Acta* 230:75–82.
1438. Karan, H.I., P.D. Hale, H.-L. Lan, H.-S. Lee, L.-F. Liu, T.A. Skotheim, and Y. Okamoto. 1991. Quinone-modified polymers as electron transfer relay systems in amperometric glucose sensors. *Polym. Adv. Technol*. 2:229–235.
1439. Tessema, M., T. Ruzgas, L. Gorton, and T. Ikeda. 1995. Flow injection amperometric determination of glucose and some other low molecular weight saccharides based on oligosaccharide dehydrogenase mediated by benzoquinone systems. *Anal. Chim. Acta* 310:161–171.
1440. Kulys, J. 1999. The carbon paste electrode encrusted with a microreactor as glucose biosensor. *Biosens. Bioelectron*. 14:473–479.
1441. Takayama, K., T. Kurosaki, and T. Ikeda. 1993. Mediated electrocatalysis at a biocatalyst electrode based on a bacterium, *Gluconobacter industrius. J. Electroanal. Chem*. 356:295–301.
1442. Takayama, K., T. Ikeda, and T. Nagasawa. 1996. Mediated amperometric biosensor for nicotinic acid based on whole cells of Pseudomonas fluorescens. *Electroanalysis* 8:765–768.
1443. Kondo, T. and T. Ikeda. 2000. Rapid detection of substrate-oxidizing activity of Hiochi bacteria using benzoquinone-mediated amperometric method. *J. Biosci. Bioeng*. 90:217–219.
1444. Aklilu, M., M. Tessema, and M. Redi-Abshiro. 2008. Indirect voltammetric determination of caffeine content in coffee using 1,4-benzoquinone modified carbon paste electrode. *Talanta* 76:742–746.
1445. Raoof, J.B., R. Ojani, and M. Ramine. 2009. Voltammetric sensor for nitrite determination based on its electrocatalytic reduction at the surface of p-duroquinone modified carbon paste electrode. *J. Solid State Electrochem*. 13:1311–1319.
1446. Zare, H.R., N. Nasirizadeh, and M. Mazloum Ardakani. 2005. Electrochemical properties of a tetrabromo-p-benzoquinone modified carbon paste electrode. Application to the simultaneous determination of ascorbic acid, dopamine and uric acid. *J. Electroanal. Chem*. 577:25–33.
1447. Raoof, J.B., R. Ojani, and M. Ramine. 2006. Electrocatalytic oxidation and voltammetric determination of L-cysteic acid at the surface of p-bromanil modified carbon paste electrode. *Electroanalysis* 18:1722–1726.
1448. Motta, N. and A.R. Guadalupe. 1994. Activated carbon paste electrodes for biosensors. *Anal. Chem*. 66:566–571.
1449. Raoof, D.B. and S.M. Golabi. 1995. Electrochemical properties of carbon-paste electrodes spiked with some 1,4-naphthoquinone derivatives. *Bull. Chem. Soc. Jpn*. 68:2253–2261.
1450. El Atrash, S.S. and R.D. O'Neill. 1995. Characterization in vitro of a naphthoquinone-mediated glucose oxidase-modified carbon paste electrode designed for neurochemical analysis in vivo. *Electrochim. Acta* 40:2791–2797.
1451. Golabi, S.M. and J.B. Raoof. 1996. Catalysis of dioxygen reduction to hydrogen peroxide at the surface of carbon paste electrodes modified by 1,4-naphthoquinone and some of its derivatives. *J. Electroanal. Chem*. 416:75–82.
1452. Raoof, J.B. and R. Ojani. 2002. The aqueous electrochemical behavior of carbon paste electrodes spiked with some 9,10-anthraquinone derivatives. *Int. J. Chem*. 12:227–239.
1453. Manisankar, P. and A. Gomathi. 2005. Electrocatalytic reduction of dioxygen at the surface of carbon paste electrodes modified with 9,10-anthraquinone derivatives and dyes. *Electroanalysis* 17:1051–1057.
1454. Mousavi, M.F., A. Rahmani, S.M. Golabi, M. Shamsipur, and H. Sharghi. 2001. Differential pulse anodic stripping voltammetric determination of lead(II) with a 1,4-bis(prop-2′-enyloxy)-9,10-anthraquinone modified carbon paste electrode. *Talanta* 55:305–312.
1455. Shamsipur, M., A. Salimi, S.M. Golabi, H. Sharghi, and M.F. Mousavi. 2001. Electrochemical properties of modified carbon paste electrodes containing some amino derivatives of 9,10-anthraquinone. *J. Solid State Electrochem*. 5:68–73.
1456. Kawakami, M., N. Uriuda, H. Koya, and S. Gondo. 1995. Glucose sensor based on ubiquinone-modified carbon paste electrode. *Anal. Lett*. 28:1555–1569.
1457. Kawakami, M., K. Tanaka, N. Uriuda, and S. Gondo. 2000. Effects of nonionic surfactants on electrochemical behavior of ubiquinone and menaquinone incorporated in a carbon paste electrode. *Bioelectrochemistry* 52:51–56.
1458. Laurinavicius, V., B. Kurtinaitiene, V. Liauksminas, A. Ramanavicius, R. Meskys, R. Rudomanskis, T. Skotheim, and L. Boguslavsky. 1999. Oxygen insensitive glucose biosensor based on PQQ-dependent glucose dehydrogenase. *Anal. Lett*. 32:299–316.

1459. Mazloum Ardakani, M., Z. Taleat, H. Beitollahi, and H. Naeimi. 2010. Selective determination of cysteine in the presence of tryptophan by carbon paste electrode modified with quinizarine. *J. Iran. Chem. Soc*. 7:251–259.
1460. Taleat, Z., M. Mazloum Ardakani, H. Naeimi, H. Beitollahi, M. Nejati, and H. Reza Zare. 2008. Electrochemical behavior of ascorbic acid at a 2,2′-[3,6-dioxa-1,8-octanediylbis(nitriloethylidyne)]-bis-hydroquinone carbon paste electrode. *Anal. Sci*. 24:1039–1044.
1461. Mazloum Ardakani, M., F. Habibollahi, H.R. Zare, H. Naeimi, and M. Nejati. 2009. Electrocatalytic oxidation of ascorbic acid at a 2,2′-(1,8-octanediylbisnitriloethylidine)-bis-hydroquinone modified carbon paste electrode. *J. Appl. Electrochem*. 39:1117–1124.
1462. Mazloum Ardakani, M., Z. Taleat, H. Beitollahi, and H. Nacimi. 2010. Electrocatalytic oxidation of dopamine on 2,2′-[3,6-dioxa-1,8-octanediylbis (nitriloethylidyne)]-bis-hydroquinone modified carbon paste electrode. *Anal. Methods* 2:149–153.
1463. Erdem, A., K. Kerman, B. Meric, and M. Ozsoz. 2001. Methylene blue as a novel electrochemical hybridization indicator. *Electroanalysis* 13:219–223.
1464. Yang, W., M. Ozsoz, D.B. Hibbert, and J.J. Gooding. 2002. Evidence for the direct interaction between methylene blue and guanine bases using DNA-modified carbon paste electrodes. *Electroanalysis* 14:1299–1302.
1465. Kara, P., K. Kerman, D. Ozkan, B. Meric, A. Erdem, P.E. Nielsen, and M. Ozsoz. 2002. Label-free and label based electrochemical detection of hybridization by using methylene blue and peptide nucleic acid probes at chitosan modified carbon paste electrodes. *Electroanalysis* 14:1685–1690.
1466. Ozkan, D., P. Kara, K. Kerman, B. Meric, A. Erdem, F. Jelen, P.E. Nielsen, and M. Ozsoz. 2002. DNA and PNA sensing on mercury and carbon electrodes by using methylene blue as an electrochemical label. *Bioelectrochemistry* 58:119–126.
1467. Kara, P., K. Kerman, D. Ozkan, B. Meric, A. Erdem, Z. Ozkan, and M. Ozsoz. 2002. Electrochemical genosensor for the detection of interaction between methylene blue and DNA. *Electrochem. Commun*. 4:705–709.
1468. Kulys, J., L. Wang, and N. Daugvilaite. 1992. Amperometric methylene green-mediated pyruvate electrode based on pyruvate oxidase entrapped in carbon paste. *Anal. Chim. Acta* 265:15–20.
1469. Kulys, J., G. Gleixner, W. Schuhmann, and H.L. Schmidt. 1993. Biocatalysis and electrocatalysis at carbon paste electrodes doped by diaphorase-methylene green and diaphorase-meldola blue. *Electroanalysis* 5:201–207.
1470. Kulys, J., L. Wang, and A. Maksimoviene. 1993. L-Lactate oxidase electrode based on methylene green and carbon paste. *Anal. Chim. Acta* 274:53–58.
1471. Chi, Q. and S. Dong. 1994. Electrocatalytic oxidation of reduced nicotinamide coenzymes at methylene Green-modified electrodes and fabrication of amperometric alcohol biosensors. *Anal. Chim. Acta* 285:125–133.
1472. Yu, A.-M., C.-X. He, J. Zhou, and H.-Y. Chen. 1997. Flow injection analysis of ascorbic acid at a methylene green chemically modified electrode. *Fresenius J. Anal. Chem*. 357:84–85.
1473. Dominguez, E., H.-L. Lan, Y. Okamoto, P.D. Hale, T.A. Skotheim, and L. Gorton. 1993. A carbon paste electrode chemically modified with a phenothiazine polymer derivative for electrocatalytic oxidation of NADH. Preliminary study. *Biosens. Bioelectron*. 8:167–175.
1474. Lobo Castanon, M.J., A.J. Miranda Ordieres, and P. Tunon Blanco. 1996. Flow-injection analysis of ethanol with an alcohol dehydrogenase-modified carbon paste electrode. *Electroanalysis* 8:932–937.
1475. Ramirez Molina, C., M. Boujtita, and N. El Murr. 1999. A carbon paste electrode modified by entrapped toluidine blue-O for amperometric determination of L-lactate. *Anal. Chim. Acta* 401:155–162.
1476. Munteanu, F.D., Y. Okamoto, and L. Gorton. 2003. Electrochemical and catalytic investigation of carbon paste modified with toluidine blue O covalently immobilised on silica gel. *Anal. Chim. Acta* 476:43–54.
1477. Thenmozhi, K. and S.S. Narayanan. 2007. Amperometric determination of hydrogen peroxide using a carbon paste electrode with immobilized toluidine blue. *Bull. Electrochem*. 23:13–18.
1478. Razola, S.S., E. Aktas, J.C. Vire, and J.-M. Kauffmann. 2000. Reagentless enzyme electrode based on phenothiazine mediation of horseradish peroxidase for subnanomolar hydrogen peroxide determination. *Analyst* 125:79–85.
1479. Serradilla Razola, S., B. Blankert, G. Quarin, and J.-M. Kauffmann. 2003. Phenothiazine drugs as redox mediators in horseradish peroxidase bioelectrocatalysis. *Anal. Lett*. 36:1819–1833.
1480. Wang, J., G. Rivas, X. Cai, H. Shiraishi, P.A.M. Farias, N. Dontha, and D. Luo. 1996. Accumulation and trace measurements of phenothiazine drugs at DNA-modified electrodes. *Anal. Chim. Acta* 332:139–144.

1481. Bremle, G., B. Persson, and L. Gorton. 1991. An amperometric glucose electrode based on carbon paste, chemically modified with glucose dehydrogenase, nicotinamide adenine dinucleotide, and a phenoxazine mediator, coated with a poly(ester sulfonic acid) cation exchanger. *Electroanalysis* 3:77–86.
1482. Kulys, J., H.E. Hansen, T. Buch-Rasmussen, J. Wang, and M. Ozsoz. 1994. Glucose biosensor based on the incorporation of Meldola Blue and glucose oxidase within carbon paste. *Anal. Chim. Acta* 288:193–196.
1483. Garjonyte, R. and A. Malinauskas. 2003. Investigation of baker's yeast *Saccharomyces cerevisiae*- and mediator-based carbon paste electrodes as amperometric biosensors for lactic acid. *Sens. Actuators, B* 96:509–515.
1484. Luo, W., H. Liu, H. Deng, K. Sun, C. Zhao, D. Qi, and J. Deng. 1997. Biosensing of hydrogen peroxide at carbon paste electrode incorporating N-methyl phenazine methosulfate, fumed-silica and horseradish peroxidase. *Anal. Lett*. 30:205–220.
1485. Garjonyte, R., V. Melvydas, and A. Malinauskas. 2006. Mediated amperometric biosensors for lactic acid based on carbon paste electrodes modified with baker's yeast *Saccharomyces cerevisiae. Bioelectrochemistry* 68:191–196.
1486. Gunasingham, H. and C.-H. Tan. 1990. Carbon paste-tetrathiafulvalene amperometric enzyme electrode for the determination of glucose in flowing systems. *Analyst* 115:35–39.
1487. Hale, P.D., L.F. Liu, and T.A. Skotheim. 1991. Enzyme-modified carbon paste: Tetrathiafulvalene electrodes for the determination of acetylcholine. *Electroanalysis* 3:751–756.
1488. Almeida, N.F. and A.K. Mulchandani. 1993. A mediated amperometric enzyme electrode using tetrathiafulvalene and L-glutamate oxidase for the determination of L-glutamic acid. *Anal. Chim. Acta* 282:353–361.
1489. Mulchandani, A., A.S. Bassi, and A. Nguyen. 1995. Tetrathiafulvalene-mediated biosensor for L-lactate in dairy products. *J. Food Sci*. 60:74–78.
1490. Mulchandani, A. and A.S. Bassi. 1996. Determination of glutamine and glutamic acid in mammalian cell cultures using tetrathiafulvalene modified enzyme electrodes. *Biosens. Bioelectron*. 11:271–280.
1491. Murthy, A.S.N. and Anita. 1996. Tetrathiafulvalene as a mediator for the electrocatalytic oxidation of L-ascorbic acid. *Biosens. Bioelectron*. 11:191–193.
1492. Saby, C., F. Mizutani, and S. Yabuki. 1995. Glucose sensor based on carbon paste electrode incorporating poly(ethylene glycol)-modified glucose oxidase and various mediators. *Anal. Chim. Acta* 304:33–39.
1493. Sun, C., W. Song, D. Zhao, Q. Gao, and H. Xu. 1996. Tetrabutylammonium-tetracyanoquinodimethane as electron-transfer mediator in amperometric glucose sensor. *Microchem. J*. 53:296–302.
1494. Bassi, A.S., D. Tang, and M.A. Bergougnou. 1999. Mediated, amperometric biosensor for glucose-6-phosphate monitoring based on entrapped glucose-6-phosphate dehydrogenase, Mg^{2+} ions, tetracyanoquinodimethane, and nicotinamide adenine dinucleotide phosphate in carbon paste. *Anal. Biochem*. 268:223–228.
1495. Forzani, E.S., G.A. Rivas, and V.M. Solis. 1999. Kinetic behavior of dopamine-polyphenol oxidase on electrodes of tetrathiafulvalenium tetracyanoquinodimethanide and tetracyanoquinodimethane species. *J. Electroanal. Chem*. 461:174–183.
1496. Calvo Marzal, P., K.Y. Chumbimuni Torres, N.F. Hoeehr, G. Oliveira Neto, and L.T. Kubota. 2004. Determination of reduced glutathione using an amperometric carbon paste electrode chemically modified with TTF-TCNQ. *Sens. Actuators B* 100:333–340.
1497. Hu, S., C. Xu, J. Luo, J. Luo, and D. Cui. 2000. Biosensor for detection of hypoxanthine based on xanthine oxidase immobilized on chemically modified carbon paste electrode. *Anal. Chim. Acta* 412:55–61.
1498. Hale, P.D., L.I. Boguslavsky, H.I. Karan, H.L. Lan, H.S. Lee, Y. Okamoto, and T.A. Skotheim. 1991. Investigation of viologen derivatives as electron-transfer mediators in amperometric glucose sensors. *Anal. Chim. Acta* 248:155–161.
1499. Dhesi, R., T.M. Cotton, and R. Timkovich. 1983. Reaction of redox proteins at a 4,4′-bipyridyl-modified carbon paste electrode. *J. Electroanal. Chem*. 154:129–139.
1500. Pandurangachar, M., B.E.K. Swamy, B.N. Chandrashekar, and B.S. Sherigara. 2009. Cyclic voltammetric investigation of dopamine at p-aminobenzoic acid modified carbon paste electrode. *Int. J. Electrochem. Sci*. 4:1319–1328.
1501. Xu, G., J. Zhang, and S. Dong. 1999. Chemiluminescent determination of glucose with a modified carbon paste electrode. *Microchem. J*. 62:259–265.
1502. Zheng, N., Y. Zeng, P.G. Osborne, Y. Li, W. Chang, and Z. Wang. 2002. Electrocatalytic reduction of dioxygen on hemin based carbon paste electrode. *J. Appl. Electrochem*. 32:129–133.
1503. Zare, H.R., N. Nasirizadeh, M. Mazloum-Ardakani, and M. Namazian. 2006. Electrochemical properties and electrocatalytic activity of hematoxylin modified carbon paste electrode toward the oxidation of reduced nicotinamide adenine dinucleotide (NADH). *Sens. Actuators B* B120:288–294.

1504. Niranjana, E., R.R. Naik, B.E.K. Swamy, B.S. Sherigara, and H. Jayadevappa. 2008. Electrocatalytic oxidation of amlodipinebesylate with phenyl hydrazine as a mediator at carbon paste electrode. *Res. Rev. Electrochem*. 1:42–48.
1505. Chitravathi, S., B.E.K. Swamy, U. Chandra, G.P. Mamatha, and B.S. Sherigara. 2010. Electrocatalytic oxidation of sodium levothyroxine with phenyl hydrazine as a mediator at carbon paste electrode: A cyclic voltammetric study. *J. Electroanal. Chem*. 645:10–15.
1506. Mirmomtaz, E., A.A. Ensafi, and H. Karimi-Maleh. 2008. Electrocatalytic determination of 6-thioguanine at a p-aminophenol modified carbon paste electrode. *Electroanalysis* 20:1973–1979.
1507. Kachoosangi, R.T., G.G. Wildgoose, and R.G. Compton. 2008. Using capsaicin modified multiwalled carbon nanotube based electrodes and p-chloranil modified carbon paste electrodes for the determination of amines: Application to benzocaine and lidocaine. *Electroanalysis* 20:2495–2500.
1508. Kulys, J., A. Drungiliene, U. Wollenberger, and F. Scheller. 1998. Membrane covered carbon paste electrode for the electrochemical determination of peroxidase and microperoxidase in a flow system. *Bioelectrochem. Bioenerg*. 45:227–232.
1509. Shahrokhian, S. and M. Ghalkhani. 2006. Simultaneous voltammetric detection of ascorbic acid and uric acid at a carbon-paste modified electrode incorporating thionine-Nafion ion-pair as an electron mediator. *Electrochim. Acta* 51:2599–2606.
1510. Portaccio, M., D. Di Tuoro, F. Arduini, M. Lepore, D.G. Mita, N. Diano, L. Mita, and D. Moscone. 2010. A thionine-modified carbon paste amperometric biosensor for catechol and bisphenol A determination. *Biosens. Bioelectron*. 25:2003–2008.
1511. Lima, P.R., W.J.R. Santos, A.B. Oliveira, M.O.F. Goulart, and L.T. Kubota. 2008. Electrocatalytic activity of 4-nitrophthalonitrile-modified electrode for the L-glutathione detection. *J. Pharm. Biomed. Anal*. 47:758–764.
1512. Lima, P.R., W.d.J.R. Santos, A. Bof de Oliveira, M.O.F. Goulart, and L.T. Kubota. 2008. Electrochemical investigations of the reaction mechanism and kinetics between NADH and redox-active $(NC)_2C_6H_3$-NHOH/$(NC)_2C_6H_3$-NO from 4-nitrophthalonitrile-$(NC)_2C_6H_3$-NO_2-modified electrode. *Biosens. Bioelectron*. 24:448–454.
1513. Shahrokhian, S., H.R. Zare-Mehrjardi, and H. Khajehsharifi. 2009. Modification of carbon paste with congo red supported on multi-walled carbon nanotube for voltammetric determination of uric acid in the presence of ascorbic acid. *J. Solid State Electrochem*. 13:1567–1575.
1514. Sabzi, R.E., E. Minaei, and K. Farhadi. 2010. Congo red as a modifier for amperometric determination of ascorbic acid. *Asian J. Chem*. 22:2165–2171.
1515. Ensafi, A.A., A. Arabzadeh, and H. Karimi-Maleh. 2010. Simultaneous determination of dopamine and uric acid by electrocatalytic oxidation on a carbon paste electrode using Pyrogallol Red as a mediator. *Anal. Lett*. 43:1976–1988.
1516. Faguy, P.W., R.P. Baldwin, and R.M. Buchanan. 1997. Polymerized phthalocyanines for electrochemical detection, EOY report 1997808052; Office of Naval research. Freely available from: http://www.dtic.mil/cgi-bin/GetTRDoc? Location = U2&doc = GetTRDoc. pdf&AD = ADA327966 (accessed April 15, 2011).
1517. Amine, A., J.-M. Kauffmann, and G.J. Patriarche. 1991. Amperometric biosensors for glucose based on carbon paste modified electrodes. *Talanta* 38:107–110.
1518. Chen, L., M.S. Lin, M. Hara, and G.A. Rechnitz. 1991. Kohlrabi-based amperometric biosensor for hydrogen peroxide measurement. *Anal. Lett*. 24:1–14.
1519. Mizutani, F., S. Yabuki, A. Okuda, and T. Katsura. 1991. Glucose-sensing electrode based on carbon paste containing ferrocene and polyethylene glycol-modified enzyme. *Bull. Chem. Soc. Jpn*. 64:2849–2851.
1520. Kalab, T. and P. Skladal. 1994. Evaluation of mediators for development of amperometric microbial bioelectrodes. *Electroanalysis* 6:1004–1008.
1521. Katrlik, J., R. Brandsteter, J. Svorc, M. Rosenberg, and S. Miertus. 1997. Mediator type of glucose microbial biosensor based on *Aspergillus niger. Anal. Chim. Acta* 356:217–224.
1522. Rondeau, A., N. Larsson, M. Boujtita, L. Gorton, and N. El Murr. 1999. The synergetic effect of redox mediators and peroxidase in a bienzymatic biosensor for glucose assays in FIA. *Analusis* 27:649–656.
1523. Guemas, Y., M. Boujtita, and N. El Murr. 2000. Biosensor for determination of glucose and sucrose in fruit juices by flow injection analysis. *Appl. Biochem. Biotechnol* 89:171–181.
1524. Szuwarski, N., S. Gueguen, M. Boujtita, and N. El Murr. 2001. Use of thermally simulated aging to evaluate the contribution of constituents to the activity of mediated carbon paste glucose biosensors to improve their shelf-life. *Electroanalysis* 13:1237–1241.
1525. Kong, Y.-T., S.I. Imabayashi, K. Kano, T. Ikeda, and T. Kakiuchi. 2001. Peroxidase-based amperometric sensor for the determination of total phenols using two-stage peroxidase reactions. *Am. J. Enol. Vitic*. 52:381–385.
1526. Matsumoto, R., M. Mochizuki, K. Kano, and T. Ikeda. 2002. Unusual response in mediated biosensors with an oxidase/peroxidase bienzyme system. *Anal. Chem*. 74:3297–3303.

1527. Zaydan, R., M. Dion, and M. Boujtita. 2004. Development of a new method, based on a bioreactor coupled with an L-lactate biosensor, toward the determination of a nonspecific inhibition of L-lactic acid production during milk fermentation. *J. Agric. Food Chem*. 52:8–14.
1528. Ghasemi, V., J.B. Raoof, R. Ojani, and R. Hosseinzadeh. 2005. Voltammetric determination of ascorbic acid on a ferrocene derivative-modified carbon paste electrode. *Bull. Electrochem*. 21:115–122.
1529. Raoof, J.B., R. Ojani, and M. Kolbadinezhad. 2009. Voltammetric sensor for glutathione determination based on ferrocene-modified carbon paste electrode. *J. Solid State Electrochem*. 13:1411–1416.
1530. Amine, A., J.M. Kauffmann, G.C. Guilbault, and S. Bacha. 1993. Characterization of mixed enzyme-mediator-carbon paste electrodes. *Anal. Lett*. 26:1281–1299.
1531. Yabuki, S., F. Mizutani, and T. Katsura. 1994. Choline-sensing electrode based on polyethylene glycol-modified enzyme and mediator. *Sens. Actuators B* 20:159–162.
1532. Kulys, J., L. Tetianec, and P. Schneider. 2000. The development of an improved glucose biosensor using recombinant carbohydrate oxidase from *Microdochium nivale. Analyst* 125:1587–1590.
1533. Kulys, J., L. Tetianec, and P. Schneider. 2001. Recombinant *Microdochium nivale* carbohydrate oxidase and its application in an amperometric glucose sensor. *Biosens. Bioelectron*. 16:319–324.
1534. Charpentier, L. and N. El Murr. 1995. Amperometric determination of cholesterol in serum with use of a renewable surface peroxidase electrode. *Anal. Chim. Acta* 318:89–93.
1535. Raoof, J.B., R. Ojani, and M. Kolbadinezhad. 2005. Electrocatalytic characteristics of ferrocenecarboxylic acid modified carbon paste electrode in the oxidation and determination of L-cysteine. *Electroanalysis* 17:2043–2051.
1536. Raoof, J.B., R. Ojani, and H. Beitollahi. 2007. L-cysteine voltammetry at a carbon paste electrode bulk-modified with ferrocenedicarboxylic acid. *Electroanalysis* 19:1822–1830.
1537. Karimi Maleh, H., A.A. Ensafi, and H.R. Ensafi. 2009. Ferrocenedicarboxylic acid modified carbon paste electrode: A sensor for electrocatalytic determination of hydrochlorothiazide. *J. Braz. Chem. Soc*. 20:880–887.
1538. Khalilzadeh, M.A., F. Gholami, and H. Karimi-Maleh. 2009. Electrocatalytic determination of ampicillin using carbon-paste electrode modified with ferrocendicarboxylic acid. *Anal. Lett*. 42:584–599.
1539. Karimi Maleh, H., A.A. Ensafi, and A.R. Allafchian. 2010. Fast and sensitive determination of captopril by voltammetric method using ferrocenedicarboxylic acid modified carbon paste electrode. *J. Solid State Electrochem*. 14:9–15.
1540. Akhgar, M.R., M. Salari, H. Zamani, A. Changizi, and H. Hosseini-Mahdiabad. 2010. Electrocatalytic and simultaneous determination of phenylhydrazine and hydrazine using carbon paste electrode modified with carbon nanotubes and ferrocenedicarboxylic acid. *Int. J. Electrochem. Sci*. 5:782–796.
1541. Hattori, T. and S. Tanaka. 2003. Cyclic voltammetry examination for effect of counter anion on adsorptive voltammetry of 11-ferrocenytrimethylundecyl-ammonium at carbon paste electrode. *Electroanalysis* 15:1522–1528.
1542. Raoof, J.B., R. Ojani, R. Hosseinzadeh, and V. Ghasemi. 2003. Electrocatalytic characteristics of a 1-[4-(ferrocenylethynyl)phenyl]-1-ethanone modified carbon-paste electrode in the oxidation of ascorbic acid. *Anal. Sci*. 19:1251–1258.
1543. Raoof, J.B., R. Ojani, H. Beitollahi, and R. Hosseinzadeh. 2006. Electrocatalytic oxidation and highly selective voltammetric determination of L-cysteine at the surface of a 1-[4-(ferrocenyl ethynyl)phenyl]-1-ethanone modified carbon paste electrode. *Anal. Sci*. 22:1213–1220.
1544. Raoof, J.B., R. Ojani, F. Chekin, and R. Hossienzadeh. 2007. Carbon paste electrode incorporating 1-[4-(ferrocenyl ethynyl) phenyl]-1-ethanone for voltammetric determination of D-penicillamine. *Int. J. Electrochem. Sci*. 2:848–860.
1545. Raoof, J.B., R. Ojani, and H. Karimi-Maleh. 2008. Carbon paste electrode incorporating 1-[4-(ferrocenyl ethynyl) phenyl]-1-ethanone for electrocatalytic and voltammetric determination of tryptophan. *Electroanalysis* 20:1259–1262.
1546. Raoof, J.B., R. Ojani, and H. Karimi-Maleh. 2008. Electrocatalytic determination of sulfite using 1-[4-(ferrocenylethynyl)phenyl]-1-ethanone modified carbon paste electrode. *Asian J. Chem*. 20:483–494.
1547. Raoof, J.B., R. Ojani, and H. Karimi-Maleh. 2008. Voltammetric determination of L-cysteic acid on a 1-[4-(ferrocenyl-ethynyl)phenyl]-1-ethanone modified carbon paste electrode. *Bull. Chem. Soc. Ethiop*. 22:173–182.
1548. Raoof, J.B., R. Ojani, H. Beitollahi, and R. Hossienzadeh. 2006. Electrocatalytic determination of ascorbic acid at the surface of 2,7-bis(ferrocenyl ethyl)fluoren-9-one modified carbon paste electrode. *Electroanalysis* 18:1193–1201.

1549. Raoof, J.B., R. Ojani, and H. Beitollahi. 2007. Electrocatalytic determination of ascorbic acid at chemically modified carbon paste electrode with 2,7-bis (ferrocenylethynyl) fluoren-9-one. *Int. J. Electrochem. Sci*. 2:534–548.
1550. Raoof, J.B., R. Ojani, and H. Karimi Maleh. 2009. Electrocatalytic oxidation of glutathione at carbon paste electrode modified with 2,7-bis (ferrocenyl ethyl) fluoren-9-one: Application as a voltammetric sensor. *J. Appl. Electrochem*. 39:1169–1175.
1551. Losada, J., I. Cuadrado, M. Moran, C.M. Casado, B. Alonso, and M. Barranco. 1997. Ferrocenyl silicon-based dendrimers as mediators in amperometric biosensors. *Anal. Chim. Acta* 338:191–198.
1552. Casero, E., F. Pariente, E. Lorenzo, L. Beyer, and J. Losada. 2001. Electrocatalytic oxidation of nitric oxide at 6,17-diferrocenyldibenzo[b,i]5,9,14,18-tetraaza[14]annulen-nickel(II) modified electrodes. *Electroanalysis* 13:1411–1416.
1553. Ojani, R., J.B. Raoof, and B. Norouzi. 2008. Acetylferrocene modified carbon paste electrode; a sensor for electrocatalytic determination of hydrazine. *Electroanalysis* 20:1378–1382.
1554. Hale, P.D., L.I. Boguslavsky, T. Inagaki, H.I. Karan, H.S. Lee, T.A. Skotheim, and Y. Okamoto. 1991. Amperometric glucose biosensors based on redox polymer-mediated electron transfer. *Anal. Chem*. 63:677–682.
1555. Calvo, E.J., C. Donilowicz, and L. Diaz. 1993. Enzyme catalysis at hydrogel-modified electrodes with redox polymer mediator. *J. Chem. Soc. Faraday Trans*. 89:377–384.
1556. Rapicault, S., B. Limoges, and C. Degrand. 1996. Renewable perfluorosulfonated ionomer carbon paste electrode for competitive homogeneous electrochemical immunoassays using a redox cationic labeled hapten. *Anal. Chem*. 68:930–935.
1557. Rapicault, S., F. Paday, and C. Degrand. 1996. Redox-catalytic reduction of dioxygen by cobaltocene at a carbon paste electrode: Application to trace analysis. *J. Organomet. Chem*. 525:139–144.
1558. Bordes, A.L., B. Limoges, P. Brossier, and C. Degrand. 1997. Simultaneous homogeneous immunoassay of phenytoin and phenobarbital using a Nafion-loaded carbon paste electrode and two redox cationic labels. *Anal. Chim. Acta* 356:195–203.
1559. Bordes, A.L., B. Schollhorn, B. Limoges, and C. Degrand. 1998. Redox labeling of two antiepileptic drugs with metallocenes and their simultaneous detection by a nafion-modified electrode. *Appl. Organomet. Chem*. 12:59–65.
1560. Wring, S.A., J.P. Hart, and B.J. Birch. 1989. Development of an improved carbon electrode chemically modified with cobalt phthalocyanine as a reusable sensor for glutathione. *Analyst* 114:1563–1570.
1561. Fujiwara, S.T. and Y. Gushikem. 1999. Cobalt(II) phthalocyanine bonded to 3-n-propylimidazole immobilized on silica gel surface: Preparation and electrochemical properties. *J. Braz. Chem. Soc*. 10:389–393.
1562. Shaidarova, L.G., G.K. Budnikov, and S.A. Zaripova. 2001. Electrocatalytic determination of dithiocarbamate-based pesticides using electrodes modified with metal phthalocyanines. *J. Anal. Chem*. 56:748–753.
1563. Andronic, V., L. Oniciu, and C. Popescu. 2003. Electrochemical behavior of cobalt phthalocyanine (CoPc) modified carbon paste electrodes in aqueous solutions. *Rev. Roum. Chim*. 47:505–511.
1564. Shaidarova, L.G., S.A. Ziganshina, E.P. Medyantseva, and G.K. Budnikov. 2004. Amperometric cholinesterase biosensors with carbon paste electrodes modified with cobalt phthalocyanine. *Russ. J. Appl. Chem*. 77:241–248.
1565. Siangproh, W., O. Chailapakul, R. Laocharoensuk, and J. Wang. 2005. Microchip capillary electrophoresis/electrochemical detection of hydrazine compounds at a cobalt phthalocyanine modified electrochemical detector. *Talanta* 67:903–907.
1566. Mizutani, F., S. Yabuki, and S. Iijima. 1995. Amperometric glucose-sensing electrode based on carbon paste containing poly(ethylene glycol)-modified glucose oxidase and cobalt octaethoxyphthalocyanine. *Anal. Chim. Acta* 300:59–64.
1567. Mizutani, F., S. Yabuki, and S. Iijima. 1995. Carbon paste electrode incorporated with cobalt(II) octaethoxyphthalocyanine for the amperometric detection of hydrogen peroxide. *Electroanalysis* 7:706–709.
1568. Ribeiro, E.S. and Y. Gushikem. 1999. Iron(II) tetrasulphophthalocyanine complex adsorbed on a silica gel surface chemically modified by 3-n-propylpyridinium chloride. *Electrochim. Acta* 44:3589–3592.
1569. Shaidarova, L.G., A.Y. Fomin, S.A. Ziganshina, E.P. Medyantseva, and G.K. Budnikov. 2002. Electrocatalytic response of electrodes modified with metal phthalocyanines in the cholinesterase-thiocholine ester system. *J. Anal. Chem*. 57:150–156.
1570. Oni, J., P. Westbroek, and T. Nyokong. 2003. Electrochemical behavior and detection of dopamine and ascorbic acid at an iron(II)tetrasulfophthalocyanine modified carbon paste microelectrode. *Electroanalysis* 15:847–854.

1571. Parra, V., T. Hernando, M.L. Rodriguez-Mendez, and J.A. de Saja. 2004. Electrochemical sensor array made from bisphthalocyanine modified carbon paste electrodes for discrimination of red wines. *Electrochim. Acta* 49:5177–5185.
1572. Takeuchi, E.S. and R.W. Murray. 1985. Metalloporphyrin containing carbon paste electrodes. *J. Electroanal. Chem*. 188:49–57.
1573. Campanella, L., G. Favero, and M. Tomassetti. 1997. A modified amperometric electrode for the determination of free radicals. *Sens. Actuators B* B44:559–565.
1574. Kasanuki, T., M. Kamiyama, H. Noguchi, S. Ishii, and Y. Yosuhida. 2001. Hydrogen peroxide sensor based on carbon paste electrode containing a metal porphyrin complex. *Chem. Sens*. 17:427–429.
1575. Shamsipur, M., M. Najafi, M.R. Milani Hosseini, H. Sharghi, and S.H. Kazemi. 2009. Electrocatalytic behavior of a carbon paste electrode modified with iron(III)tetracyanophenylporphyrin chloride towards dioxygen reduction. *Pol. J. Chem*. 83:1173–1183.
1576. Sugawara, K., F. Yamamoto, S. Tanaka, and H. Nakamura. 1995. Electrochemical behavior of sugar investigated using a carbon paste electrode modified with copper(II)-porphyrin. *J. Electroanal. Chem*. 394:263–265.
1577. Abbaspour, A., A. Ghaffarinejad, and E. Safaei. 2004. Determination of L-histidine by modified carbon paste electrode using tetra-3,4-pyridinoporphirazinatocopper(II). *Talanta* 64:1036–1040.
1578. Joseph, R. and K. Girish Kumar. 2010. Differential pulse voltammetric determination and catalytic oxidation of sulfamethoxazole using [5,10,15,20-tetrakis (3-methoxy-4-hydroxy phenyl) porphyrinato] Cu (II) modified carbon paste sensor. *Drug Test. Anal*. 2:278–283.
1579. Abbaspour, A., M. Asadi, A. Ghaffarinejad, and E. Safaei. 2005. A selective modified carbon paste electrode for determination of cyanide using tetra-3,4-pyridinoporphyrazinatocobalt(II). *Talanta* 66:931–936.
1580. Gong, F.-C., X.-B. Zhang, C.-C. Guo, G.-L. Shen, and R.-Q. Yu. 2003. Amperometric metronidazole sensor based on the supermolecular recognition by metalloporphyrin incorporated in carbon paste electrode. *Sensors* 3:91–100.
1581. Amini, M.K., J.H. Khorasani, S.S. Khaloo, and S. Tangestaninejad. 2003. Cobalt(II) salophen-modified carbon-paste electrode for potentiometric and voltammetric determination of cysteine. *Anal. Biochem*. 320:32–38.
1582. Shahrokhian, S., A. Souri, and H. Khajehsharifi. 2004. Electrocatalytic oxidation of penicillamine at a carbon paste electrode modified with cobalt salophen. *J. Electroanal. Chem*. 565:95–101.
1583. Shahrokhian, S. and H.R. Zare-Mehrjardi. 2007. Cobalt salophen-modified carbon-paste electrode incorporating a cationic surfactant for simultaneous voltammetric detection of ascorbic acid and dopamine. *Sens. Actuators B* B121:530–537.
1584. Jamasbi, E.S., A. Rouhollahi, S. Shahrokhian, S. Haghgoo, and S. Aghajani. 2007. The electrocatalytic examination of cephalosporins at carbon paste electrode modified with CoSalophen. *Talanta* 71:1669–1674.
1585. Teixeira, M.F.S., G. Marino, E.R. Dockal, and E.T.G. Cavalheiro. 2004. Voltammetric determination of pyridoxine (Vitamin B6) at a carbon paste electrode modified with vanadyl(IV)-Salen complex. *Anal. Chim. Acta* 508:79–85.
1586. Shahrokhian, S. and M. Karimi. 2004. Voltammetric studies of a cobalt(II)-4-methylsalophen modified carbon-paste electrode and its application for the simultaneous determination of cysteine and ascorbic acid. *Electrochim. Acta* 50:77–84.
1587. Shahrokhian, S., M. Karimi, and H. Khajehsharifi. 2005. Carbon-paste electrode modified with cobalt-5-nitrolsalophen as a sensitive voltammetric sensor for detection of captopril. *Sens. Actuators B* B109:278–284.
1588. Shahrokhian, S. and M.J. Jannat Rezvani. 2005. Voltammetric studies of propylthiouracil at a carbon-paste electrode modified with cobalt(II)-4-chlorosalophen: Application to voltammetric determination in pharmaceutical and clinical preparations. *Microchim. Acta* 151:73–79.
1589. Shahrokhian, S. and M. Amiri. 2006. Voltammetric determination of thiocytosine based on its electrocatalytic oxidation on the surface of carbon-paste electrode modified with cobalt Schiff base complexes. *J. Solid State Electrochem*. 11:1133–1138.
1590. Shahrokhian, S. and H.R. Zare-Mehrjardi. 2007. Simultaneous voltammetric determination of uric acid and ascorbic acid using a carbon-paste electrode modified with multi-walled carbon nanotubes/Nafion and cobalt(II)-nitrosalophen. *Electroanalysis* 19:2234–2242.
1591. Shahrokhian, S. and M. Ghalkhani. 2008. Voltammetric determination of methimazole using a carbon paste electrode modified with a Schiff base complex of cobalt. *Electroanalysis* 20:1061–1066.
1592. Kamyabi, M.A. and F. Aghajanloo. 2008. Electrocatalytic oxidation and determination of nitrite on carbon paste electrode modified with oxovanadium(IV)-4-methylsalophen. *J. Electroanal. Chem*. 614:157–165.

1593. Shamsipur, M., A. Soleymanpour, M. Akhond, H. Sharghi, and M.A. Naseri. 2001. Iodide-selective carbon paste electrodes based on recently synthesized Schiff base complexes of Fe(III). *Anal. Chim. Acta* 450:37–44.
1594. Teixeira, M.F.S., E.R. Dockal, and E.T.G. Cavalheiro. 2005. Sensor for cysteine based on oxovanadium(IV) complex of Salen modified carbon paste electrode. *Sens. Actuators B* 106:619–625.
1595. Kamyabi, M.A., S. Shahabi, and H. Hosseini-Monfared. 2007. Electrocatalytic oxidation of hydrazine at a cobalt(II) Schiff-base-modified carbon paste electrode. *J. Electrochem. Soc*. 155:F8-F12.
1596. Nigam, P., S. Mohan, S. Kundu, and R. Prakash. 2009. Trace analysis of cefotaxime at carbon paste electrode modified with novel Schiff base Zn(II) complex. *Talanta* 77:1426–1431.
1597. Bonakdar, M., J. Yu, and H.A. Mottola. 1989. Continuous-flow performance of carbon electrodes modified with immobilized iron(II)/iron(III) centers. *Talanta* 36:219–225.
1598. Sun, G. and H.A. Mottola. 1991. Chemical species produced in the reaction between ethanedial (glyoxal) and 5-amino-1,10-phenanthroline and their iron(II) complexes: Electrochemical studies and analytical applications. *Anal. Chim. Acta* 242:241–247.
1599. Tobalina, F., F. Pariente, L. Hernandez, H.D. Abruna, and E. Lorenzo. 1999. Integrated ethanol biosensors based on carbon paste electrodes modified with [Re(phen-dione)$(CO)_3$Cl] and [Fe(phen-dione$)_3$] $(PF_6)_2$. *Anal. Chim. Acta* 395:17–26.
1600. Wang, H., G. Xu, and S. Dong. 2002. Electrochemiluminescence of dichlorotris (1,10-phenanthroline) ruthenium(II) with peroxydisulfate in purely aqueous solution at carbon paste electrode. *Microchem. J*. 72:43–48.
1601. Ivanova, E.V., V.S. Sergeeva, J. Oni, C. Kurzawa, A.D. Ryabov, and W. Schuhmann. 2003. Evaluation of redox mediators for amperometric biosensors: Ru-complex modified carbon-paste/enzyme electrodes. *Bioelectrochemistry* 60:65–71.
1602. Motonaka, J., Y. Mishima, K. Maruyama, K. Minagawa, and S. Ikeda. 2000. Interaction between immobilized DNA and tris(bpy) osmium(II/III) complex. *Sens. Actuators B* 66:234–236.
1603. Fojta, M., L. Havran, S. Billova, P. Kostecka, M. Masarik, and R. Kizek. 2003. Two-surface strategy in electrochemical DNA hybridization assays: Detection of osmium-labeled target DNA at carbon electrodes. *Electroanalysis* 15:431–440.
1604. El Maali, N.A. and J. Wang. 2001. Tris(2,2′-bipyridyl)dichloro-ruthenium(II) modified carbon paste electrodes for electrocatalytic detection of DNA. *Sens. Actuators B* B76:211–214.
1605. Sugawara, K., S. Tanaka, and M. Taga. 1991. Voltammetric behavior of cysteine by a carbon-paste electrode containing a cobalt(II) cyclohexylbutyrate. *Bioelectrochem. Bioenerg*. 26:469–474.
1606. Sugawara, K., S. Tanaka, K. Hasebe, and M. Taga. 1993. Electroanalysis for lipoic acid using a carbon paste electrode modified with nickel[II]-cyclohexylbutyrate. *J. Electroanal. Chem*. 347:393–398.
1607. Sugawara, K., S. Tanaka, and M. Taga. 1993. Determination of amino acids by a chemically modified carbon paste electrode with copper(II) cyclohexylbutyrate. *Bioelectrochem. Bioenerg*. 31:229–234.
1608. Nalini, B. and S.S. Narayanan. 1998. Electrocatalytic oxidation of sulfhydryl compounds at ruthenium(III) diphenyldithiocarbamate modified carbon paste electrode. *Electroanalysis* 10:779–783.
1609. Nalini, B. and S.S. Narayanan. 2000. Amperometric determination of ascorbic acid based on electrocatalytic oxidation using a ruthenium(III) diphenyldithiocarbamate-modified carbon paste electrode. *Anal. Chim. Acta* 405:93–97.
1610. Ramos, L.A., E.T.G. Cavalheiro, and G.O. Chierice. 2005. Evaluation of the electrochemical behavior and analytical potentialities of a carbon paste electrode modified with a ruthenium (III) piperidinedithiocarbamate complex. *Farmaco* 60:149–155.
1611. Cavalheiro, E.T.G., A. Segnini, A.B. Couto, F.C. Moraes, and M.F.S. Teixeira. 2007. Electrochemical behavior and electrocatalytic study of the manganese (II) pyrrolidine dithiocarbamate modified carbon paste electrode: Use in a flow injection system. *Anal. Chem. Indian J*. 3:124–132.
1612. Santos, P.M., B. Sandrino, T.F. Moreira, K. Wohnrath, N. Nagata, and C.A. Pessoa. 2007. Simultaneous voltammetric determination of dopamine and ascorbic acid using multivariate calibration methodology performed on a carbon paste electrode modified by a mer-[$RuCl_3$(dppb)(4-pic)] complex. *J. Braz. Chem. Soc*. 18:93–99.
1613. Zen, J.-M., A.S. Kumar, and C.-R. Chung. 2003. A glucose biosensor employing a stable artificial peroxidase based on ruthenium purple anchored cinder. *Anal. Chem*. 75:2703–2709.
1614. Gil, E.D. and L.T. Kubota. 2000. Electrochemical behavior of rhodium acetamidate immobilized on a carbon paste electrode: A hydrazine sensor. *J. Braz. Chem. Soc*. 11:304–310.
1615. Do Carmo, D.R., R.M. da Silva, and N.R. Stradiotto. 2003. Electrocatalytic and voltammetric determination of sulfhydryl compounds through iron nitroprusside modified graphite paste electrode. *J. Braz. Chem. Soc*. 14:616–620.

1616. Rezaei, B., S. Meghdadi, and M. Rezazadeh. 2009. Electrocatalytic determination of dopamine in pharmaceutical and human serum samples by using [N,N′-bis(2-pyridine carboxamido)-1,2-benzene] nickel(II) modified carbon paste electrode. *J. Anal. Chem*. 64:513–517.
1617. Kamyabi, M.A., Z. Asgari, H. Hosseini Monfared, and A. Morsali. 2009. Electrocatalytic oxidation of ascorbic acid and simultaneous determination of ascorbic acid and dopamine at a bis(4′-(4-pyridyl)-2,2′:6′,2″-terpyridine)iron(II) thiocyanate carbon past modified electrode. *J. Electroanal. Chem*. 632:170–176.
1618. Zhuang, R.-R. and F.-F. Jian. 2010. Electrocatalysis for the hydrogen peroxide and nitrite at carbon paste electrode modified with a new zinc complex of 1-pentyl-1H-benzo[d][1,2,3]triazole. *J. Solid State Electrochem*. 14:747–750.
1619. Zhuang, R.-R., F.-F. Jian, and K.-F. Wang. 2010. An electrochemical sensing platform based on a new zinc complex for the determination of hydrogen peroxide and nitrite. *Sens. Lett*. 8:228–232.
1620. Zhuang, R.-R., F.-F. Jian, and K. Wang. 2010. Synthesis, characterization and performance of a new copper complex as electrocatalyst of hydrogen peroxide and nitrite. *Sci. Adv. Mater*. 2:151–156.
1621. Zhuang, R.-R., F.-F. Jian, and K-.F. Wang. 2010. New cobalt(II)-based electrocatalyst for reduction of trichloroacetic acid and bromate. *Collect. Czech. Chem. Commun*. 75:637–647.
1622. Wang, L.-H. and S.-W. Tseng. 2001. Direct determination of d-panthenol and salt of pantothenic acid in cosmetic and pharmaceutical preparations by differential pulse voltammetry. *Anal. Chim. Acta* 432:39–48.
1623. Kauffmann, J.-M. 1997. Lipid based enzyme electrodes for environmental pollution control. *NATO ASI Ser. Ser. 2* 38:107–114.
1624. Lu, G.-H., M. Yang, Q.-F. Zheng, A.-L. Wang, and Z.-X. Jin. 1995. Anodic stripping voltammetry for the determination of trace iodide. *Electroanalysis* 7:591–593.
1625. Hu, C. and S. Hu. 2004. Electrochemical characterization of cetyltrimethyl ammonium bromide modified carbon paste electrode and the application in the immobilization of DNA. *Electrochim. Acta* 49:405–412.
1626. He, Q., C. Hu, X. Dang, Y. Wei, and S. Hu. 2004. Electrocatalytic reduction of dioxygen at cetyltrimethylammonium bromide modified carbon paste electrode. *Electrochemistry* 72:5–8.
1627. Amor Garcia, I., M.C. Blanco Lopez, M.J. Lobo Castanon, A.J. Miranda Ordieres, and P. Tunon Blanco. 2005. Flufenamic acid determination in human serum by adsorptive voltammetry with in situ surfactant-modified carbon paste electrodes. *Electroanalysis* 17:1555–1562.
1628. Huang, W. 2005. Voltammetric determination of bisphenol A using a carbon paste electrode based on the enhancement effect of cetyltrimethylammonium bromide (CTAB). *Bull. Korean Chem. Soc*. 26:1560–1564.
1629. Liu, S., J. Li, S. Zhang, and J. Zhao. 2005. Study on the adsorptive stripping voltammetric determination of trace cerium at a carbon paste electrode modified in situ with cetyltrimethylammonium bromide. *Appl. Surf. Sci*. 252:2078–2084.
1630. Li, C. 2007. Electrochemical determination of dipyridamole at a carbon paste electrode using cetyltrimethyl ammonium bromide as enhancing element. *Colloids Surf. B* 55:77–83.
1631. Char, M.P., E. Niranjana, B.E.K. Swamy, B.S. Sherigara, and K.V. Pai. 2008. Electrochemical studies of amaranth at surfactant modified carbon paste electrode: A cyclic voltammetry. *Int. J. Electrochem. Sci*. 3:588–596.
1632. Sharath Shankar, S., B.E.K. Swamy, U. Chandra, J.G. Manjunatha, and B.S. Sherigara. 2009. Simultaneous determination of dopamine, uric acid and ascorbic acid with CTAB modified carbon paste electrode. *Int. J. Electrochem. Sci*. 4:592–601.
1633. Manjunatha, J.G., B.E.K. Swamy, R. Deepa, V. Krishna, G.P. Mamatha, U. Chandra, S. Sharath Shankar, and B.S. Sherigara. 2009. Electrochemical studies of dopamine at Eperisone and cetyl trimethyl ammonium bromide surfactant modified carbon paste electrode: A cyclic voltammetric study. *Int. J. Electrochem. Sci*. 4:662–671.
1634. Manjunatha, J.G., B.E.K. Swamy, O. Gilbert, G.P. Mamatha, and B.S. Sherigara. 2010. Sensitive voltammetric determination of dopamine at salicylic acid and TX-100, SDS, CTAB modified carbon paste electrode. *Int. J. Electrochem. Sci*. 5:682–695.
1635. Li, C. 2007. Voltammetric determination of ethinylestradiol at a carbon paste electrode in the presence of cetyl pyridine bromide. *Bioelectrochemistry* 70:263–268.
1636. Švancara, I., M. Galik, and K. Vytřas. 2007. Stripping voltammetric determination of platinum metals at a carbon paste electrode modified with cationic surfactants. *Talanta* 72:512–518.
1637. Egashira, N., S. Aragaki, H. Iwanaga, and K. Ohga. 1991. Selective determination of pyridoxal with an octadecylamine-modified carbon-paste electrode. *Anal. Sci*. 7:691–694.

1638. Millan, K.M., A. Saraullo, and S.R. Mikkelsen. 1994. Voltammetric DNA biosensor for cystic fibrosis based on a modified carbon paste electrode. *Anal. Chem*. 66:2943–2948.
1639. Amine, A., J. Deni, and J.M. Kauffmann. 1994. Preparation and characterization of octadecylamine-containing carbon paste electrodes. *Anal. Chem*. 66:1595–1599.
1640. Girousi, S.T., A.A. Pantazaki, and A.N. Voulgaropoulos. 2001. Mitochondria-based amperometric biosensor for the determination of L-glutamic acid. *Electroanalysis* 13:243–245.
1641. Egashira, N., H. Iwanaga, K. Okabe, and K. Ohga. 1992. Selective determination of pyridoxal in nonfat dry milk using a carbon paste electrode modified with an amine having a long alkyl chain. *Anal. Sci*. 8:705–707.
1642. Ormonde, D.E. and R.D. O'Neill. 1990. The oxidation of ascorbic acid at carbon paste electrodes. Modified response following contact with surfactant, lipid and brain tissue. *J. Electroanal. Chem*. 279:109–121.
1643. Acuna, J.A., C. De La Fuente, M.D. Vazquez, M.L. Tascon, and P. Sanchez-Batanero. 1993. Voltammetric determination of piroxicam in micellar media by using conventional and surfactant chemically-modified carbon paste electrodes. *Talanta* 40:1637–1642.
1644. Posac, J.R., M.D. Vazquez, M.L. Tascon, J.A. Acuna, C. De La Fuente, E. Velasco, and P. Sanchez-Batanero. 1995. Determination of aceclofenac using adsorptive stripping voltammetric techniques on conventional and surfactant chemically modified carbon paste electrodes. *Talanta* 42:293–304.
1645. Manjunatha, J.G., B.E.K. Swamy, G.P. Mamatha, U. Chandra, E. Niranjana, and B.S. Sherigara. 2009. Cyclic voltammetric studies of dopamine at lamotrigine and TX-100 modified carbon paste electrode. *Int. J. Electrochem. Sci*. 4:187–196.
1646. Yuan, C.J., Y.C. Wang, and O. Reiko. 2009. Improving the detection of hydrogen peroxide of screen-printed carbon paste electrodes by modifying with nonionic surfactants. *Anal. Chim. Acta* 653:71–76.
1647. Mahanthesha, K.R., B.E.K. Swamy, U. Chandra, Y.D. Bodke, K.V.K. Pai, and B.S. Sherigara. 2009. Cyclic voltammetric investigations of alizarin at carbon paste electrode using surfactants. *Int. J. Electrochem. Sci*. 4:1237–1247.
1648. Manjunatha, J.G., B.E.K. Swamy, G.P. Mamatha, S. Sharath Shankar, O. Gilbert, B.N. Chandrashekar, and B.S. Sherigara. 2009. Electrochemical response of dopamine at phthalic acid and Triton X-100 modified carbon paste electrode: A cyclic voltammetry study. *Int. J. Electrochem. Sci*. 4:1469–1478.
1649. Manjunatha, J.G., B.E.K. Swamy, G.P. Mamatha, O. Gilbert, M.T. Shreenivas, and B.S. Sherigara. 2009. Electrocatalytic response of dopamine at Mannitol and Triton X-100 modified carbon paste electrode: A cyclic voltammetric study. *Int. J. Electrochem. Sci*. 4:1706–1718.
1650. Huang, S.-S., Z.-G. Chen, B.-F. Li, H.-G. Lin, and R.-Q. Yu. 1994. Preconcentration and voltammetric measurement of silver(I) with a carbon paste electrode modified with 2,9-dichloro-1,10-phenanthroline-surfactant. *Analyst* 119:1859–1862.
1651. Jaiswal, P.V., V.S. Ijeri, and A.K. Srivastava. 2001. Voltammetric behavior of menadione in surfactant media and its determination in sodium dodecyl sulfate surfactant system. *Bull. Chem. Soc. Jpn*. 74:2053–2057.
1652. Gutierrez Fernandez, S., M.C. Blanco Lopez, M.J. Lobo Castanon, A.J. Miranda Ordieres, and P. Tunon Blanco. 2004. Adsorptive stripping voltammetry of rifamycins at unmodified and surfactant-modified carbon paste electrodes. *Electroanalysis* 16:1660–1666.
1653. Blanco Lopez, M.C., M.J. Lobo Castanon, A.J. Miranda Ordieres, and P. Tunon Blanco. 2007. Electrochemical behavior of catecholamines and related compounds at in situ surfactant modified carbon paste electrodes. *Electroanalysis* 19:207–213.
1654. Alarcon Angeles, G., S. Corona Avendano, M. Palomar Pardave, A. Rojas Hernandez, M. Romero Romo, and M.T. Ramirez Silva. 2008. Selective electrochemical determination of dopamine in the presence of ascorbic acid using sodium dodecyl sulfate micelles as masking agent. *Electrochim. Acta* 53:3013–3020.
1655. Chandra, U., O. Gilbert, B.E.K. Swamy, Y.D. Bodke, and B.S. Sherigara. 2008. Electrochemical studies of Eriochrome Black T at carbon paste electrode and immobilized by SDS surfactant: A cyclic voltammetric study. *Int. J. Electrochem. Sci*. 3:1044–1054.
1656. Chitravathi, S., B.E. Kumaraswamy, E. Niranjana, U. Chandra, G.P. Mamatha, and B.S. Sherigara. 2009. Electrochemical studies of sodium levothyroxine at surfactant modified carbon paste electrode. *Int. J. Electrochem. Sci*. 4:223–237.
1657. Chowdappa, N., B.E.K. Swamy, E. Niranjana, and B.S. Sherigara. 2009. Cyclic voltammetric studies of serotonin at sodium dodecyl sulfate modified carbon paste electrode. *Int. J. Electrochem. Sci*. 4:425–434.
1658. Chandrashekar, B.N., B.E.K. Swamy, K.R. Vishnu Mahesh, U. Chandra, and B.S. Sherigara. 2009. Electrochemical studies of bromothymol blue at surfactant modified carbon paste electrode by cyclic voltammetry. *Int. J. Electrochem. Sci*. 4:471–480.

1659. Niranjana, E., B.E.K. Swamy, R. Raghavendra Naik, B.S. Sherigara, and H. Jayadevappa. 2009. Electrochemical investigations of potassium ferricyanide and dopamine by sodium dodecyl sulphate modified carbon paste electrode: A cyclic voltammetric study. *J. Electroanal. Chem*. 631:1–9.
1660. Ojani, R., J.B. Raoof, and B. Norouzi. 2010. Carbon paste electrode modified by cobalt ions dispersed into poly (N-methylaniline) preparing in the presence of SDS: Application in electrocatalytic oxidation of hydrogen peroxide. *J. Solid State Electrochem*. 14:621–631.
1661. Kauffmann, J.M. 2004. Personal communication.
1662. Lyne, P.D. and R.D. O'Neill. 1990. Stearate-modified carbon paste electrodes for detecting dopamine in vivo: Decrease in selectivity caused by lipids and other surface-active agents. *Anal. Chem*. 62:2347–2351.
1663. El Maali, N.A. 1992. Carbon paste electrodes modified with palmitic acid and stearic acid for the determination of folic acid (vitamin B9) in both aqueous and biological media. *Bioelectrochem. Bioenerg*. 27:465–473.
1664. Petit, C., A. Gonzalez-Cortes, and J.M. Kauffmann. 1996. On the origin of the differences between stearic-acid-modified carbon paste electrode performances after exposure to surfactant and brain tissues. *Bioelectrochem. Bioenerg*. 41:101–106.
1665. Xu, G. and S. Dong. 2000. Electrochemiluminescent detection of chlorpromazine by selective preconcentration at a lauric acid-modified carbon paste electrode using tris(2,2′-bipyridine)ruthenium(II). *Anal. Chem*. 72:5308–5312.
1666. Khodari, M., J.M. Kauffmann, G.J. Patriarche, and M.A. Ghandour. 1989. Applications in drug analysis of carbon paste electrodes modified by fatty acids. *J. Pharm. Biomed. Anal*. 7:1491–1497.
1667. Chastel, O., J.M. Kauffmann, G.J. Patriarche, and G.D. Christian. 1990. Electrochemical behavior of marcellomycin at lipid-modified carbon-paste electrodes. *Talanta* 37:213–217.
1668. Kauffmann, J.M., O. Chastel, G. Quarin, G.J. Patriarche, and M. Khodari. 1990. Electrochemical behavior of drugs at lipid modified carbon paste electrodes. *Bioelectrochem. Bioenerg*. 23:167–175.
1669. Arcos, J., J.M. Kauffmann, G.J. Patriarche, and P. Sanchez Batanero. 1990. Voltammetric determination of celiptium with carbon paste and lipid-modified carbon paste electrodes. *Anal. Chim. Acta* 236:299–305.
1670. Arcos, J., B. Garcia, A. Munguia, J. Lopez Palacios, J.-M. Kauffmann, and G.J. Patriarche. 1991. Spectrophotometric and electroanalytical study of minoxidil. *Anal. Lett*. 24:357–376.
1671. Khodari, M. 1993. Voltammetric determination of the antidepressant trimipramine at a lipid-modified carbon paste electrode. *Electroanalysis* 5:521–523.
1672. Amine, A., J. Deni, and J.-M. Kauffmann. 1994. Amperometric biosensor based on carbon paste mixed with enzyme, lipid and cytochrome c. *Bioelectrochem. Bioenerg*. 34:123–128.
1673. Mizutani, F., S. Yabuki, and T. Katsura. 1994. Amperometric glucose-sensing electrodes with the use of modified enzymes. *ACS Symp. Ser*. 556:41–46.
1674. Hu, S., M. Guo, G. Hu, and M. Jiang. 1995. Electrochemical oxidation and analytical applications of estrogens at modified carbon paste electrode. *Anal. Lett*. 28:1993–2003.
1675. Khodari, M., H. Mansour, and H.S. El Din. 1997. Preconcentration and determination of the tricyclic antidepressant drug imipramine at modified carbon paste electrode. *Anal. Lett*. 30:1909–1921.
1676. Murray, R.W. 1992. Molecular design of electrode surfaces. In *Techniques of Chemistry*, Vol. 22, Ed. R.W. Murray, pp. 1–48. New York: Wiley.
1677. Li, P., Z. Gao, Y. Xu, G. Wang, and Z. Zhao. 1990. Determination of trace amounts of silver with a chemically modified carbon paste electrode. *Anal. Chim. Acta* 229:213–219.
1678. Gao, Z., P. Li, S. Dong, and Z. Zhao. 1990. Voltammetric determination of trace amounts of gold(III) with a carbon paste electrode modified with chelating resin. *Anal. Chim. Acta* 232:367–376.
1679. Compagnone, D., J.V. Bannister, and G. Federici. 1992. Electrochemical sensors for the determination of metal ions. *Sens. Actuators B* B7:549–552.
1680. Agraz, R., M.T. Sevilla, and L. Hernandez. 1995. Voltammetric quantification and speciation of mercury compounds. *J. Electroanal. Chem*. 390:47–57.
1681. Agraz, R., J. de Miguel, M.T. Sevilla, and L. Hernandez. 1996. Application of a Chelite P modified carbon paste electrode to copper determination and speciation. *Electroanalysis* 8:565–570.
1682. Mikysek, T., I. Švancara, K. Vytřas, and F.G. Banica. 2008. Functionalised resin-modified carbon paste sensor for the voltammetric determination of Pb(II) within a wide concentration range. *Electrochem. Commun*. 10:242–245.
1683. Sar, E., H. Berber, B. Asci, and H. Cankurtaran. 2008. Determination of some heavy metal ions with a carbon paste electrode modified by poly(glycidyl methacrylate-methylmethacrylate-divinylbenzene) microspheres functionalized by 2-aminothiazole. *Electroanalysis* 20:1533–1541.
1684. Mikysek, T., I. Švancara, A. Banica, F.G. Banica, and K. Vytřas. 2010. Carbon paste electrode modified with thiourea-functionalized resin for determination of lead. *Sci. Pap. Univ. Pardubice Ser. A* 15:5–27.

1685. Ianniello, R.M. 1992. Crosslinked poly(N-vinylpyrrolidone) coated carbon paste electrodes prepared via plasma polymerization. *Anal. Lett*. 25:125–135.
1686. Yang, X., F. Wang, and S. Hu. 2006. The electrochemical oxidation of troxerutin and its sensitive determination in pharmaceutical dosage forms at PVP modified carbon paste electrode. *Colloids Surf. B* 52:8–13.
1687. Franzoi, A.C., A. Spinelli, and I.C. Vieira. 2008. Rutin determination in pharmaceutical formulations using a carbon paste electrode modified with poly(vinylpyrrolidone). *J. Pharm. Biomed. Anal*. 47:973–977.
1688. Alizadeh, T. 2009. High selective parathion voltammetric sensor development by using an acrylic based molecularly imprinted polymer-carbon paste electrode. *Electroanalysis* 21:1490–1498.
1689. Alizadeh, T., M.R. Ganjali, P. Norouzi, M. Zare, and A. Zeraatkar. 2009. A novel high selective and sensitive para-nitrophenol voltammetric sensor, based on a molecularly imprinted polymer-carbon paste electrode. *Talanta* 79:1197–1203.
1690. Alizadeh, T., M. Zare, M.R. Ganjali, P. Norouzi, and B. Tavana. 2010. A new molecularly imprinted polymer (MIP)-based electrochemical sensor for monitoring 2,4,6-trinitrotoluene (TNT) in natural waters and soil samples. *Biosens. Bioelectron*. 25:1166–1172.
1691. Alizadeh, T., M.R. Ganjali, M. Zare, and P. Norouzi. 2010. Development of a voltammetric sensor based on a molecularly imprinted polymer (MIP) for caffeine measurement. *Electrochim. Acta* 55:1568–1574.
1692. Alizadeh, T. and M. Akhoundian. 2010. Promethazine determination in plasma samples by using carbon paste electrode modified with molecularly imprinted polymer (MIP): Coupling of extraction, preconcentration and electrochemical determination. *Electrochim. Acta* 55:5867–5873.
1693. Navratilova, Z. and P. Kula. 1992. Determination of mercury on a carbon paste electrode modified with humic acid. *Electroanalysis* 4:683–687.
1694. Navratilova, Z. and P. Kula. 1993. Modified carbon paste electrodes for the study of metal-humic substances complexation. *Anal. Chim. Acta* 273:305–311.
1695. Jeong, E.D., M.S. Won, and Y.B. Shim. 1994. Simultaneous determination of lead, copper, and mercury at a modified carbon paste electrode containing humic acid. *Electroanalysis* 6:887–893.
1696. Kula, P. and Z. Navratilova. 1994. Humic acids interactions with metal salts incorporated into the carbon paste electrode. *Electroanalysis* 6:1009–1013.
1697. Wang, C.M., Q.Y. Sun, and H.L. Li. 1997. Voltammetric behavior and determination of bismuth on sodium humate-modified carbon paste electrode. *Electroanalysis* 9:645–649.
1698. Wang, C.M. and H.L. Li. 1998. Voltammetric behavior of mercury(I,II) ions at an amide-functionalized humic acids modified carbon paste electrode. *Electroanalysis* 10:44–49.
1699. Wang, C., H. Zhang, Y. Sun, and H. Li. 1998. Electrochemical behavior and determination of gold at chemically modified carbon paste electrode by the ethylenediamine fixed humic acid preparation. *Anal. Chim. Acta* 361:133–139.
1700. Sun, Q.Y., C.M. Wang, L.X. Li, and H.L. Li. 1999. Preconcentration and voltammetric determination of palladium(II) at sodium humate modified carbon paste electrodes. *Fresenius J. Anal. Chem*. 363:114–117.
1701. Wang, C.M., B. Zhu, and H.L. Li. 1999. Theoretical analysis and determination of the heterogeneous stability constant of copper(II)-humic acids complex at chemically modified carbon paste electrode. *Electroanalysis* 11:183–187.
1702. Thobie Gautier, C., W.T. Lopes da Silva, M.O.O. Rezende, and N. El Murr. 2003. Sensitive and reproducible quantification of Cu^{2+} by Stripping with a carbon paste electrode modified with humic acid. *J. Environ. Sci. Health A* A38:1811–1823.
1703. Airoldi, F.P.S., W.T.L. Da Silva, F.N. Crespilho, and M.O.O. Rezende. 2007. Evaluation of the electrochemical behavior of pentachlorophenol by cyclic voltammetry on carbon paste electrode modified by humic acids. *Water Environ. Res*. 79:63–67.
1704. Silva, L.S., T.N. Oliveira, M.A. Ballin, and C.R.M. Peixoto. 2006. Ascorbic acid determination using a carbon paste electrode modified with iron(III) ions adsorbed on humic acid. *Ecletica Quim*. 31:39–42.
1705. Bai, Z.P., T. Nakamura, and K. Izutsu. 1990. Enhanced voltammetric waves of iron(III)-EDTA at a chitin-containing carbon paste electrode and its analytical application. *Electroanalysis* 2:75–79.
1706. Bai, Z.P., T. Nakamura, and K. Izutsu. 1990. Voltammetric behavior of various anions at a chitin-containing carbon paste electrode. *Anal. Sci*. 6:443–447.
1707. Sugawara, K., T. Miyasita, S. Hoshi, and K. Akatsuka. 1997. Voltammetric detection of MoO_4^{2-} at a modified carbon paste electrode containing chitin. *Anal. Chim. Acta* 353:301–306.
1708. Miao, Y. and S.-N. Tan. 2000. Amperometric hydrogen peroxide biosensor based on immobilization of peroxidase in chitosan matrix crosslinked with glutaraldehyde. *Analyst* 125:1591–1594.

1709. Marcolino-Junior, L.H., B.C. Janegitz, B.C. Lourencao, and O. Fatibello-Filho. 2007. Anodic stripping voltammetric determination of mercury in water using a chitosan-modified carbon paste electrode. *Anal. Lett*. 40:3119–3128.
1710. Hassan, R., I.H.I. Habib, and H.N.A. Hassan. 2008. Voltammetric determination of lead(II) in medical lotion and biological samples using chitosan-carbon paste electrode. *Int. J. Electrochem. Sci*. 3:935–945.
1711. Sugawara, K., A. Yugami, N. Terui, and H. Kuramitz. 2009. Electrochemical study of functionalization on the surface of a chitin/platinum-modified glassy carbon paste electrode. *Anal. Sci*. 25:1365–1368.
1712. Dempsey, E., M.R. Smyth, and D.H.S. Richardson. 1992. Application of lichen-modified carbon paste electrodes to the voltammetric determination of metal ions in multielement and speciation studies. *Analyst* 117:1467–1470.
1713. Wang, J., Z. Taha, and N. Naser. 1991. Electroanalysis at modified carbon-paste electrodes containing natural ionic polysaccharides. *Talanta* 38:81–88.
1714. Perlado, J.C., A. Zapardiel, E. Bermejo, J.A. Perez, and L. Hernandez. 1995. Determination of phenylephrine with a modified carbon paste electrode. *Anal. Chim. Acta* 305:83–90.
1715. Gao, Z., A. Ivaska, and P. Li. 1992. Determination of trace amounts of copper(I) with a chemically modified carbon paste electrode. *Anal. Sci*. 8:337–343.
1716. Lee, G.-J., C.-K. Kim, M.-K. Lee, and C.-K. Rhee. 2010. Advanced use of nanobismuth/Nafion electrode for trace analyses of zinc, cadmium, and lead. *J. Electrochem. Soc*. 157:J241-J244.
1717. Mueller, K. 1986. In vivo voltammetric recording with nafion-coated carbon paste electrodes: Additional evidence that ascorbic acid release is monitored. *Pharm. Biochem. Behavior* 25:325–328.
1718. Boyd, D., J.R. Barreira Rodriguez, P. Tunon Blanco, and M.R. Smyth. 1994. Application of a Nafion-modified carbon paste electrode for the adsorptive stripping voltammetric determination of fenoterol in pharmaceutical preparations and biological fluids. *J. Pharm. Biomed. Anal*. 12:1069–1074.
1719. Boyd, D., J.R. Barreira Rodriguez, A.J. Miranda Ordieres, P. Tunon Blanco, and M.R. Smyth. 1994. Voltammetric study of salbutamol, fenoterol and metaproterenol at unmodified and nafion-modified carbon paste electrodes. *Analyst* 119:1979–1984.
1720. Moane, S., J.R. Barreira Rodriguez, O. Miranda, P. Tunon Blanco, and M.R. Smyth. 1995. Electrochemical behavior of clenbuterol at Nafion-modified carbon-paste electrodes. *J. Pharm. Biomed. Anal*. 14:57–63.
1721. Moane, S., M.R. Smyth, and M. O'Keeffe. 1996. Differential-pulse voltammetric determination of clenbuterol in bovine urine using a Nafion-modified carbon paste electrode. *Analyst* 121:779–784.
1722. Zen, J.M. and C.T. Hsu. 1998. A selective voltammetric method for uric acid detection at Nafion-coated carbon paste electrodes. *Talanta* 46:1363–1369.
1723. De Betono, S.F., A.A. Garcia, and J.F.A. Valentin. 1999. UV-spectrophotometry and square wave voltammetry at Nafion-modified carbon-paste electrode for the determination of doxazosin in urine and formulations. *J. Pharm. Biomed. Anal*. 20:621–630.
1724. Arranz, A., S.F. de Betono, C. Echevarria, J.M. Moreda, A. Cid, and J.F. Arranz Valentin. 1999. Voltammetric and spectrophotometric techniques for the determination of the antihypertensive drug Prazosin in urine and formulations. *J. Pharm. Biomed. Anal*. 21:797–807.
1725. Andrieux, C.P., P. Audebert, P. Bacchi, and B. Divisia Blohorn. 1995. Kinetic behavior of an amperometric biosensor made of an enzymic carbon paste and a Nafion gel investigated by rotating electrode studies. *J. Electroanal. Chem*. 394:141–148.
1726. Rapicault, S., B. Limoges, and C. Degrand. 1996. Alkaline phosphatase assay using a redox procationic labeled substrate and a renewable Nafion-loaded carbon paste electrode. *Electroanalysis* 8:880–884.
1727. Yamamoto, K., T. Ohgaru, M. Torimura, H. Kinoshita, K. Kano, and T. Ikeda. 2000. Highly sensitive flow injection determination of hydrogen peroxide with a peroxidase-immobilized electrode and its application to clinical chemistry. *Anal. Chim. Acta* 406:201–207.
1728. Bordes, A.L., B. Schollhorn, B. Limoges, and C. Degrand. 1999. Simultaneous detection of three drugs labeled by cationic metal complexes at a nafion-loaded carbon paste electrode. *Talanta* 48:201–208.
1729. Shahrokhian, S. and H.R. Zare Mehrjardi. 2007. Application of thionine-Nafion supported on multiwalled carbon nanotube for preparation of a modified electrode in simultaneous voltammetric detection of dopamine and ascorbic acid. *Electrochim. Acta* 52:6310–6317.
1730. Sun, W., R.F. Gao, and K. Jiao. 2007. Electrochemistry and electrocatalysis of a Nafion/nano-$CaCO_3$/Hb film modified carbon ionic liquid electrode using $BMIMPF_6$ as binder. *Electroanalysis* 19:1368–1374.
1731. Labuda, J., H. Korgova, and M. Vanickova. 1995. Theory and application of chemically modified carbon paste electrode to copper speciation determination. *Anal. Chim. Acta* 305:42–48.
1732. Labuda, J., E. Korgova, M. Vanickova, and P. Tarapcik. 1996. Comparison of copper speciation data obtained by voltammetric and ion-exchange methods. *Chem. Anal*. 41:865–871.

1733. Labuda, J., M. Buckova, and L. Halamova. 1997. Sensor-analyte interaction kinetics as a metal speciation criterion. *Electroanalysis* 9:1129–1131.
1734. Gonzalez, P., V.A. Cortinez, and C.A. Fontan. 2002. Determination of nickel by anodic adsorptive stripping voltammetry with a cation exchanger-modified carbon paste electrode. *Talanta* 58:679–690.
1735. Smolander, M., G. Marko Varga, and L. Gorton. 1995. Aldose dehydrogenase-modified carbon paste electrodes as amperometric aldose sensors. *Anal. Chim. Acta* 302:233–240.
1736. Mariaulle, P., F. Sinapi, L. Lamberts, and A. Walcarius. 2001. Application of electrodes modified with ion-exchange polymers for the amperometric detection of non-redox cations and anions in combination to ion chromatography. *Electrochim. Acta* 46:3543–3553.
1737. Agraz, R., M.T. Sevilla, J.M. Pinilla, and L. Hernandez. 1991. Voltammetric determination of cadmium on a carbon paste electrode modified with a chelating resin. *Electroanalysis* 3:393–397.
1738. Agraz, R., M.T. Sevilla, and L. Hernandez. 1993. Chemically modified electrode for the simultaneous determination of trace metals and speciation analysis. *Anal. Chim. Acta* 273:205–212.
1739. Agraz, R., M.T. Sevilla, and L. Hernandez. 1993. Copper speciation analysis using a chemically modified electrode. *Anal. Chim. Acta* 283:650–656.
1740. Ortiz Viana, M.M., M.P. da Silva, R. Agraz, J.R. Procopio, M.T. Sevilla, and L. Hernandez. 1999. Comparison of two kinetic approaches for copper speciation using ion-exchange columns and ion-exchange modified carbon paste electrodes. *Anal. Chim. Acta* 382:179–188.
1741. Alvarez, E., M.T. Sevilla, J.M. Pinilla, and L. Hernandez. 1992. Cathodic stripping voltammetry of paraquat on a carbon paste electrode modified with Amberlite XAD-2 resin. *Anal. Chim. Acta* 260:19–23.
1742. Geno, P.W., K. Ravichandran, and R.P. Baldwin. 1985. Chemically modified carbon paste electrodes. Part IV. Electrostatic binding and electrocatalysis at poly(4-vinylpyridine)-containing electrodes. *J. Electroanal. Chem*. 183:155–166.
1743. Guadalupe, A.R., S.S. Jhaveri, K.E. Liu, and H.D. Abruna. 1987. Electroanalysis of primary amines with chemically modified carbon paste electrodes. *Anal. Chem*. 59:2436–2438.
1744. Biryol, I., B. Uslu, and Z. Kucukyavuz. 1998. Voltammetric determination of amoxicillin using a carbon paste electrode modified with poly(4-vinyl pyridine). *S. T. P. Pharma Sci*. 8:383–386.
1745. Diewald, W., K. Kalcher, C. Neuhold, X. Cai, and R.J. Magee. 1993. Voltammetric behavior of thallium(III) on carbon paste electrodes chemically modified with an anion exchanger. *Anal. Chim. Acta* 273:237–244.
1746. Ahamad, R., J. Barek, A.R. Yusoff, S.M. Sinaga, and J. Zima. 2000. Determination of roxarsone using carbon paste and amberlite LA2 modified carbon paste electrodes. *Electroanalysis* 12:1220–1226.
1747. Chandra, U., B.E.K. Swamy, O. Gilbert, M. Pandurangachar, and B.S. Sherigara. 2009. Voltammetric resolution of dopamine in presence of ascorbic acid at polyvinyl alcohol modified carbon paste electrode. *Int. J. Electrochem. Sci*. 4:1479–1488.
1748. Saito, T. and M. Watanabe. 1998. Characterization of poly(vinylferrocene-co-2-hydroxyethyl methacrylate) for use as electron mediator in enzymic glucose sensor. *React. Funct. Polym*. 37:263–269.
1749. Chuang, C.-L., Y.-J. Wang, and H.-L. Lan. 1997. Amperometric glucose sensors based on ferrocene-containing B-polyethylenimine and immobilized glucose oxidase. *Anal. Chim. Acta* 353:37–44.
1750. Dominguez, E., H.-L. Lan, Y. Okamoto, P.D. Hale, T.A. Skotheim, L. Gorton, and B. Hahn-Haegerdal. 1993. Reagentless chemically modified carbon paste electrode based on a phenothiazine polymer derivative and yeast alcohol dehydrogenase for the analysis of ethanol. *Biosens. Bioelectron*. 8:229–237.
1751. Pasco, N., C. Jeffries, Q. Davies, A.J. Downard, A.D. Roddick-Lanzilotta, and L. Gorton. 1999. Characterization of a thermophilic L-glutamate dehydrogenase biosensor for amperometric determination of L-glutamate by flow injection analysis. *Biosens. Bioelectron*. 14:171–178.
1752. Yao, Q., S. Yabuki, and F. Mizutani. 2000. Preparation of a carbon paste/alcohol dehydrogenase electrode using polyethylene glycol-modified enzyme and oil-soluble mediator. *Sens. Actuators B* B65:147–149.
1753. Yang, M., Y. Yang, Y. Yang, G. Shen, and R. Yu. 2004. Bienzymatic amperometric biosensor for choline based on mediator thionine in situ electropolymerized within a carbon paste electrode. *Anal. Biochem*. 334:127–134.
1754. Hedenmo, M., A. Narvaez, E. Dominguez, and I. Katakis. 1996. Reagentless amperometric glucose dehydrogenase biosensor based on electrocatalytic oxidation of NADH by osmium phenanthrolinedione mediator. *Analyst* 121:1891–1895.
1755. Vijayakumar, A.R., E. Csoeregi, A. Heller, and L. Gorton. 1996. Alcohol biosensors based on coupled oxidase–peroxidase systems. *Anal. Chim. Acta* 327:223–234.
1756. Hale, P.D., L.I. Boguslavsky, T.A. Skotheim, H.I. Karan, H.L. Lan, and Y. Okamoto. 1990. Poly(xylylviologen) electron transfer mediators in amperometric glucose sensors. *Mol. Cryst. Liq. Cryst*. 190:259–264.

1757. Kaku, T., H.I. Karan, and Y. Okamoto. 1994. Amperometric glucose sensors based on immobilized glucose oxidase-polyquinone system. *Anal. Chem*. 66:1231–1235.
1758. Lan, H.L., T. Kaku, H.I. Karan, and Y. Okamoto. 1994. Poly(ether amine quinone)s as electron-transfer relay systems in amperometric glucose sensors. *ACS Symp., Ser. A* 556:124–136.
1759. Kaku, T., Y. Okamoto, L. Charles, W. Holness, and H.I. Karan. 1995. The effect of structure on poly(quinone) systems for amperometric glucose sensors. *Polymer* 36:2813–2818.
1760. Uslu, B. and I. Biryol. 1999. Voltammetric determination of amoxicillin using a poly(N-vinylimidazole) modified carbon paste electrode. *J. Pharm. Biomed. Anal*. 20:591–598.
1761. Sode, K., Y. Takahashi, S. Ohta, W. Tsugawa, and T. Yamazaki. 2001. A new concept for the construction of an artificial dehydrogenase for fructosylamine compounds and its application for an amperometric fructosylamine sensor. *Anal. Chim. Acta* 435:151–156.
1762. Zhou, Y.Z., L.J. Zhang, S.L. Chen, S.Y. Dong, and X.H. Zheng. 2009. Electroanalysis and simultaneous determination of dopamine and epinephrine at poly(isonicotinic acid)-modified carbon paste electrode in the presence of ascorbic acid. *Chin. Chem. Lett*. 20:217–220.
1763. Gilbert, O., B.E.K. Swamy, U. Chandra, and B.S. Sherigara. 2009. Electrocatalytic oxidation of dopamine and ascorbic acid at poly(Eriochrome black-T) modified carbon paste electrode. *Int. J. Electrochem. Sci*. 4:582–591.
1764. Gilbert, O., B.E.K. Swamy, U. Chandra, and B.S. Sherigara. 2009. Simultaneous detection of dopamine and ascorbic acid using polyglycine modified carbon paste electrode: A cyclic voltammetric study. *J. Electroanal. Chem*. 636:80–85.
1765. Ojani, R., J.B. Raoof, and P. Salmany Afagh. 2004. Electrocatalytic oxidation of some carbohydrates by poly(1-naphthylamine)/nickel modified carbon paste electrode. *J. Electroanal. Chem*. 571:1–8.
1766. Ojani, R., J.B. Raoof, and S. Fathi. 2008. Electrocatalytic oxidation of some carbohydrates by nickel/poly(o-aminophenol) modified carbon paste electrode. *Electroanalysis* 20:1825–1830.
1767. Ojani, R., J.B. Raoof, and S.R.H. Zavvarmahalleh. 2009. Preparation of Ni/poly(1,5-diaminonaphthalene)-modified carbon paste electrode; application in electrocatalytic oxidation of formaldehyde for fuel cells. *J. Solid State Electrochem*. 13:1605–1611.
1768. Ojani, R., J.B. Raoof, and S. Zamani. 2009. Electrocatalytic oxidation of folic acid on carbon paste electrode modified by nickel ions dispersed into poly(o-anisidine) film. *Electroanalysis* 21:2634–2639.
1769. Ojani, R., J.B. Raoof, and S. Zamani. 2010. A novel sensor for cephalosporins based on electrocatalytic oxidation by poly(o-anisidine)/SDS/Ni modified carbon paste electrode. *Talanta* 81:1522–1528.
1770. Ojani, R., J.B. Raoof, and R. Babazadeh. 2010. Electrocatalytic oxidation of hydrogen peroxide on poly(m-toluidine)-nickel modified carbon paste electrode in alkaline medium. *Electroanalysis* 22:1607–1616.
1771. Lobo Castanon, M.J., A.J. Miranda Ordieres, and P. Tunon Blanco. 1997. A bienzyme-poly-(o-phenylenediamine)-modified carbon paste electrode for the amperometric detection of L-lactate. *Anal. Chim. Acta* 346:165–174.
1772. Lobo Castanon, M.J., A.J. Miranda Ordieres, and P. Tunon Blanco. 1997. Amperometric detection of ethanol with poly-(o-phenylenediamine)-modified enzyme electrodes. *Biosens. Bioelectron*. 12:511–520.
1773. Alvarez Crespo, S.L., M.J. Lobo Castanon, A.J. Miranda Ordieres, and P. Tunon Blanco. 1997. Amperometric glutamate biosensor based on poly(o-phenylenediamine) film electrogenerated onto modified carbon paste electrodes. *Biosens. Bioelectron*. 12:739–747.
1774. Lowry, J.P., M. Miele, R.D. O'Neill, M.G. Boutelle, and M. Fillenz. 1998. An amperometric glucose-oxidase/poly(o-phenylenediamine) biosensor for monitoring brain extracellular glucose: In vivo characterization in the striatum of freely-moving rats. *J. Neurosci. Methods*. 79:65–74.
1775. Bassi, A.S., E. Lee, and J.X. Zhu. 1999. Carbon paste-mediated, amperometric, thin-film biosensors for fructose monitoring in honey. *Food Res. Int*. 31:119–127.
1776. Vidal, J.C., E. Garcia, S. Mendez, P. Yarnoz, and J.R. Castillo. 1999. Three approaches to the development of selective bilayer amperometric biosensors for glucose by in situ electropolymerization. *Analyst* 124:319–324.
1777. Wang, J., L. Chen, S.B. Hocevar, and B. Ogorevc. 2000. One-step electropolymeric co-immobilization of glucose oxidase and heparin for amperometric biosensing of glucose. *Analyst* 125:1431–1434.
1778. Saidman, S.B., M.J. Lobo-Castanon, A.J. Miranda-Ordieres, and P. Tunon-Blanco. 2000. Amperometric detection of D-sorbitol with NAD+-D-sorbitol dehydrogenase modified carbon paste electrode. *Anal. Chim. Acta* 424:45–50.
1779. Rodriguez Granda, P., M.J. Lobo Castanon, A.J. Miranda Ordieres, and P. Tunon Blanco. 2002. Modified carbon paste electrodes for flow injection amperometric determination of isocitrate dehydrogenase activity in serum. *Anal. Biochem*. 308:195–203.

1780. Wang, J., L. Chen, and D.-B. Luo. 1997. Electrocatalytic detection of hydrogen peroxide at a poly(m-phenylenediamine)-modified carbon paste electrode and its use for biosensing of glucose. *Anal. Commun*. 34:217–219.
1781. Yabuki, S., F. Mizutani, and T. Katsura. 1992. Glucose-sensing carbon paste electrode containing polyethylene glycol-modified glucose oxidase. *Biosens. Bioelectron*. 7:695–700.
1782. Yabuki, S., F. Mizutani, and T. Katsura. 1993. Electrical communication of polyethylene glycol-modified glucose oxidase in carbon paste and its application to the assay of glucose. *Sens. Actuators B* 13:166–168.
1783. Yabuki, S. and F. Mizutani. 1995. Modifications to a carbon paste glucose-sensing enzyme electrode and a reduction in the electrochemical interference from L-ascorbate. *Biosens. Bioelectron*. 10:353–358.
1784. Csoeregi, E., T. Laurell, I. Katakis, A. Heller, and L. Gorton. 1995. Online glucose monitoring by using microdialysis sampling and amperometric detection based on 'wired' glucose oxidase in carbon paste. *Mikrochim. Acta* 121:31–40.
1785. Vijayakumar, A., E. Csoeregi, T. Ruzgas, and L. Gorton. 1996. Comparison of carbon paste electrodes modified with native and polyethylene glycol derivatized horseradish peroxidases for the amperometric monitoring of H_2O_2. *Sens. Actuators B* B37:97–102.
1786. Lobo Castanon, M.J., A.J. Miranda Ordierez, J.M. Lopez Fonseca, and P. Tunon Blanco. 1996. Electrocatalytic detection of nicotinamide coenzymes by poly(o-aminophenol)- and poly(o-phenylenediamine)-modified carbon paste electrodes. *Anal. Chim. Acta* 325:33–42.
1787. Parellada, J., E. Dominguez, and V.M. Fernandez. 1996. Amperometric flow injection determination of fructose in honey with a carbon paste sensor based on fructose dehydrogenase. *Anal. Chim. Acta* 330:71–77.
1788. Kulys, J., K. Krikstopaitis, T. Ruzgas, and V. Razumas. 1995. Electrochemical and bioelectrocatalytical properties of polydimethylsiloxane carbon paste doped with glucose oxidase. *Mater. Sci. Eng. C* 3:51–56.
1789. Wang, J., S. Li, J.W. Mo, J. Porter, M.M. Musameh, and P.K. Dasgupta. 2002. Oxygen-independent poly(dimethylsiloxane)-based carbon-paste glucose biosensors. *Biosens. Bioelectron*. 17:999–1003.
1790. Hernandez, P., F. Galan, O. Nieto, and L. Hernandez. 1994. Direct determination of indole-3-acetic acid in plant tissues by electroanalytical techniques using a carbon paste modified with OV-17 electrode. *Electroanalysis* 6:577–583.
1791. Schuhmann, W. 1995. Conducting polymer based amperometric enzyme electrodes. *Mikrochim. Acta* 121:1–29.
1792. Gerard, M., A. Chaubey, and B.D. Malhotra. 2002. Application of conducting polymers to biosensors. *Biosens. Bioelectron*. 17:345–359.
1793. Vidal, J.C., E. Garcia-Ruiz, and J.R. Castillo. 2003. Recent Advances in Electropolymerized conducting polymers in amperometric biosensors. *Microchim. Acta* 143:93–111.
1794. Borole, D.D., U.R. Kapadi, P.P. Malhulikar, and D.G. Hundiwale. 2006. Conducting polymers: An emerging field of biosensors. *Design. Monomers Polym*. 9:1–11.
1795. Wang, X., H. Zhang, E. Wang, Z. Han, and C. Hu. 2004. Phosphomolybdate-polypyrrole composite bulk-modified carbon paste electrode for a hydrogen peroxide amperometric sensor. *Mater. Lett*. 58:1661–1664.
1796. Audebert, P. and G. Bidan. 1986. Comparison of carbon paste electrochemistry of polypyrroles prepared by chemical and electrochemical oxidation paths. Some characteristics of the chemically prepared polyhalopyrroles. *Synth. Met*. 14:71–80.
1797. Chen, Z. K. Okamura, M. Hanaki, and T. Nagaoka. 2002. Selective determination of tryptophan by using a carbon paste electrode modified with an overoxidized polypyrrole film. *Anal. Sci*. 18:417–421.
1798. Mailley, P., E.A. Cummings, S.C. Mailley, B.R. Eggins, E. McAdams, and S. Cosnier. 2003. Composite carbon paste biosensor for phenolic derivatives based on in situ electrogenerated polypyrrole binder. *Anal. Chem*. 75:5422–5428.
1799. Raoof, J.B., R. Ojani, and S. Rashid-Nadimi. 2004. Preparation of polypyrrole/ferrocyanide films modified carbon paste electrode and its application on the electrocatalytic determination of ascorbic acid. *Electrochim. Acta* 49:271–280.
1800. Mailley, P., E.A. Cummings, S. Mailley, S. Cosnier, B.R. Eggins, and E. McAdams. 2004. Amperometric detection of phenolic compounds by polypyrrole-based composite carbon paste electrodes. *Bioelectrochemistry* 63:291–296.
1801. Wu, X., J. Wu, L. Fu, X. Li, G. Shen, and R. Yu. 2005. Determination of DNA based on polypyrrole-intercalated graphite oxide nanocomposite modified carbon paste electrode. *Asian J. Phys*. 14:173–182.
1802. Raoof, J.B., R. Ojani, and S. Rashid-Nadimi. 2005. Voltammetric determination of ascorbic acid and dopamine in the same sample at the surface of a carbon paste electrode modified with polypyrrole/ferrocyanide films. *Electrochim. Acta* 50:4694–4698.

1803. Szymanska, I., H. Radecka, J. Radecki, P.A. Gale, and C.N. Warriner. 2006. Ferrocene-substituted calix[4] pyrrole modified carbon paste electrodes for anion detection in water. *J. Electroanal. Chem*. 591:223–228.
1804. Lori, J.A., A. Morrin, A.J. Killard, and M.R. Smyth. 2006. Development and characterization of Nickel-NTA-polyaniline modified electrodes. *Electroanalysis* 18:77–81.
1805. Consolin Filho, N., E.C. Venancio, E.S. de Medeiros, S.T. Tanimoto, S.A.S. Machado, and L.H.C. Mattoso. 2006. Voltammetric determination of imazaquin using polyaniline modified carbon paste electrode (CPE). *Sens. Lett*. 4:11–16.
1806. Gilbert, O., U. Chandra, B.E.K. Swamy, M.P. Char, C. Nagaraj, and B.S. Sherigara. 2008. Poly(alanine) modified carbon paste electrode for simultaneous detection of dopamine and ascorbic acid. *Int. J. Electrochem. Sci*. 3:1186–1195.
1807. Majid, S., M. El Rhazi, A. Amine, A. Curulli, and G. Palleschi. 2003. Carbon paste electrode bulk-modified with the conducting polymer poly(1,8-diaminonaphthalene): Application to lead determination. *Microchim. Acta* 143:195–204.
1808. Walcarius, A. 2001. Electrochemical applications of silica-based organic–inorganic hybrid materials. *Chem. Mater*. 13:3351–3372.
1809. Gonzalez, E., P. Hernandez, and L. Hernandez. 1990. Cyclic voltammetry of tifluadom at a C18-modified carbon-paste electrode. *Anal. Chim. Acta* 228:265–272.
1810. Hernandez, P., E. Lorenzo, J. Cerrada, and L. Hernandez. 1992. Preconcentration and determination of bentazepam at C18-modified carbon paste electrodes. *Fresenius J. Anal. Chem*. 342:429–432.
1811. Hernandez, L., P. Hernandez, and J. Vicente. 1993. Voltammetric determination of methyl parathion, ortho, meta and para nitrophenol with a carbon paste electrode modified with C18. *Fresenius J. Anal. Chem*. 345:712–715.
1812. Hernandez, P., O. Nieto, F. Galan, and L. Hernandez. 1993. Use of an electrode of carbon paste modified with C18 in the determination of bendiocarb. *Quim. Anal. (Barcelona)* 12:18–23.
1813. Faller, C., A. Meyer, and G. Henze. 1996. Voltammetric determination of ioxynil and 2-methyl-3-nitroaniline using C18 modified carbon paste electrodes. *Fresenius J. Anal. Chem*. 356:279–283.
1814. Arranz, A., J.M. Moreda, and J.F. Arranz. 2000. Anodic stripping voltammetric assay for the determination of prazosin at carbon paste electrodes. *Quim. Anal. (Barcelona)* 19:31–37.
1815. Arranz, A., J.M. Moreda, and J.F. Arranz. 2000. Preconcentration and voltammetric determination of the antihypertensive doxazosin on a C8 modified carbon paste electrode. *Mikrochim. Acta* 134:69–75.
1816. Etienne, M., J. Bessiere, and A. Walcarius. 2001. Voltammetric detection of copper(II) at a carbon paste electrode containing an organically modified silica. *Sens. Actuators B* 76:531–538.
1817. Li, L., W. Li, C. Sun, and L. Li. 2002. Fabrication of carbon paste electrode containing 1:12 phosphomolybdic anions encapsulated in modified mesoporous molecular sieve MCM-41 and its electrochemistry. *Electroanalysis* 14:368–375.
1818. Hamidi, H., E. Shams, B. Yadollahi, and F.K. Esfahani. 2008. Fabrication of bulk-modified carbon paste electrode containing alpha-PW12O403-polyanion supported on modified silica gel: Preparation, electrochemistry and electrocatalysis. *Talanta* 74:909–914.
1819. Hamidi, H., E. Shams, B. Yadollahi, and F.K. Esfahani. 2009. Fabrication of carbon paste electrode containing [PFeW11O39]4-polyoxoanion supported on modified amorphous silica gel and its electrocatalytic activity for H_2O_2 reduction. *Electrochim. Acta* 54:3495–3500.
1820. Lorencetti, L.L. and Y. Gushikem. 1993. Cyclic voltammetry study of hexacyanoferrate complex immobilized on silica gel surface chemically modified with pyridinium ion. *J. Braz. Chem. Soc*. 4:88–92.
1821. Fujiwara, S.T., C.A. Pessoa, and Y. Gushikem. 2003. Hexacyanoferrate ion adsorbed on propylpyridiniumsilsesquioxane polymer film-coated SiO_2/Al_2O_3: Use in an electrochemical oxidation study of cysteine. *Electrochim. Acta* 48:3625–3631.
1822. Lucho, A.M.S., E.C. Oliveira, H.O. Pastore, and Y. Gushikem. 2004. 3-n-Propylpyridinium chloride silsesquioxane polymer film-coated aluminum phosphate and adsorption of cobalt(II) tetrasulfophthalocyanine: An electrocatalytic oxidation study of oxalic acid. *J. Electroanal. Chem*. 573:55–60.
1823. Fujiwara, S.T., Y. Gushikem, C.A. Pessoa, and S. Nakagaki. 2005. Electrochemical studies of a new iron porphyrin entrapped in a propylpyridiniumsilsesquioxane polymer immobilized on a SiO_2/Al_2O_3 surface. *Electroanalysis* 17:783–788.
1824. Magosso, H.A., R.C.S. Luz, and Y. Gushikem. 2010. Preparation and properties of the hybrid material n-propyl(3-methylpyridinium)silsesquioxane chloride. Application in electrochemical determination of nitrite. *Electroanalysis* 22:216–222.
1825. Sayen, S., M. Etienne, J. Bessière, and A. Walcarius. 2002. Tuning the sensitivity of electrodes modified with an organic–inorganic hybrid by tailoring the structure of the nanocomposite material. *Electroanalysis* 14:1521–1525.

1826. Cavalheiro, E.T.G., G. Marino, and I. Cesarino. 2006. Differential pulse anodic stripping voltammetric determination of mercury(II) in natural water at a carbon paste electrode modified with organofunctionalized amorphous silica. *Anal. Chem., Indian J*. 2:37–44.
1827. Aleixo, L.M., B.S. de Fatima, O.E.S. Godinho, G. Oliveira Neto, Y. Gushikem, and J.C. Moreira. 1992. Development of a chemically modified electrode based on carbon paste and functionalized silica gel for preconcentration and voltammetric determination of mercury(II). *Anal. Chim. Acta* 271:143–148.
1828. Dias Filho, N.L. and D.R. do Carmo. 2005. Stripping voltammetry of mercury(II) with a chemically modified carbon paste electrode containing silica gel functionalized with 2,5-dimercapto-1,3,4-thiadiazole. *Electroanalysis* 17:1540–1546.
1829. Dias Filho, N.L., D.R. do Carmo, and A.H. Rosa. 2006. An electroanalytical application of 2-aminothiazole-modified silica gel after adsorption and separation of Hg(II) from heavy metals in aqueous solution. *Electrochim. Acta* 52:965–972.
1830. Takeuchi, R.M., A.L. Santos, P.M. Padilha, and N.R. Stradiotto. 2007. Copper determination in ethanol fuel by differential pulse anodic stripping voltammetry at a solid paraffin-based carbon paste electrode modified with 2-aminothiazole organofunctionalized silica. *Talanta* 71:771–777.
1831. Sayen, S., C. Gerardin, L. Rodehuser, and A. Walcarius. 2003. Electrochemical detection of copper(II) at an electrode modified by a carnosine-silica hybrid material. *Electroanalysis* 15:422–430.
1832. Walcarius, A., S. Sayen, C. Gerardin, F. Hamdoune, and L. Rodehuser. 2004. Dipeptide-functionalized mesoporous silica spheres. *Colloids Surf. A* 234:145–151.
1833. Ganesan, V. and A. Walcarius. 2004. Surfactant templated sulfonic acid functionalized silica microspheres as new efficient ion exchangers and electrode modifiers. *Langmuir* 20:3632–3640.
1834. Abu-Shawish, H.M., S.M. Saadeh, and A.R. Hussien. 2008. Enhanced sensitivity for Cu(II) by a salicylidine-functionalized polysiloxane carbon paste electrode. *Talanta* 76:941–948.
1835. Javanbakht, M., A. Badiei, M.R. Ganjali, P. Norouzi, A. Hasheminasab, and M. Abdouss. 2007. Use of organofunctionalized nanoporous silica gel to improve the lifetime of carbon paste electrode for determination of copper(II) ions. *Anal. Chim. Acta* 601:172–182.
1836. Torabi, R., E. Shams, M.A. Zolfigol, and S. Afshar. 2006. Anodic stripping voltammetric determination of lead(II) with a 2-aminopyridinated-silica modified carbon paste electrode. *Anal. Lett*. 39:2643–2655.
1837. Dias Filho, N.L., L. Caetano, D.R. do Carmo, and A.H. Rosa. 2006. Preparation of a silica gel modified with 2-amino-1,3,4-thiadiazole for adsorption of metal ions and electroanalytical application. *J. Braz. Chem. Soc*. 17:473–481.
1838. Takeuchi, R.M., A.L. Santos, P.M. Padilha, and N.R. Stradiotto. 2007. A solid paraffin-based carbon paste electrode modified with 2-aminothiazole organo-functionalized silica for differential pulse adsorptive stripping analysis of nickel in ethanol fuel. *Anal. Chim. Acta* 584:295–301.
1839. Tian, A., Z. Han, J. Peng, J. Zhai, and Y. Zhao. 2007. Inorganic–organic microporous solid of Wells-Dawson type polyoxometalate: Synthesis, characterization, and electrochemical properties. *Z. Anorg. Allg. Chem*. 633:495–503.
1840. Wang, X., Y. Bi, B. Chen, H. Lin, and G. Liu. 2008. Self-assembly of organic–inorganic hybrid materials constructed from eight-connected coordination polymer hosts with nanotube channels and polyoxometalate guests as templates. *Inorg. Chem*. 47:2442–2448.
1841. Li, C., R. Cao, K.P. O'Halloran, H. Ma, and L. Wu. 2008. Preparation, characterization and bifunctional electrocatalysis of an inorganic–organic complex with a vanadium-substituted polyoxometalate. *Electrochim. Acta* 54:484–489.
1842. Lin, S., X. Zhang, and M. Luo. 2009. A novel inorganic–organic hybrid compound constructed from copper(II)-monosubstituted polyoxometalates and poly(amidoamine). *J. Solid State Electrochem*. 13:1585–1589.
1843. Walcarius, A. 2005. Impact of mesoporous silica-based materials on electrochemistry and feedback from electrochemical science to the characterization of these ordered materials. *C. R. Chim*. 8:693–712.
1844. Guo, H., N. He, S. Ge, D. Yang, and J. Zhang. 2005. MCM-41 mesoporous material modified carbon paste electrode for the determination of cardiac troponin I by anodic stripping voltammetry. *Talanta* 68:61–66.
1845. Guo, H.S., N.Y. He, S.X. Ge, D. Yang, and J.N. Zhang. 2005. Determination of cardiac troponin I by anodic stripping voltammetry at SBA-15 modified carbon paste electrode. *Stud. Surf. Sci. Catal*. 156:695–702.
1846. He, N.-Y., H.-S. Guo, D. Yang, C.-R. Gu, and J.-N. Zhang. 2006. SBA-15 modified carbon paste electrode for rapid cTnI detection with enhanced sensitivity. *Chin. Chem. Lett*. 17:235–238.
1847. Zeng, Y., J. Xu, and K. Wu. 2008. Electrochemical determination of uric acid using a mesoporous SiO_2-modified electrode. *Microchim. Acta* 161:249–253.

1848. Xie, X., D. Zhou, X. Zheng, W. Huang, and K. Wu. 2009. Electrochemical sensing of rutin using an MCM-41 modified electrode. *Anal. Lett*. 42:678–688.
1849. Zhou, C., Z. Liu, Y. Dong, and D. Li. 2009. Electrochemical behavior of o-nitrophenol at hexagonal mesoporous silica modified carbon paste electrodes. *Electroanalysis* 21:853–858.
1850. Sun, D., F. Wang, K. Wu, J. Chen, and Y. Zhou. 2009. Electrochemical determination of hesperidin using mesoporous SiO_2 modified electrode. *Microchim. Acta* 167:35–39.
1851. Zhao, J., W. Huang, and X. Zheng. 2009. Mesoporous silica-based electrochemical sensor for simultaneous determination of honokiol and magnolol. *J. Appl. Electrochem*. 39:2415–2419.
1852. Song, J., J. Yang, and X. Yang. 2009. Electrochemical determination of 5-hydroxytryptamine using mesoporous SiO_2 modified carbon paste electrode. *Russ. J. Electrochem*. 45:1346–1350.
1853. Walcarius, A., C. Despas, P. Trens, M.J. Hudson, and J. Bessiere. 1998. Voltammetric in situ investigation of a MCM-41-modified carbon paste electrode—A new sensor. *J. Electroanal. Chem*. 453:249–252.
1854. Walcarius, A. and J. Bessiere. 1999. Electrochemistry with Mesoporous Silica: Selective Mercury(II) Binding. *Chem. Mater*. 11:3009–3011.
1855. Zeng, Y., J. Yang, and K. Wu. 2008. Electrochemistry and determination of epinephrine using a mesoporous Al-incorporated SiO_2 modified electrode. *Electrochim. Acta* 53:4615–4620.
1856. Lin, H., T. Gan, and K. Wu. 2009. Sensitive and rapid determination of catechol in tea samples using mesoporous Al-doped silica modified electrode. *Food Chem*. 113:701–704.
1857. Walcarius, A., M. Etienne, S. Sayen, and B. Lebeau. 2003. Grafted silicas in electroanalysis: Amorphous versus ordered mesoporous materials. *Electroanalysis* 15:414–421.
1858. Walcarius, A., C. Delacote, and S. Sayen. 2004. Electrochemical probing of mass transfer rates in mesoporous silica-based organic–inorganic hybrids. *Electrochim. Acta* 49:3775–3783.
1859. Ojani, R., E. Ahmadi, J.B. Raoof, and F. Mohamadnia. 2009. Characterization of a carbon paste electrode containing organically modified nanostructure silica: Application to voltammetric detection of ferricyanide. *J. Electroanal. Chem*. 626:23–29.
1860. Cesarino, I., G. Marino, J. do Rosario Matos, and E.T.G. Cavalheiro. 2007. Using the organofunctionalized SBA-15 nanostructured silica as a carbon paste electrode modifier: Determination of cadmium ions by differential anodic pulse stripping voltammetry. *J. Braz. Chem. Soc*. 18:810–817.
1861. Cesarino, I., G. Marino, J.R. Matos, and E.T.G. Cavalheiro. 2007. Evaluation of a carbon paste electrode modified with organofunctionalized SBA-15 silica in the determination of copper. *Ecletica Quim*. 32:29–34.
1862. Cesarino, I., G. Marino, J.d.R. Matos, and E.T.G. Cavalheiro. 2008. Evaluation of a carbon paste electrode modified with organofunctionalised SBA-15 nanostructured silica in the simultaneous determination of divalent lead, copper and mercury ions. *Talanta* 75:15–21.
1863. Morante Zarcero, S., A. Sanchez, M. Fajardo, I. Hierro, and I. Sierra. 2010. Voltammetric analysis of Pb(II) in natural waters using a carbon paste electrode modified with 5-mercapto-1-methyltetrazol grafted on hexagonal mesoporous silica. *Microchim. Acta* 169:57–64.
1864. Ganjali, M.R., M. Asgari, F. Faridbod, P. Norouzi, A. Badiei, and J. Gholami. 2010. Thiomorpholine-functionalized nanoporous mesopore as a sensing material for Cd^{2+} carbon paste electrode. *J. Solid State Electrochem*. 14:1359–1366.
1865. Popa, D.E., M. Buleandra, M. Mureseanu, M. Ionica, and I.G. Tanase. 2010. Carbon paste electrode modified with organofunctionalized mesoporous silica for electrochemical detection and quantitative determination of cadmium(II) using square wave anodic stripping voltammetry. *Rev. Chim. (Roum.)* 61:162–167.
1866. Zhou, W., Y. Chai, R. Yuan, J. Guo, and X. Wu. 2009. Organically nanoporous silica gel based on carbon paste electrode for potentiometric detection of trace Cr(III). *Anal. Chim. Acta* 647:210–214.
1867. Javanbakht, M., F. Divsar, A. Badiei, M.R. Ganjali, P. Norouzi, G.M. Ziarani, M. Chaloosi, and A.A. Jahangir. 2009. Potentiometric detection of mercury(II) ions using a carbon paste electrode modified with substituted thiourea-functionalized highly ordered nanoporous silica. *Anal. Sci. (Jpn.)* 25:789–794.
1868. Javanbakht, M., F. Divsar, A. Badiei, F. Fatollahi, Y. Khaniani, M.R. Ganjali, P. Norouzi, M. Chaloosi, and G.M. Ziarani. 2009. Determination of picomolar silver concentrations by differential pulse anodic stripping voltammetry at a carbon paste electrode modified with phenylthiourea-functionalized high ordered nanoporous silica gel. *Electrochim. Acta* 54:5381–5386.
1869. Javanbakht, M., M.R. Ganjali, P. Norouzi, A. Badiei, A. Hasheminasab, and M. Abdouss. 2007. Carbon paste electrode modified with functionalized nanoporous silica gel as a new sensor for determination of silver ion. *Electroanalysis* 19:1307–1314.

1870. Javanbakht, M., H. Khoshsafar, M.R. Ganjali, P. Norouzi, A. Badei, and A. Hasheminasab. 2008. Stripping voltammetry of cerium(III) with a chemically modified carbon paste electrode containing functionalized nanoporous silica gel. *Electroanalysis* 20:203–206.
1871. Javanbakht, M., H. Khoshsafar, M.R. Ganjali, A. Badiei, P. Norouzi, and A. Hasheminasab. 2009. Determination of nanomolar mercury(II) concentration by anodic-stripping voltammetry at a carbon paste electrode modified with functionalized nanoporous silica gel. *Curr. Anal. Chem*. 5:35–41.
1872. Lin, Y., X. Cui, and L. Li. 2005. Low-potential amperometric determination of hydrogen peroxide with a carbon paste electrode modified with nanostructured cryptomelane-type manganese oxides. *Electrochem. Commun*. 7:166–172.
1873. Cui, X., G. Liu, L. Li, W. Yantasee, and Y. Lin. 2005. Electrochemical sensor based on carbon paste electrode modified with nanostructured cryptomelane-type manganese oxides for detection of heavy metals. *Sens. Lett*. 3:16–21.
1874. Cui, X., G. Liu, and Y. Lin. 2005. Amperometric biosensors based on carbon paste electrodes modified with nanostructured mixed-valence manganese oxides and glucose oxidase. *Nanomedicine* 1:130–135.
1875. Xie, X., K. Yang, and D. Sun. 2008. Voltammetric determination of hypoxanthine based on the enhancement effect of mesoporous TiO_2-modified electrode. *Colloids Surf. B* 67:261–264.
1876. Tan, X., B. Li, G. Zhan, and C. Li. 2010. Sensitive voltammetric determination of methyl parathion using a carbon paste electrode modified with mesoporous zirconia. *Electroanalysis* 22:151–154.
1877. Manso, J., L. Aguei, P. Yanez-Sedeno, and J.M. Pingarron. 2004. Development and Characterization of colloidal gold-cysteamine-carbon paste electrodes. *Anal. Lett*. 37:887–902.
1878. Agui, L., J. Manso, P. Yanez-Sedeno, and J.M. Pingarron. 2004. Colloidal-gold cysteamine-modified carbon paste electrodes as suitable electrode materials for the electrochemical determination of sulphur-containing compounds Application to the determination of methionine. *Talanta* 64:1041–1047.
1879. Kalanur, S.S., J. Seetharamappa, and S.N. Prashanth. 2010. Voltammetric sensor for buzepide methiodide determination based on TiO_2 nanoparticle-modified carbon paste electrode. *Colloids Surf. B* 78:217–221.
1880. Mazloum Ardakani, M., H. Beitollahi, Z. Taleat, H. Naeimi, and N. Taghavinia. 2010. Selective voltammetric determination of D-penicillamine in the presence of tryptophan at a modified carbon paste electrode incorporating TiO_2 nanoparticles and quinizarine. *J. Electroanal. Chem*. 644:1–6.
1881. Sabzi, R.E., F. Ebrahimzadeh, and H. Sedghi. 2008. Electrochemical and electrocatalytic properties of cobalt oxide nanoparticles. *Asian J. Chem*. 20:3364–3372.
1882. Daneshgar, P., P. Norouzi, M.R. Ganjali, A. Ordikhani-Seyedlar, and H. Eshraghi. 2009. A dysprosium nanowire modified carbon paste electrode for determination of levodopa using fast Fourier transformation square-wave voltammetry method. *Colloids Surf. B* 68:27–32.
1883. Daneshgar, P., P. Norouzi, M.R. Ganjali, and F. Dousty. 2009. A dysprosium nanowire modified carbon paste electrode for determination of nanomolar level of Diphenhydramin by continuous square wave voltammetry in flow injection system. *Int. J. Electrochem. Sci*. 4:444–457.
1884. Daneshgar, P., P. Norouzi, F. Dousty, M.R. Ganjali, and A.A. Moosavi-Movahedi. 2009. Dysprosium hydroxide nanowires modified electrode for determination of rifampicin drug in human urine and capsules by adsorptive square wave voltammetry. *Curr. Pharm. Anal*. 5:246–255.
1885. Daneshgar, P., P. Norouzi, M.R. Ganjali, R. Dinarvand, and A.A. Moosavi-Movahedi. 2009. Determination of diclofenac on a dysprosium nanowire-modified carbon paste electrode accomplished in a flow injection system by advanced filtering. *Sensors* 9:7903–7918.
1886. Daneshgar, P., P. Norouzi, A.A. Moosavi-Movahedi, M.R. Ganjali, E. Haghshenas, F. Dousty, and M. Farhadi. 2009. Fabrication of carbon nanotube and dysprosium nanowire modified electrodes as a sensor for determination of curcumin. *J. Appl. Electrochem*. 39:1983–1992.
1887. Norouzi, P., F. Dousty, M.R. Ganjali, and P. Daneshgar. 2009. Dysprosium nanowire modified carbon paste electrode for the simultaneous determination of naproxen and paracetamol: Application in pharmaceutical formulation and biological fluid. *Int. J. Electrochem. Sci*. 4:1373–1386.
1888. Mashhadizadeh, M.H. and M. Akbarian. 2009. Voltammetric determination of some anti-malarial drugs using a carbon paste electrode modified with $Cu(OH)_2$ nano-wire. *Talanta* 78:1440–1445.
1889. Sun, W., D. Wang, G. Li, Z. Zhai, R. Zhao, and K. Jiao. 2008. Direct electron transfer of hemoglobin in a CdS nanorods and Nafion composite film on carbon ionic liquid electrode. *Electrochim. Acta* 53:8217–8221.
1890. Economou, E., and P.R. Fielden. 2003. Mercury film electrodes: Developments, trends and potentialities for electroanalysis. *Analyst* 128:205–212.
1891. Farghaly, O.A. 2004. A novel method for determination of magnesium in urine and water samples with mercury film-plated carbon paste electrode. *Talanta* 63:497–501.

1892. Sherigara, B.S., Y. Shivaraj, R.J. Mascarenhas, and A.K. Satpati. 2007. Simultaneous determination of lead, copper and cadmium onto mercury film supported on wax impregnated carbon paste electrode. *Electrochim. Acta* 52:3137–3142.
1893. Chadim, P., I. Švancara, B. Pihlar, and K. Vytřas. 2000. Gold-plated carbon paste electrodes for anodic stripping determination of arsenic. *Collect. Czech. Chem. Commun*. 65:1035–1046.
1894. Tesarova, E., L. Baldrianova, S.B. Hocevar, I. Švancara, K. Vytřas, and B. Ogorevc. 2009. Anodic stripping voltammetric measurement of trace heavy metals at antimony film carbon paste electrode. *Electrochim. Acta* 54:1506–1510.
1895. Bobrowski, A., A. Krolicka, and E. Lyczkowska. 2007. Carbon paste electrode plated with lead film. Voltammetric characteristics and application in adsorptive stripping voltammetry. *Electroanalysis* 20:61–67.
1896. Tesarova-Svobodova, E., L. Baldrianova, M. Stoces, I. Švancara, K. Vytřas, S.B. Hocevar, and B. Ogorevc. 2010. Antimony powder-modified carbon paste electrodes for electrochemical stripping determination of trace heavy metals. *Electrochim. Acta* 56:6673–6677.
1897. Pauliukaite, R. and K. Kalcher. 2001. Using of CPE and SPCE modified by Bi_2O_3 and Sb_2O_3 for trace analysis of some heavy metals. In *YISAC-01: 8th Young Investigators' Seminar on Analytical Chemistry, Book of Abstracts*, Pardubice, Czech Republic, July 2–5, 2001, pp. 10–11. Pardubice, Czech Republic: University of Pardubice.
1898. Švancara, I., M. Florescu, M. Stoces, L. Baldrianova, E. Svobodova, M. Badea. 2010. Carbon paste electrodes modified with a reaction product obtained by hydrolysis of an antimony(III) salt. In *Sensing in Electroanalysis*, Vol. 5, Eds. K. Vytřas, K. Kalcher, and I. Švancara, pp. 109–125. Pardubice, Czech Republic: University Press Center.
1899. Stoces, M. and I. Švancara. 2010. Carbon paste electrodes modified with bismuth- and antimony fluoride as a novel non-mercury metallic film-based sensors for electrochemical stripping analysis. Article in preparation.
1900. Cai, X., K. Kalcher, and C. Neuhold. 1994. Simultaneous determination of uric acid, xanthine and hypoxanthine with an electrochemically pretreated carbon paste electrode. *Fresenius J. Anal. Chem*. 348:660–665.
1901. Cai, X., B. Ogorevc, and K. Kalcher. 1995. Synergistic electrochemical and chemical modification of carbon paste electrodes for open-circuit preconcentration and voltammetric determination of trace adenine. *Electroanalysis* 7:1126–1131.
1902. Wang, J., X. Cai, J. Wang, C. Jonsson, and E. Palecek. 1995. Trace measurements 91 of RNA by potentiometric stripping analysis at carbon paste electrodes. *Anal. Chem*. 67:4065–4070.
1903. Wang, H., A. Zhang, H. Cui, D. Liu, and R. Liu. 1998. Adsorptive stripping voltammetric determination of phenol at an electrochemically pretreated carbon-paste electrode with solid paraffin as a binder. *Microchem. J*. 59:448–456.
1904. Saidman, S.B. 2002. Effects of electrochemical pretreatments on NADH oxidation at NAD^+-modified carbon paste electrodes. *Electroanalysis* 14:449–454.
1905. Dunwoody, D.C., A.K.H. Wolf, W.L. Gellett, and J. Leddy. 2004–2005. Magnetically modified carbon paste electrodes: Method for construction and demonstration of increased electrochemical flux over unmodified carbon paste electrodes. *Proc. Electrochem. Soc*. 18:181–191.
1906. Hulanicki, A., S. Glab, and F. Ingman A. 1991. Chemical sensors—Definitions and classification. *Pure Appl. Chem*. 63:1247–1250.
1907. Thevenot, D.R., K. Toth, R.A. Durst, and G.S. Wilson. 1999. Electrochemical biosensors: Recommended definitions and classification. *Pure Appl. Chem*. 71:2333–2348.
1908. Clark, L.C. and C. Lyons. 1962. Electrode systems for continuous monitoring in cardiovascular surgery. *Ann. N.Y. Acad. Sci*. 102:29–45.
1909. Clark L.C., R. Wolf, D. Granger, and Z. Taylor. 1953. Continuous recording of blood oxygen tensions by polarography. *J. Appl. Physiol*. 6:189–193.
1910. Severinghaus J.W. and P.B. Astrup. 1986. History of blood gas analysis. IV. Leland Clark's oxygen electrode. *J. Clin. Monit*. 2:125–139.
1911. Lubert, K.H. and K. Kalcher. 2010. History of electroanalytical methods. *Electroanalysis* 22:1937–1946.
1912. Patolsky, F., Y. Weizmann, and I. Willner. 2004. Long-range electrical contacting of redox enzymes by SWCNT connectors. *Angew. Chem. Int. Ed*. 43:2113–2117.
1913. Xiao, Y., F. Patolsky, E. Katz, J.F. Hainfeld, and I. Willner. 2003. "Plugging into Enzymes": Nanowiring of redox enzymes by a gold nanoparticle. *Science* 299:1877–1881.
1914. Razumas, V., J. Kazlauskaite, and R. Vidziunaite. 1996. Electrocatalytic reduction of hydrogen peroxide on the microperoxidase-11 modified carbon paste and graphite electrodes. *Bioelectrochem. Bioenerg*. 39:139–143.

1915. Wang, J. 1994. *Analytical Electrochemistry*, 1st Edn., New York: VCH Publishers.
1916. Wang, J. 1985. *Stripping Analysis. Principles, Instrumentation, and Application*, 1st Edn., New York: VCH Publishers.
1917. Kissinger, P.T and W.R. Heineman. 1996. *Laboratory Techniques in Electroanalytical Chemistry*, 2nd Rev. and Exp. Edn., New York: Marcel Dekker.
1918. Bockris, J.O'M. and A.K.N. Reddy. 1977. *Modern Electrochemistry 1*. 3rd Print, New York: Plenum Press.
1919. Bockris, J.O'M. and A.K.N. Reddy. 1977. *Modern Electrochemistry 2*. 3rd Print, New York: Plenum Press.
1920. Bard, A.J. and L.R. Faulkner. 1980. *Electrochemical Methods. Fundamentals and Applications*. New York: John Wiley.
1921. Monk, P.M.S. 2001. *Fundamentals of Electroanalytical Chemistry*. Chichester, U.K.: John Wiley.
1922. Scholz F. Ed. 2002. *Electroanalytical Methods*. Berlin, Germany: Springer-Verlag.
1923. Pletcher, D. 1991. *A First Course in Electrode Processes*. Hants, U.K.: The Electrochemical Consultancy.
1924. Bagotsky, V.S. 2006. *Fundamentals of Electrochemistry*. Hoboken, NJ: John Wiley.
1925. Mirceski, V., S. Komorski-Lovric, and M. Lovric. 2007. *Square Wave Voltammetry. Theory and Application*. Berlin, Germany: Springer-Verlag.
1926. Zhao, J., L. Zhang, X. Yao, and Q. Yang. 2002. Adsorptive voltammetric determination of cobalt in Chinese herbal medicine. *Lihua Jianyan, Huaxue Fence* 38:387–388.
1927. Lu, J., W. Jin, and S. Wang. 1990. Adsorption voltammetry of the vanadium-2-(5′-bromo-2′-pyridylazo)-5-diethylaminophenol (5-Br-PADAP) system. *Anal. Chim. Acta* 238:375–381.
1928. Jin, W. and X. Li. 1990. 1.5th- and 2.5th-order derivative adsorption voltammetry of the cobalt(II)-2-(5′-bromo-2′-pyridylazo)-diethylaminophenol system. *Anal. Chim. Acta* 236:453–458.
1929. Goto, M. and D. Ishii. 1975. Semidifferential electroanalysis. *J. Electroanal. Chem. Interf. Electrochem*. 61:361–365.
1930. Oldham, K.B. 1972. Signal-independent electroanalytical method. *Anal. Chem*. 44:196–198.
1931. Grennes, M. and K.B. Oldham. 1972. Semiintegral electroanalysis. Theory and verification. *Anal. Chem*. 44:1121–1129.
1932. Goto, M., T. Hirano, and D. Ishii. 1978. 2.5th Order differential electroanalysis. *Bull. Chem. Soc. Jan*. 51:470–475.
1933. Jin, W., H. Cui, and S. Wang. 1992. Linear potential sweep adsorption voltammetry for a reversible interfacial reaction: Comparison of conventional and derivative measuring techniques. *Anal. Chim. Acta* 268:301–306.
1934. Jin W., H. Cui, L. Zhu, and S. Wang. 1992. Linear potential sweep adsorption voltammetry for an irreversible interfacial reaction: Theory and sensitivity. *J. Electroanal. Chem*. 340:315–324.
1935. Jin W., H. Cui, and S. Wang. 1991. On the theory of the integer and half-integer integral and derivative linear potential sweep voltammetry for a reversible interfacial reaction. *J. Electroanal. Chem*. 297:37–47.
1936. Trnkova, L. and O. Dracka. 1996. Elimination voltammetry. Experimental verification and extension of theoretical results. *J. Electroanal. Chem*. 413:123–129.
1937. Trnkova, L. 2001. Electrochemical elimination methods. *Chem. Listy* 95:518–527.
1938. Trnkova, L., R. Kizek, and O. Dracka. 2000. Application of elimination voltammetry to adsorptive stripping of DNA. *Electroanal*. 12:905–911.
1939. Trnkova, L., J. Friml, and O. Dracka. 2001. Elimination voltammetry of adenine and cytosine mixtures. *Bioelectrochem*. 54:131–136.
1940. Trnkova, L. 2002. Electrochemical behavior of DNA at a silver electrode studied by cyclic and elimination voltammetry. *Talanta* 56:887–894.
1941. Trnkova, L., R. Kizek, and O. Dracka. 2002. Elimination voltammetry of nucleic acids on silver electrodes. *Bioelectrochemistry* 55:131–133.
1942. Trnkova, L., F. Jelen, and I. Postbieglova. 2003. Application of elimination voltammetry to the resolution of adenine and cytosine signals in oligonucleotides. I. Homooligodeoxynucleotides dA(9) and dC(9). *Electroanalysis* 15:1529–1535.
1943. Trnkova, L., R. Kizek, and J. Vacek. 2004. Square wave and elimination voltammetric analysis of azidothymidine in the presence of oligonucleotides and chromosomal DNA. *Bioelectrochemistry* 63:31–36.
1944. Trnkova, L., I. Postbieglova, and M. Holik. 2004. Electroanalytical determination of d(GCGAAGC) hairpin. *Bioelectrochemistry* 63, 25–30.
1945. Trnkova, L., F. Jelen, J. Petrlova, V. Adam, D. Potesil, and R. Kizek. 2005. Elimination voltammetry with linear scan as a new detection method for DNA sensors. *Sensors* 5:448–464.

1946. Palecek E., F. Jelen, C. Teijeiro, V. Fucik, and T.M. Jovin. 1993. Biopolymer-modified electrodes in the voltammetric determination of nucleic acids and proteins at the submicrogram level. *Anal. Chim. Acta* 273:175–186.
1947. Ruzicka, J. and E.H. Hansen. 1988. *Flow Injection Analysis*, 2nd Edn., New York: John Wiley & Sons, Inc.
1948. Wang, J., L. Chen, L. Angnes, and B. Tian. 1992. Computerized pipettes with programmable dispension for batch injection analysis. *Anal. Chim. Acta* 267:171–177.
1949. Wang, J. and Z. Taha. 1991. Batch injection analysis. *Anal. Chem*. 63:1053–1056.
1950. Quintino, M.S.M. and L. Angnes. 2004. Batch injection analysis: An almost unexplored powerful tool. *Electroanalysis* 16:513–523.
1951. Brett, C.M.A., A.M. Oliveira Brett, and L. Tugulea. 1996. Anodic stripping voltammetry of trace metals by batch injection analysis. *Anal. Chim. Acta* 322:151–157.
1952. Brett, C.M.A., A.M.O. Brett, and L.C. Mitoseriu. Amperometric batch injection analysis: Theoretical aspects of current transients and comparison with wall-jet electrodes in continuous flow. 1995. *Electroanalysis* 7:225–229.
1953. Brett, C.M.A., A.M. Oliveira Brett, and L.C. Mitoseriu. Amperometric and voltammetric detection in batch injection analysis. 1994. *Anal. Chem*. 66:3145–3150.
1954. Backofen, U., W. Hoffmann, and F.M. Matysik. 1998. Capillary batch injection analysis—A novel approach for analyzing nanoliter samples. *Anal. Chim. Acta* 362:213–220.
1955. Yamada, J. and H. Matsuda. 1973. Limiting diffusion currents in hydrodynamic voltammetry. III. Wall jet electrodes. *J. Electroanal. Chem*. 44:189–198.
1956. Bates, R.G. 1964. *Determination of pH, Theory and Practice*. New York: Wiley.
1957. Eiseman, G. 1967. *Glass Electrodes for Hydrogen and Other Cations*. New York: Marcel Dekker.
1958. Vytřas, K. 1995. Potentiometry, In *Encyclopedia of Pharmaceutical Technology*, Vol. 12, Eds. J. Swarbrick and J.C. Boylan, pp. 347–388. New York: Marcel Dekker.
1959. Lakshminarayanaiah, N. 1976. *Membrane Electrodes*. New York: Academic Press.
1960. Koryta, J. and K. Stulik. 1983. *Ion-Selective Electrodes*, 2nd Edn., Cambridge, U.K.: University Press.
1961. Ruzicka, J. 2009. *Flow-Injection Analysis*. Bellevue, WA: FIALab Instruments.
1962. Ruzicka, J., J.C. Tjell, and C.G. Lamm. 1972. Selectrode—Universal ion-selective electrode. Concept, construction and materials. *Anal. Chim. Acta* 62:15–28.
1963. Ruzicka, J. 1997. The seventies: Golden age for ion selective electrodes. *J. Chem. Educ*. 74:167–170.
1964. Filipenko, A.T., E.M. Skobets, O.P. Ryabushko, and Yu.S. Savin. 1984. Silver iodide carbon-paste ion-selective electrode. *Ukr. Khim. Zh. (Russ. Ed.)* 50:490–493.
1965. Hoffmann, C.R., M.R. Haskard, and D.E. Mulcahy. 1984. Carbon-filled polymer paste ion-selective probes. *Anal. Lett*. 17:1499–1509.
1966. Vytřas, K., J. Jezkova, and J. Kalous. 1997. Automated potentiometry as an ecologic alternative to two-phase titrations of surfactants. *Egypt. J. Anal. Chem*. 6:107–123.
1967. Vytřas, K., J. Jezkova, V. Dlabka, and J. Kalous. 1997. Studies on potentiometric titrations using simple liquid membrane-based electrodes: Coated wires vs. carbon pastes. *Sci. Pap. Univ. Pardubice Ser. A* 3:307–321.
1968. Vytřas, K., J. Jezkova, and J. Skorepa. 1998. Some aspects of the use of heteropoly anions in elemental analysis by simple potentiometric ion-pair formation-based titration. *Talanta* 46:1619–1622.
1969. Lee, Y.-K., C.-K. Kim, J.-T. Park, K.-S. Kim, and K.-J. Whang. 1985. Potentiometry with carbon paste-based ion-selective electrode for the determination of sulphate. *J. Korean Air Pollut. Res. Assoc*. 1:99–103.
1970. Lee, Y.-K., J.-T. Park, C.-K. Kim, and K.-J. Whang. 1986. Carbon paste-coated wire ion-selective electrode for nitrate ion. *Anal. Chem*. 58:2101–2103.
1971. Lee,Y.-K., S.-K. Rhim, and K.-J. Whang. 1989. Construction of carbon paste-coated wire ion-selective electrode for chloride and its application to environmental analysis of water. *Bull. Korean Chem. Soc*. 10:485–488.
1972. Vytřas, K. 1989. The use of ion-selective electrodes in the determination of drug substances. *J. Pharm. Biomed. Anal*. 7:789–812.
1973. Vytřas, K., T. Capoun, E. Halamek, J. Soucek, and B. Stajerova. 1990. Potentiometric ion-pair formation titrations of *N*-alkyl-*N*-ethylpyrrolidium cations using plastic membrane electrodes. *Collect. Czech. Chem. Commun*. 55:941–950.
1974. Fogg, A.G., M. Duzinkewycz, and A.S. Pathan. 1973. Ion-selective electrodes based on brilliant green tetrathiocyanatezincate(II). *Anal. Lett*. 6:1101–1106.
1975. Vytřas, K., J. Jezkova, J. Kalous, I. Švancara. 1994. A low ohmic resistance sensor for potentiometric titrations of tensides. In *XXVII. Seminar on Tensides and Detergents. Proceedings (in Czech)*, Novaky, Slovakia, pp. 35–48.
1976. Rejhonová, H. 2011. Development and testing of the dual sensors based on carbon pastes modified with Bi + Bi_2O_3 and Sb + Sb_2O_3 mixtures. MSc dissertation (in Czech). University of Pardubice, Pardubice, Czech Republic.

1977. Fogg, A.G. and J. Wang. Terminology and convention for electrochemical stripping analysis (technical report). 1999. *Pure Appl. Chem*. 71:891–897.
1978. Delahay, P. and T. Berzins. 1953. Theory of electrolysis at constant current with partial control by diffusion: Application to the study of complex ions. *J. Am. Chem. Soc*. 75:2486–2486.
1979. Berzins, T. and P. Delahay. 1953. Theory of electrolysis at constant current in unstirred solution. 2. Consecutive electrochemical reactions. *J. Am. Chem. Soc*. 75:4205–4213.
1980. Delahay, P. and C.C. Mattax. 1954. Theory of electrolysis at constant current in unstirred solution. 3. Experimental study of potential-time curves. *J. Am. Chem. Soc*. 76:874–878.
1981. Heineman, W.R. and P.T. Kissinger. 1996. Large-Amplitude Controlled-Current Techniques. In *Laboratory Techniques in Electroanalytical Chemistry*, 2nd Rev. Edn. Eds. P.T. Kissinger and W.R. Heineman, pp. 127–139. New York: Marcel Dekker.
1982. Jagner, D. and A. Graneli. 1976. Potentiometric stripping analysis. *Anal. Chim. Acta* 83:19–26.
1983. Ostapczuk, P. and M. Froning. 1992. Advanced electrochemical techniques for the determination of heavy metals in specimen bank materials. In *Specimen Banking—Environmental Monitoring & Modern Analytical Approaches*, Eds. M. Rossbach, J.D. Schladot, and P. Ostapczuk, pp. 153–165. Berlin, Germany: Springer Verlag.
1984. Ostapczuk, P. 1993. Present potentials and limitations in the determination of trace elements by potentiometric stripping analysis. *Anal. Chim. Acta* 273:35–40.
1985. Estela, J.M., C. Tomas, A. Cladera, and V. Cerda. 1995. Potentiometric stripping analysis—A review. *Crit. Rev. Anal. Chem*. 25:91–141.
1986. Christensen, J.K., L. Kryger, J. Mortensen, and J. Rasmussen. 1980. Reductive potentiometric stripping analysis for elements forming sparingly soluble mercury compounds with amalgamed metal as a reducting agent. *Anal. Chim. Acta* 121:71–83.
1987. Konvalina, J. and K. Vytřas. 2001. The present use of (chrono)potentiometric stripping analysis. *Chem. Listy* 95:344–351.
1988. Wang, J., G. Rivas, X.-H. Cai, M. Chicharro, N. Dontha, D.-B. Luo, E. Palecek, and P.E. Nielsen. 1997. Adsorption and detection of peptide nucleic acids at carbon paste electrodes. *Electroanalysis* 9:120–124.
1989. Vytřas, K., K. Kalcher, I. Švancara, K. Schachl, E. Khaled, J. Jezkova, J. Konvalina, and R. Metelka. 2001. Recent applications of carbon paste electrodes in potentiometry and stripping analysis. In *Chemical and Biological Sensors and Analytical Methods II*, Eds. M. Butler, P. Vanysek, and N. Yamazoe, pp. 277–283. Pennington, NJ: Electrochem. Soc.
1990. Konvalina, J. and K. Vytřas. 1999. Determination of thallium(III) at a carbon paste electrode using potentiometric stripping analysis. In *Monitoring of Environmental Pollutants*, Eds. K. Vytřas, J. Kellner, and J. Fischer, pp. 99–104. Pardubice, Czech Republic: University of Pardubice.
1991. Mortensen, J., E. Ouziel, H.J. Skov, and L. Kryger. 1979. Multiple-scanning potentiometric stripping analysis. *Anal. Chim. Acta* 112:297–312.
1992. Konvalina, J., E. Khaled, and K. Vytřas. 2000. Carbon paste electrode as a support for mercury film in potentiometric stripping determination of heavy metals. *Collect. Czech. Chem. Commun*. 65:1047–1054.
1993. Khaled, E., J. Konvalina, K. Vytřas, and H.N.A.Hassan. 2003. Investigation of carbon paste electrodes as supports for gold films in potentiometric stripping determination of copper(II) and mercury(II) traces. *Sci. Pap. Univ. Pardubice Ser. A* 9:19–29.
1994. Tesarova, E. and K. Vytřas. 2009. Potentiometric stripping analysis at antimony film electrodes. *Electroanalysis* 21:1075–1080.
1995. Hocevar, S.B., I. Švancara, B. Ogorevc, and K. Vytřas. 2007. Antimony film electrode for electrochemical stripping analysis. *Anal. Chem*. 79:8639–8643.
1996. Švancara, I., S.B. Hocevar, L. Baldrianova, E. Tesarova, B. Ogorevc, and K. Vytřas. 2007. Antimony-modified carbon paste electrodes: Initial studies and prospects. *Sci. Pap. Univ. Pardubice Ser. A* 13:5–19.
1997. Sopha, H., L. Baldrianova, E. Tesarova, S.B. Hocevar, I. Švancara, B. Ogorevc, and K. Vytřas. 2010. Insights into the simultaneous chronopotentiometric stripping measurements of indium(III), thallium(I) and zinc(II) in acidic medium at the in-situ prepared antimony film carbon paste electrode. *Electrochim. Acta* 55:7929–7933.
1998. Brett, M.A. and A.M. Oliveira Brett. 1998. *Electroanalysis*. Oxford, U.K.: University Press.
1999. Ruby, W.R. and C.G. Tremmel. 1968. Electrochemical properties of a carbon paste-silver halide electrode. *J. Electroanal. Chem*. 18:231–238.
2000. Hu, C., X. Dang, and S. Hu. 2004. Studies on adsorption of cetyltrimethylammonium bromide at carbon paste electrode and the enhancement effect in thyroxine reduction by voltammetry and electrochemical impedance spectroscopy. *J. Electroanal. Chem*. 572:161–171.

2001. He, J.B., Y. Zhou, and F.S. Meng. 2009. Time-derivative cyclic voltabsorptometry for voltammetric characterization of catechin film on a carbon-paste electrode: One voltammogram becomes four. *J. Solid State Electrochem*. 13:679–685.
2002. Sandulescu, R., S. Mirel, and R. Oprean. 2000. The development of spectrophotometric and electroanalytical methods for ascorbic acid and acetaminophen and their applications in the analysis of effervescent dosage forms. *J. Pharm. Biomed. Anal*. 23:77–87.
2003. Egashira, N., H. Kumasako, Y. Kurauchi, and K. Ohga. 1993. Determination of oxalate with fiber-optic electrochemiluminescence sensors. *Proc. Electrochem. Soc*. 93–7:674–679.
2004. Buckley, A.N. and R. Woods. 1991. Electrochemical and XPS studies of the surface oxidation of synthetic heazlewoodite (Ni_3S_2). *J. Appl. Electrochem*. 21:575–582.
2005. Nava, D., I. Gonzalez, D. Leinen, and J.R. Ramos-Barrado. 2008. Surface characterization by X-ray photoelectron spectroscopy and cyclic voltammetry of products formed during the potentiostatic reduction of chalcopyrite. *Electrochim. Acta* 53:4889–4899.
2006. Simic, N. and E. Ahlberg. 1999. Electrochemical, spectroscopic and structural investigations of the Cd/Cd(II) system in alkaline media 2. Concentration effects. *J. Electroanal. Chem*. 462:34–42.
2007. Ahlberg, E. and J. Asbjoernsson. 1993. Carbon paste electrodes in mineral processing: An electrochemical study of galena. *Hydrometallurgy* 34:171–185.
2008. Lara Castro, R.H., R. Briones, M. Monroy, M. Dossot, M. Mullet, and R. Cruz. 2010. Electrochemical and spectroscopic analysis of arsenopyrite (FeAsS) oxidation under calcareous soil conditions. *ECS Trans*. 28:105–116.
2009. Galus, Z. and R.N. Adams. 1962. Anodic oxidation studies of N,N-dimethylaniline. Part II: Stationary and rotated disk electrode studies. *J. Am. Chem. Soc*. 84:2061–2064.
2010. Galus, Z. and R.N. Adams. 1962. Anodic oxidation of triphenylmethane dyes. Part I. *J. Am. Chem. Soc*. 84:3207–3208.
2011. Galus, Z. and R.N. Adams. 1964. Anodic oxidation of triphenylmethane dyes. Part II. *J. Am. Chem. Soc*. 86:1666–1671.
2012. Hawley, D. and R.N. Adams. 1964. Anodic oxidation of p-methoxyphenol. *J. Electroanal. Chem*. 8:163–166.
2013. Leedy, D.W. and R.N. Adams. 1967. Reduction of N,N-dimethyl-*p*-nitrosoaniline. *J. Electroanal. Chem*. 14:119–122.
2014. Papouchado, L., G. Petrie, J.H. Sharp, and R.N. Adams. 1968. Anodic hydroxylation of aromatic compounds. *J. Am. Chem. Soc*. 90:5620–5622.
2015. Bacon, A.J. and R.N. Adams. 1968. Anodic oxidation of aromatic amines. Part III: Substituted anilines in aqueous media. *J. Am. Chem. Soc*. 90:6596–6597.
2016. Melicharek, M. and R.F. Nelson. 1970. Electrochemical oxidation of N,N-dimethyl-p-toluidine. *J. Electroanal. Chem*. 26:201–209.
2017. Grandi, G., R. Andreoli, and G.B. Gavioli. 1970. Effect of specific adsorption of some anions on the polarographic reduction. *J. Electroanal. Chem*. 27:177–183.
2018. Farsang, Gy., V. Vass, L. Ladanyi, and T.H.M. Saber. 1973. Electrochemical oxidation of 2,4-diaminodiphenylamine in aqueous solutions. *J. Electroanal. Chem*. 43:397–403.
2019. Sternson, L.A. 1974. Electrochemical determination of arylhydroxylamines in aqueous solutions and liver microsomal suspensions. *Anal. Chem*. 46:2228–2230.
2020. Sternson, L.A. 1974. Detection of arylhydroxylamines as intermediates in the metabolic reduction of nitro compounds. *Cell. Mol. Life Sci*. 31:268–270.
2021. Sternson, L.A. and J. Hes. 1975. Electrochemical method for the determination of aniline hydroxylation in liver. *Anal. Biochem*. 67:74–80.
2022. Brainina, Kh.Z. 1990. Personal communication.
2023. Gaillochet, P. 1975. Redox properties of oleums and concentrated or pure sulfuric acid. Electrochemical behavior of solids dispersed in carbon paste. Application to the determination of uranium in ores. PhD dissertation (in French), University of Paris 6.
2024. Bachiller, P.E., M.L.T. Garcia, M.D.V. Barbado, and P. Sanchez Batanero. 1997. Voltammetric method for distinguishing between electrochemical reactions involving solid or dissolved analytes within carbon paste electrodes. *J. Electroanal. Chem*. 424:217–219.
2025. Lecuire, J-M. 1975. Electrochemical reduction of iron oxides. Application to the measurement of non-stoichiometry. *J. Electroanal. Chem*. 66:195–205.
2026. Lecuire, J-M. and O. Evrard. 1977. Electrochemical reduction of iron oxides. Comparison of the electrochemical and crystallographic characteristics. *J. Electroanal. Chem*. 78:331–339.
2027. Mouhandess, M.T., F. Chassagneux, O. Vittori, A. Accary, and R.M. Reeves. 1984. Some theoretical aspects of electrodissolution of iron oxide α-Fe_2O_3 in carbon paste electrodes with acidic binder. *J. Electroanal. Chem*. 181:93–105.

2028. Ramirez, M.T., M.E. Palomar, I. González, and A. Rojas Hernandez. 1995. Carbon paste electrodes with electrolytic binder: Influence of the preparation method. *Electroanalysis* 7:184–188.
2029. Lamache, M. 1979. Carbon paste electrode with electrolytic binder and the incorporated poorly soluble electroactive compounds: Quantitative aspects (in French). *Electrochim. Acta* 24:79–84.
2030. Gruner, W., J. Kunath, L.N. Kalnishevskaja, J.V. Posokin, and K.Z. Brainina. 1993. Fundamentals and limitations for the application of the carbon paste electroactive electrode in the electroanalysis of solids. *Electroanalysis* 5:243–250.
2031. Roizenblat, E.M., A.A. Kosogov, E.Y. Sapozhnikova, and V.Y. Kolmanovich. 1988. Voltammetry of poorly soluble and non-conducting oxides in carbon paste electrode. *Electrokhimiya* 24:1352–1358.
2032. Moskzin, L.N., E.A. Koc, and M. Grigorieva. 1988. Electrode for determination of active Fe_2O_3 in magnesite samples. *Zh. Anal. Chim*. 43:1025–1028.
2033. Encinas, P.B., M.L.G. Tascon, M.D.B. Vazquez, and P. Sanchez Batanero. 1994. Electroanalytical study of copper and iron compounds in the solid state: Application to copper ferrite characterization. *J. Electroanal. Chem*. 367:99–108.
2034. Encinas Lorenzo, L.P., M.L. Tascon, M.D. Vazquez, C. de Francisco, and P. Sanchez Batanero. 1996. Electrochemical study of manganese and iron compounds at carbon paste electrodes with electrolytic binder. Application to the characterization of manganese ferrite. *J. Solid State Electrochem*. 1:232–240.
2035. Freour, R. 1985. The oxidation and reduction of γ-Fe_2O_3 and Fe_3O_4 in powdered form in carbon paste electrode with electroactive binder. *Electrochim. Acta* 30:795–798.
2036. Cepria, G., J.J. Cepria, and J. Ramajo. 2004. Fast and simple electroanalytical identification of iron oxides in geological samples without sample pretreatment. *Microchim. Acta* 144:139–145.
2037. Agasyan, P.K., A.I. Kamenev, and A.M. Troshenkov. 1987. Design of electroactive carbon paste electrodes for studying CuO, Ag, and Ag_2O. *Zavod. Lab*. 53:14–26.
2038. San Jose, M.T., A.M. Espinosa, M.L. Tascon, M.D. Vasquez, and P. Sanchez Batanero. 1991. Electrochemical behaviour of copper oxides at a carbon paste electrode. Application to the study of the superconductor YBaCuO. *Electrochim. Acta* 36:1209–1218.
2039. Zakharchuk, N.F. and N.F. Borisova. 1992. Peculiarities of the electrochemical behavior of a copper oxide graphite paste electrode in solutions of HCl. *Elektrokhimiya* 28:1787–1799.
2040. Zakharchuk, N., S. Meyer, B. Lange, and F. Scholz. 2000. A comparative study of lead oxide modified graphite paste electrodes and solid graphite electrodes with mechanically immobilized lead oxides. *Croat. Chem. Acta* 73:667–704.
2041. Centeno, B., M.L. Tascon, M.D. Vazquez, and P. Sanchez Batanero. 1991. Electrochemical study of PbO_2 at a carbon paste electrode with electrolytic binder. *Electrochim. Acta* 36:277–282.
2042. Liang, B., P. Li, and L. Gu. 1995. Carbon paste electrode with Mn-compounds. *Dianchi (Shuangyuekan)* 25:275–276.
2043. Fetisov, V.B., G.A. Kozhina, A.N. Ermakov, A.V. Fetisov, and E.G. Miroshnikova. 2007. Electrochemical dissolution of Mn_3O_4 in acid solutions. *J. Solid State Electrochem*. 11:1205–1210.
2044. Gonzalez, C., J.I. Gutierrez, J.R. Gonzalez Velasco, A. Cid, A. Arranz, and J.F. Arranz, 1996. Transformations of manganese oxides under different thermal conditions. *J. Therm. Anal*. 47: 93–102.
2045. Bezdicka, P., T. Grygar, B. Klapste, and J. Vondrak. MnOx/C composites as electrode materials. Part I. Synthesis, XRD and cyclic voltammetric investigation. 1999. *Electrochim. Acta* 45:913–920.
2046. El Sherief, A.E. 2000. A study of the electroleaching of manganese ore. *Hydrometallurgy* 55:311–326.
2047. Strappazzon, R. and L. Lamberts. 1994. Electrochemical study of the vanadium-oxygen system with a carbon paste electrode. *Analusis* 22:263–267.
2048. Elouadseri, M.M., O. Vittori, and B. Durand. 1986. The electrochemical reactivity of some vanadium compounds in an acidic medium of 1 M HCl. *Electrochim. Acta* 31:1335–1339.
2049. Grigoreva, M.F. and M.E. Dushina. 1992. Method of masking during analysis with the use of a carbon paste electroact. electrode. *Vestn. S. Peterb. Univ., Ser. 4: Fiz., Khim. (Ukraine)* 2:95–97 + 119.
2050. Grigoreva, M.F. and M.G. Ivanko. 1997. Simultaneous determination of vanadium(III,IV,V) in chloride melts. *Vestn. S. Peterb. Univ. Ser. 4: Fiz., Khim. (Ukraine)* 1:98–102.
2051. Barrado, E., R. Pardo, Y. Castrillejo, and M. Vega. 1997. Electrochemical behaviour of vanadium compounds at a carbon paste electrode. *J. Electroanal. Chem*. 427:35–42.
2052. Zakharchuk, N.F., N.A. Valisheva, N.R. Vitsina, T.P. Smirnova, K.P. Lel'kin, I.G. Yudelevich, and I.S. Illarionova. 1984. Phase analysis of oxide films on indium antimonide by voltammetry on a carbon-paste electrode. Part III: Electrochemical transformations of indium oxide (In_2O_3). *Izv. Sib. Otd. Akad. Nauk S.S.S.R Ser. Khim. Nauk* 2:83–88.

2053. Espinosa, A.M., M.T.S. Jose, M.L.T. Tascon, M.D. Vazquez, and P. Sanchez Batanero. 1991. Electrochemical behaviour of bismuth(V) and bismuth(III) compounds at a carbon paste electrode. Application to the study of the superconductor BiSrCaCuO. *Electrochim. Acta* 36:1561–1571.
2054. Vivier, V., A. Regis, G. Sagon, J.-Y. Nedelec, L.T. Yu, and C. Cachet-Vivier. 2001. Cyclic voltammetry study of bismuth oxide powder (Bi_2O_3) by means of a cavity micro-electrode coupled with Raman microspectrometry. *Electrochim. Acta* 46:907–914.
2055. Eguren, M., M.L. Tascon, M.D. Vazquez, and P. Sanchez Batanero. 1988. Study of the electrochemical behavior of solid tin dioxide using a carbon paste electrode. *Electrochim. Acta* 33:1009–1011.
2056. Kozhina, G.A., A.N. Ermakov, V.B. Fetisov, A.V. Fetisov, and K.Y. Shunyaev. 2009. Electrochemical dissolution of Co_3O_4 in acidic solutions. *Russ. J. Electrochem*. 45:1170–1175.
2057. Adekola, F.A., C. Colin, and D. Bauer. 1992. A study of the electrochemical behaviour of some platinum compounds at a carbon paste electrode with electrolytic binder. *Electrochim. Acta* 37:507–512.
2058. Hodos, M.Y., E.V. Bazarova, A.P. Palkin, K.Z. Brainina. 1984. The electrochemical behaviour of the V_2O_5 + MoO_3, system and the defect structure of $(MoxV1\text{-}x)_2O_5$ solid solution. *J. Electroanal. Chem*. 164:121–128.
2059. Grygar, T. 1996. The electrochemical dissolution of iron(III) and chromium(III) oxides and ferrites under conditions of abrasive stripping voltammetry. *J. Electroanal. Chem*. 405:117–125.
2060. Barrado, E., F. Prieto, M. Vega, R. Pardo, and J. Medina. 2000. Characterization and electrochemical behavior of a copper ferrite obtained by in situ precipitation from aqueous solutions. *Electroanalysis* 12:383–389.
2061. Barrado, E., F. Prieto, Y. Castrillejo, and J. Medina. 1999. Chemical and electrochemical characterization of lead ferrites produced in the purification of lead-bearing wastewater. *Electrochim. Acta* 45:1105–1111.
2062. Barrado, E., F. Prieto, J. Medina, and R. Pardo. 2001. Purification of cadmium waste water: Characterization and electrochemical behaviour of ferrites bearing cadmium(II). *Quim. Anal. (Barcelona)* 20:47–53.
2063. Barrado, E., F. Prieto, F.J. Garay, J. Medina, and M. Vega. 2002. Characterization of nickel-bearing ferrites obtained as by-products of hydrochemical wastewater purification processes. *Electrochim. Acta* 47:1959–1965.
2064. Mao, Q., S. Wu, and H. Zhang. 1995. A new kind of carbon paste electroactive electrode with paraffin as a binder. *Fenxi Huaxue* 23:648–651.
2065. Espinosa, A.M., M.L. Tascon, P. Encinas, M.D. Vázquez, and P. Sanchez Batanero. 1995. Electrochemical behaviour of copper, lead, and bismuth solid compounds and their ternary mixtures at solid state at a carbon paste electrode with electrolytic binder. Application to the study of the high transition temperature superconductor $Bi_{0.7}Pb_{0.3}SrCaCu_{1.8}Ox$. *Electrochim. Acta* 40:1623–1632.
2066. Domenech, A. and J. Alarcon. 2002. Electrochemistry of vanadium-doped tetragonal and monoclinic ZrO_2 attached to graphite/polyester composite electrodes. *J. Solid. State Electrochem*. 6:443–450.
2067. Ahlberg, E. and J. Ásbjörnsson. 1994. Carbon paste electrodes in mineral processing: An electrochemical study of sphalerite. *Hydrometallurgy* 36:19–37.
2068. Srinivasan, G.N. and S.V. Iyer. 2000. Cyclic voltammetric studies on sphalerite. *Bull. Electrochem*. 16:5–9.
2069. Nava, J.L., M.T. Oropeza, and I. Gonzalez. 2004. Oxidation of mineral species as a function of the anodic potential of zinc concentrate (sphalerite with various metal sulphides) in sulfuric acid. *J. Electrochem. Soc*. 151:B387–B393.
2070. Shi, S.-Y., Z.-H. Fang, and J.-R. Ni. 2006. Comparative study on the bioleaching of zinc sulphides. *Process Biochem*. 41:438–446.
2071. Shi, S.-H., Z.-H. Fang, and J.-R. Ni. 2006. Electrochemistry of marmatite-containing carbon paste electrode in the presence of bacterial strains. *Bioelectrochemistry* 68:113–118.
2072. Gonzalez, I.C., T.M.O. Guzmán, and I. González. 1999. Cyclic voltammetry applied to the characterisation of galena. *Hydrometallurgy* 53:133–144.
2073. Gonzalez, I.G., M.T.O. Guzmán, and I. González. 2000. An electrochemical study of galena concentrate in perchlorate medium at pH 2.0: The influence of chloride ions. *Electrochim. Acta* 45:2729–2741.
2074. Nava, J.L., M.T. Oropeza, and I. Gonzalez. 2002. Electrochemical characterisation of sulfur species formed during anodic dis-solution of galena concentrate in perchlorate medium. *Electrochim. Acta* 47:1513–1525.
2075. Nava, J.L. and I. González. 2005. The role of the carbon paste electrodes in the electrochemical study of metallic minerals. *Quim. Nova (Barcelona)* 28:901–909.
2076. Medvedeva, E.P., Z.B. Rozhdestvenskaya, and A.K. Kulikovskii. 1976. Kinetics of electro-oxidation of copper and chalcocite on a mineral-carbon paste electrode. *Izv. Akad. Nauk Kazakh. S.S.R. Ser. Khim*. 26:80–84.

2077. Lu, Z.Y., M.I. Jeffrey, and F. Lawson. 2000. An electrochemical study of the effect of chloride ions on the dissolution of chalcopyrite in acidic solutions. *Hydrometallurgy* 56:145–155.
2078. El Sherief, A.E. 2002. The influence of cathodic reduction, Fe^{2+} and Cu^{2+} ions on the electrochemical dissolution of chalcopyrite in acidic solution. *Miner. Eng*. 15:215–223.
2079. Nava, D. and I. Gonzalez. 2005. Electrochemical characterization of chemical species formed during the electrochemical treatment of chalcopyrite in sulfuric acid. *Electrochim. Acta* 51:5295–5303.
2080. Horta, D.G., H.A. Acciari, D. Bevilaqua, A.V. Benedetti, and O. Garcia Jr. 2009. The effect of chloride ions and A. ferrooxidans on the oxidative dissolution of the chalco-pyrite evaluated by electrochemical noise analysis (ENA). *Adv. Mater. Res. (Book Ser.)* 71–73:397–400.
2081. Almeida, C.M.V.B. and B.F. Giannetti. 2003. Electrochemical study of arsenopyrite weathering. *Phys. Chem. Chem. Phys*. 5:604–610.
2082. Liu, A. and J.-L. Wong. 2000. Chemical speciation of nickel in fly ash by phase separation and carbon paste electrode voltammetry. *J. Hazard. Mater*. 74:25–35.
2083. Wong, J.-L., J. Wenrui, and H. Yanan. 2001. Subspeciation of nickel disulfide by carbon paste electrode voltammetry catalyzed by Ni^{2+} ions. *Fresenius J. Anal. Chem*. 369:587–588.
2084. Holley, E.A., A.J. McQuillan, D. Craw, J.P. Kim, and S.G. Sander. 2007. Mercury mobilization by oxidative dissolution of cinnabar (α-HgS) and meta-cinnabar (β-HgS). *Chem. Geol*. 240:313–325.
2085. Luna Sanchez, R.M., I. Gonzalez, and G.T. Lapidus. 2002. An integrated approach to evaluate the leaching behaviour of silver from sulfide concentrates. *J. Appl. Electrochem*. 32:1157–1165.
2086. Laganovsky, A.V., Z.O. Kormosh, A.O. Fedorchuk, V.P. Sachanyuk, and O.V. Parasyuk. 2008. $AgCrTiS_4$: Synthesis, properties, and analytical application. *Metall. Mater. Trans. Ser. B* 39:155–159.
2087. Gobert, E. and V. Olivier. 1988. Electrochemical study of PbSe using the carbon paste electrode technique. *Electrochim. Acta* 33:245–250.
2088. Carbonnelle, P. and L. Lamberts. 1992. Electrochemical study of the copper-selenium system using carbon paste electrode. *Electrochim. Acta* 37:1321–1325.
2089. Espinosa, A.M., M.L. Tascon, M.D. Vazquez, and P. Sanchez Batanero. 1992. Electroanalytical study of selenium(+IV) at a carbon paste electrode with electrolytic binder and electroactive compound incorporated. *Electrochim. Acta* 37:1165.
2090. Perdicakis, M., N. Grosselin, and J. Bessiere. 1997. Voltammetric behaviour of single particles of silver chalcogenides in the micrometric range. Comparison with measurements at modified carbon paste electrodes. *Electrochim. Acta* 42:3351–3358.
2091. Lamache, M. and A. Adriamanana. 1986. The electrochemistry of chalcogenides containing molybdenum at carbon paste electrode with electrolytic binder. *Electrochim. Acta* 31:79–82.
2092. Matakova, R.N. and R.F. Yulmetova. 1984. Use of carbon paste electroactive electrode in the investigations of some metallic catalyst. *Zh. Anal. Khim*. 39:1200–1205.
2093. Tkach, A.V. and Y.B. Paderno. 1984. Electrochemical behavior of powdered rare earth borides incorporated in carbon paste electrodes. *Dop. Ak. Nauk Ukrain. R.S.R. Ser. B* 9:50–52.
2094. Gruner, W. 1986. Electrochemical characterization of solid materials in the volume range. Part III: Voltammetric studies on isolated iron carbide (Fe_3C). *Microchim. Acta* 1:301–309.
2095. Bennouna, A., B. Durand, and O. Vittori. 1987. The influence of the nature of the electrolyte on the electrochemical reactivity of barium chromate incorporated in a carbon paste electrode. *Electrochim. Acta* 32:713–721.
2096. Zakharchuk, N.F., G.F. Mustafina, T.P. Smirnova, and I.S. Illarionova. 1988. Voltammetry of a graphite paste electrode containing amorphous and crystalline arsenic. *Elektrokhimiya* 24:29–36.
2097. Adekola, F.A., C. Colin, and D. Bauer. 1993. Electrochemical study of some rhodium compounds at a carbon paste electrode with electrolytic binder. *Electrochim. Acta* 38:1331–1335.
2098. Marinovich, Y., S. Bailey, J. Avraamides, and S. Jayasekera. 1995. An electrochemical study of reduced ilmenite carbon paste electrodes. *J. Appl. Electrochem*. 25:823–832.
2099. Jaya, K.E., S. Berckman, V. Yegnaraman, and P.N. Mohandes. 2002. Electrochemical investigation of the rusting reaction of ilmenite using CV-studies *Hydrometallurgy* 65:217–225.
2100. Ibris, N., J.C.M. Rosca, A. Santana, and T. Visan. 2002. Comparative EIS study of a paste electrode containing zinc powder in neutral and near neutral solutions. *J. Solid State Electrochem*. 6:119–125.
2101. Carmo, D.R., R.M. da Silva, and N.R. Stradiotto. 2002. Electrochemical study of $Fe[Fe(CN)_5NO]$ in a graphite paste electrode. *Ecletica Quim*. 27:197–210.
2102. Covington, J.R. and R.J. Lacoste. 1965. Voltammetric determination of monoethylether of hydroquinone with carbon-ceresine wax paste electrode. *Anal. Chem*. 37:420–421.
2103. Dione, G., M. Guene, M. Toure, and M.M. Dieng. 1995. Influence of substitution on the electrochemical properties of anthraquinone in the solid state. *Bull. Chem. Soc. Ethiop*. 9:119–124.

2104. Gholabi, S.M., R. Davarkhah, and D. Nematollahi. 1997. Modified carbon paste electrode: An electroanalytical tool for estimation of thermodynamic parameters of water insoluble quinones. *Sci. Iran* 4:112–120.
2105. Martinez, R., M.T. Ramirez, and I. Gonzales. 1998. Voltammetric characterization of carbon paste electrodes with a nonconducting binder. Part I: Evidence of the influence of electroactive species dissolution into the paste on the voltammetric response. *Electroanalysis* 10:336–342.
2106. Perdicakis, M., N. Grosselin, and J. Bessière. 1999. Interaction of pyrite pulps with Ag^{+} and Hg^{2+} ions. Electrochemical characterization of micrometric grains. *Anal. Chim. Acta* 385:467–485.
2107. Vlasa, A., S. Varvara, and L.M. Muresan. 2007. Electrochemical investigation of the influence of two thiadiazole derivatives on the patina of an archaeological bronze artefact using a CPE. *Stud. Univ. Babes-Bolyai Chem. (Roum.)* 52:63–71.
2108. Tascon, M.L., M.D. Vazquez, R. Pardo, P. Sanchez Batanero, and J. Iza. 1989. Determination of tin(IV) oxide with a mixed carbon paste electrode and using computerized instrumentation. *Electroanalysis* 1:363–366.
2109. Gruner, W., R. Stahlberg, K.Z. Brainina, N.L. Akselrod, and V.M. Kamyshov. 1990. Electrochemical determination of free CuO in YBaCuO superconductor materials. *Electroanalysis* 2:397–400.
2110. Adekola, F.A., M. Diaw, C. Colin, and D. Bauer. 1992. Electrochemical study of some palladium compounds at a carbon paste electrode—Application to the determination of palladium in oxidation automotive catalysts. *Electrochim. Acta* 37:2491–2495.
2111. Osipova, E.A., G.V. Prokhorova, O.I. Gurentsova, and N.E. Kopytova. 1994. Determination of germanium in semiconductor-materials by the adsorption inversion voltamperometric method. *Ind. Labor. (Russ.)* 60:82–83.
2112. Cepria, G., N. Alexa, E. Cordos, and R.J. Castillo. 2005. Electrochemical screening procedure for arsenic contaminated soils. *Talanta* 66:875–881.
2113. Bennouna, A., A. Kheribech, J.P. Scharff, F. Chassagneux, B. Durand, and O. Vittori. 1997. Evaluation of preconcentration response of a carbon paste electrode with conducting binder. Application to lead. *Electrochim. Acta* 42:2659–2665.
2114. Clark, L.C., Jr., G. Misrahy, and R.P. Fox. 1958. Chronically implanted polarographic electrodes. *J. Appl. Physiol*. 13:85–91.
2115. Clark, L.C., Jr. and C. Lyons. 1958. Studies of a glassy carbon electrode for brain polarography with observations on the effect of carbonic anhydrase inhibition. *Ala. J. Med. Sci*. 2:353–359.
2116. Adams, R.N. 1990. In vivo electrochemical measurements in the CNS. *Prog. Neurobiol*. 35:297–311.
2117. Mitchell, K. and R.N. Adams. 1993. Comparison of the effects of voltage-sensitive calcium channel antagonism on electrically stimulated release of dopamine and norepinephrine monitored in-vivo. *Brain. Res*. 604:349–353.
2118. Adams, R.N., A.A Boulton, and G.B. Baker (Eds). 1996. *Voltammetric Methods in Brain Systems*. New York: Humana Press.
2119. Al Mulla, I., J.P. Lowry, P.A. Serra, and R.D. O'Neill. 2009. Development of a voltammetric technique for monitoring brain dopamine metabolism: Compensation for interference caused by DOPAC electrogenerated during homovanillic acid detection. *Analyst (U.K.)* 134:893–898.
2120. Bhaskaran, D. and C.R. Freed. 1988. Changes in arterial blood pressure lead to baroreceptor-mediated changes in norepinephrine and 5-hydroxyindoleacetic acid in rat nucleus tractus solitarius. *J. Pharmacol. Exp. Ther*. 245:356–363.
2121. Broderick, P.A. 1988. Distinguishing in vitro electrochemical signatures for norepinephrine and dopamine. *Neurosci. Lett*. 95:275–280.
2122. Joseph, M.H. and H. Hodges. 1990. Lever pressing for food reward and changes in dopamine turnover and uric acid in rat caudate and nucleus accumbens studied chronically by in vivo voltammetry. *J. Neurosci. Methods* 34:143–149.
2123. Lin Z., W. Qiao, and M. Wu. 1992. The preparation of a spinach tissue-based carbon paste microelectrode and its performance in pharmacokinetic experiments in vivo. *Anal. Lett*. 25:1171–1181.
2124. Pantano, P. and W.G. Kuhr. 1995. Enzyme-modified microelectrodes for in vivo neurochemical measurements. *Electroanalysis* 7:405–416.
2125. Sokolovskaya, L.G., L.V. Sigolaeva, A.V. Eremenko, I.V. Gachok, G.F. Makhaeva, N.N. Strakhova, R.J. Richardson, and I.N. Kurochkin. 2005. Improved electrochemical analysis of neuropathy target esterase activity by a tyrosinase carbon paste electrode modified by 1-methoxyphenazine methosulfate. *Biotechnol. Lett*. 27:1211–1218.
2126. O'Neill, R.D., M. Fillenz, W.J. Albery, and N.J. Goddard. 1983. The monitoring of ascorbate and monoamine transmitter metabolites in the striatum of unanaesthetised rats using microprocessor-based voltammetry. *Neuroscience (U.K.)* 9:87–93.

2127. Blaha, C.D. and R.F. Lane. 1984. Direct in vivo electrochemical monitoring of dopamine release in response to neuroleptic drugs. *Eur. J. Pharmacol*. 98:113–117.
2128. Marrocco, R.T., R.F. Lane, J.W. McClurkin, C.D. Blaha, and M.F. Alkire. 1987. Release of cortical catecholamines by visual stimulation requires activity in thalamocortical afferents of monkey and cat. *J. Neurosci*. 7:2756–2767.
2129. Blaha, C.D. and A.G. Phillips. 1990. Application of in vivo electrochemistry to the measurement of changes in dopamine release during intracranial self-stimulation. *J. Neurosci. Methods* 34:125–133.
2130. Lane, R.F. and C.D. Blaha. 1990. Detection of catecholamines in brain tissue: Surface-modified electrodes enabling in vivo investigations of dopamine function. *Langmuir* 6:56–65.
2131. Blaha, C.D. and M.E. Jung. 1991. Electrochemical evaluation of stearate-modified graphite paste electrodes: Selective detection of dopamine is maintained after exposure to brain tissue. *J. Electroanal. Chem*. 310:317–334.
2132. Coury, A., C.D. Blaha, L.J. Atkinson, and A.G. Phillips. 1992. Cocaine-induced changes in extracellular levels of striatal dopamine measured concurrently by microdialysis with HPLC-EC and chronoamperometry. *Ann. N.Y. Acad. Sci*. 654:424–427.
2133. Blaha, C.D. 1996. Evaluation of stearate-graphite paste electrodes for chronic measurement of extracellular dopamine concentrations in the mammalian brain. *Pharmacol. Biochem. Behav*. 55:351–364.
2134. Blaha, C.D., D. Liu, and A.G. Phillips. 1996. Improved electrochemical properties of stearate-graphite paste electrodes after albumin and phospholipid treatments. *Biosens. Bioelectron*. 11:63–79.
2135. O'Neill, R.D., M. Fillenz, L. Sundstrom, and J.N. Rawlins. 1984. Voltammetrically monitored brain ascorbate as an index of excitatory amino acid release in the unrestrained rat. *Neurosci. Lett*. 52:227–233.
2136. O'Neill, R.D., M. Fillenz, R.A. Gruenewald, M.R. Bloomfield, W.J. Albery, C.M. Jamieson, J.H. Williams, and J.A. Gray. 1984. Voltammetric carbon paste electrodes monitor uric acid and not 5-HIAA at the 5-hydroxyindole potential in the rat brain. *Neurosci. Lett*. 45:39–46.
2137. O'Neill, R.D. and M. Fillenz. 1985. Simultaneous monitoring of dopamine release in rat frontal cortex, nucleus accumbens and striatum. Effect of drugs, circadian changes and correlations with motor activity. *Neuroscience (U.K.)* 16:49–55.
2138. O'Neill, R.D. and M. Fillenz. 1986. Microcomputer-controlled voltammetry in the analysis of transmitter release in rat brain. *Ann. N.Y. Acad. Sci*. 473:337–348.
2139. Brose, N., R.D. O'Neill, M.G. Boutelle, and M. Fillenz. 1989. The effects of anxiolytic and anxiogenic benzodiazepine receptor ligands on motor activity and levels of ascorbic acid in the nucleus accumbens and striatum of the rat. *Neuropharmacology* 28:509–514.
2140. O'Neill, R.D. 1990. Uric acid levels and dopamine transmission in rat striatum: Diurnal changes and effects of drugs. *Brain Res*. 507:267–272.
2141. Duff, A. and R.D. O'Neill. 1994. Effect of probe size on the concentration of brain extracellular uric acid monitored with carbon paste electrodes. *J. Neurochem*. 62:1496–1502.
2142. Lowry, J.P., M.G. Boutelle, R.D. O'Neill, and M. Fillenz. 1996. Characterization of carbon paste electrodes in vitro for simultaneous amperometric measurement of changes in oxygen and ascorbic acid concentrations in vivo. *Analyst (U.K.)* 121:761–766.
2143. Kane, D.A. and R.D. O'Neill. 1998. Major differences in the behavior of carbon paste and carbon fiber electrodes in a protein-lipid matrix: Implications for voltammetry in vivo. *Analyst (U.K.)* 123:2899–2903.
2144. Lowry, J.P. and M.Fillenz. 2001. Real-time monitoring of brain energy metabolism in vivo using microelectrochemical sensors: The effects of anesthesia. *Bioelectrochemistry* 54:39–47.
2145. Dixon, B.M., J.P. Lowry, and R.D. O'Neill. 2002. Characterization in vitro and in vivo of the oxygen dependence of an enzyme/polymer biosensor for monitoring brain glucose. *J. Neurosci. Methods* 119:135–142.
2146. Kennett, G.A. and M.H. Joseph. 1982. Does in vivo voltammetry in the hippocampus measure 5-HT release? *Brain Res*. 236:305–316.
2147. Echizen, H. and C.R. Freed. 1984. Measurement of serotonin turnover rate in rat dorsal raphe nucleus by in vivo electrochemistry. *J. Neurochem*. 42:1483–1486.
2148. Echizen, H. and C.R. Freed. 1986. Factors affecting in vivo electrochemistry: Electrode-tissue interaction and the ascorbate amplification effect. *Life Sci*. 39:77–89.
2149. Mueller, K. and C. Haskett. 1987. Effects of haloperidol on amphetamine-induced increases in ascorbic acid and uric acid as determined by voltammetry in vivo. *Pharmacol., Biochem. Behav*. 27:231–234.
2150. Mueller, K. 1989. Repeated administration of high doses of amphetamine increases release of ascorbic acid in caudate but not nucleus accumbens. *Brain Res*. 494:30–35.
2151. Joseph, M.H. and A.M.J. Young. 1991. Pharmacological evidence, using in vivo dialysis, that substances additional to ascorbic acid, uric acid and homovanillic acid contribute to the voltammetric signals obtained in unrestrained rats from chronically implanted carbon paste electrodes. *J. Neurosci. Methods* 36:209–218.

2152. Shi, G.-Y., K. Yamamoto, T.-.S. Zhou, F. Xu, T. Kato, J.-Y. Jin, and L.-T. Jin. 2003. On-line biosensors for simultaneous determination of glucose, choline, and glutamate integrated with a microseparation system. *Electrophoresis* 24:3266–3272.
2153. Congestri, F., F. Formenti, V. Sonntag, G. Hdou, and F. Crespi. 2008. Selective D3 receptor antagonist SB-277011-A potentiates the effect of cocaine on extracellular dopamine in the nucleus accumbens: A dual core-shell voltammetry in anesthetized rats. *Sensors* 8:6936–6951.
2154. Bolger F.B., S.B. McHugh, R. Bennett, J. Li, K. Ishiwari, J. Francois, M.W. Conway et al. 2011. Characterisation of carbon paste electrodes for real-time amperometric monitoring of brain tissue oxygen. *J. Neurosci. Methods* 195:135–142.
2155. Baker, G.A., Jr. and J.E. Brolley. 1983. Deconvolution of noisy experimental data. *J. Comput. Phys*. 51:227–240.
2156. Pizeta, I. 1994. Deconvolution of non-resolved voltammetric signals. *Anal. Chim. Acta* 285:95–102.
2157. Goto, M., K. Ikenoya, M. Kajihara, and D. Ishii. 1978. Application of semidifferential electroanalysis to anodic stripping voltammetry. *Anal. Chim. Acta* 101:131–138.
2158. Bustin D., J. Mocak, and J. Garaj. 1987. The utilization of fractional differentiation and integration in electrochemistry (in Slovak). *Chem. Listy* 81:1009–1033.
2159. Mocak, J., I. Janiga, M. Rievaj, and D. Bustin. 2007. The use of fractional differentiation or integration for signal improvement. *Meas. Sci. Rev*. 7:39–42.
2160. Cobos Murcia, J.A., L. Galicia, A. Rojas Hernandez, M.T. Ramirez Silva, R. Alvarez Bustamante, M. Romero Romo, G. Rosquete Pina, and M. Palomar Pardave. 2005. Electrochemical polymerisation of 5-amino-1,10-phenanthroline at different substrates: Experimental and theoretical study. *Polymer* 46:9053–9063.
2161. Parra, V., A.A. Arrieta, J.A. Fernández Escudero, M. Iniguez, J.A. de Saja, and M.L. Rodriguez Mendez. 2006. Monitoring of the ageing of red wines in oak barrels by an hybrid electronic tongue. *Anal. Chim. Acta* 563:229–237.
2162. Rodriguez Mendez, M.L., V. Parra, C. Apetrei, S. Villanuevam, M. Gay, N. Prieto, J. Martinez, and J.A. de Saja. 2008. Electronic tongue based on voltammetric electrodes modified with materials showing complementary electroactive properties. Characterization and applications. *Microchim. Acta* 163:23–31.
2163. Apetrei, C., F. Gutieréz, M.L. Rodriguez Mendez, and J.A. de Saja. 2007. Novel method based on carbon paste electrodes for the evaluation of bitterness in extra virgin olive oils. *Sens. Actuators B* 121:567–575.
2164. Kalvoda, R. 1999. Electronic noses and tongues. In *Modern Electroanalytical Methods—XVIII.* Book of Abstracts (in Czech), p. 8. Usti nad Labem (Czech Republic): SES Logis.
2165. Wang, X.-L., H.-Y. Lin, Y.-F. Bi, B.-K. Chen, and G.-C. Liu. 2008. An unprecedented extended architecture constructed from a 2-D interpenetrating cationic coordination framework templated by SiW12O40(4-) anion. *J. Solid State Chem*. 181:556–561.
2166. Cao, X.-G., L.-W. He, B.-Z. Lin, Z.-J. Chen, and P.-D. Liu. 2009. Synthesis and characterization of a polyoxotungstate-supported metal compound [{Cu(enMe)(2) (H_2O)}{Cu(enMe)(2)}(3)P2W18O62] × n H(2)O. *Inorg. Chim. Acta* 362:2505–2509.
2167. Wang, K.-F., F.-F. Jian, and R.-R. Zhuang. 2009. A new ionic liquid comprising lanthanum(III) bulk-modified carbon paste electrode: Preparation, electrochemistry and electrocatalysis. *Dalton Trans*. 23:4532–4537.
2168. Wolter, K.D. and J.T. Stock. 1978. Preparative electrolyses at graphite paste anodes. *J. Electrochem. Soc*. 125:531–533.
2169. Fitt, A.D. and P.D. Howell. 1998. The manufacture of continuous smelting electrodes from carbon-paste briquettes. *J. Eng. Math*. 33:353–376.
2170. Pettichini, S., H. Boggetti, B.A. Lopez de Mishima, H.T. Mishima, J. Rodriguez, and E. Pastor. 2003. Electrochemical reduction of carbon dioxide on copper alloy. *J. Argen. Chem. Soc*. 91:107–112.
2171. Roa Morales, G., L. Galicia, A. Rojas Hernandez, and M.T. Ramirez Silva. 2005. Electrochemical study on the selective formation of [Pb(cyclodextrin)$^{(2+)}$] (surface) inclusion complexes at the carbon paste electrode/ClO_4/1 M interphase. *Electrochim. Acta* 50:1925–1930.
2172. Oh, T.-S., J.-H. Lee, S.-E. Lee, K.-W. Min, S.-K. Kang, J.-B. Yoo, C.-Y. Park, and J.-M. Kim. 2005. A field-emission display with an asymmetric electrostatic-quadrupole lens structure. *Jpn. J. Appl. Phys*. 44:8692–8697.
2173. Cepria, G., L. Irigoyen, and J.R. Castillo. 2006. A microscale procedure to test the metal sorption properties of biomass sorbents: A time and reagents saving alternative to conventional methods. *Microchim. Acta* 154:287–295.
2174. Krizkova, S., P. Ryant, O. Krystofova, V. Adam, V. Galiova, M. Beklova, P. Babula et al. 2008. Multi-instrumental analysis of tissues of sunflower plants treated with silver(I) ions: Plants as bioindicators of environmental pollution. *Sensors* 8:445–463.

2175. Khotseng, L.E., S. Feng, G. Vaivars, and V. Linkov. 2008. Nickel/carbon nano-structured electrodes synthesized using template method. *Integr. Ferroelectr*. 103:72–79.
2176. Liang, Y., P. He, Y.-J. Ma, Y. Zhou, C.-H. Pei, and X.-B. Li. 2009. A novel bacterial cellulose-based carbon paste electrode and its polyoxometalate-modified properties. *Electrochem. Commun*. 11:1018–1021.
2177. Lee, C.-P., P.-Y. Chen, R. Vittal, and K.-C. Ho. 2010. Iodine-free high efficient quasi solid-state dye-sensitized solar cell containing ionic liquid and polyaniline-loaded carbon black. *J. Mater. Chem*. 20:2356–2361.
2178. Zuman, P. 1999. The use of polarography in the initial stages of investigations of mechanisms of organic electrode processes in aqueous solutions. *Sci. Pap. Univ. Pardubice Ser. A* 5:5–40.
2179. Barek, J., J. Costa Moreira, and J. Zima. 2005. Modern electrochemical methods for monitoring of chemical carcinogens (a review). *Sensors* 5:148–158.
2180. Barek, J., J. Fischer, T. Navratil, K. Peckova, B. Yosypchuk, and J. Zima. 2007. Nontraditional electrode materials in environmental analysis of biologically active organic compounds (a review). *Electroanalysis* 19:2003–2014.
2181. Badihi Mossberg, M., V. Buchner, and J. Rishpon. 2007. Electrochemical biosensors for pollutants in the environment (a review). *Electroanalysis* 19:2015–2028.
2182. Švancara, I. and J. Zima. 2011. Possibilities and limitations of carbon paste electrodes in organic electrochemistry (a review). *Curr. Org. Chem*. 15:3043–3058.
2183. Uslu, B. and S.A. Ozkan. 2007. Electroanalytical application of carbon based electrodes to the pharmaceuticals (mini-review). *Anal. Lett*. 40:817–853.
2184. Fojta, M. 2002. Electrochemical sensors for DNA interactions and damage (a review). *Electroanalysis* 14:1449–1463.
2185. Girousi, S. and Z. Stanic. 2011. The last decade of carbon paste electrodes in DNA electrochemistry. *Curr. Anal. Chem*. 7:80–100.
2186. Skladal, P. 1997. Advances in electrochemical immunosensors (a review). *Electroanalysis* 9:737–745.
2187. Liu, G.-D. and Y.-H. Lin. 2007. Nanomaterial labels in electrochemical immunosensors and immunoassays (a review; dedicated to Prof. Joseph Wang on the occasion of his 60th birthday). *Talanta* 74:308–317.
2188. Monien, H. 1968. Inverse voltammetric determination of small amounts of gold by peak potential measurement. *Fresenius Z. Anal. Chem*. 237:409–419.
2189. Vasilyeva, L.N. and T.A. Koroleva. 1971. Joint determination of elements by method 2205 of inversion voltamperometry on a graphite (paste) electrode. *J. Anal. Chem. (Russ.)*/transl. of *Zh. Anal. Chem*. 237:1682–1685.
2190. Vasilyeva, L.N., E.N. Vinogradova, T.A. Koroleva, and Z.L. Justus. 1975. Determination of gold on carbon paste electrode containing nujol oil in samples of metallic copper. *Zavod. Lab*. 41:1199–2003.
2191. Zarinskii, V.A., L.S. Chulkina, and N.N. Baranova. 1977. Inverse voltammetric determination of gold(III) in the presence of iron(III). *J. Anal. Chem. (Russ.)*/transl. of *Zh. Anal. Khim*. 32:530–534.
2192. Alexander, R., B. Kinsella, and A. Middleton. 1978. Cathodic voltammetric determination of gold. *J. Electroanal. Chem*. 93:19–27.
2193. Peng, T.-Z., Q. Shi, and R. Lu. 1990. Determination of gold at an extractive CPE modified with N235. *Yingyong Kexue Xuebao* 8:366–370.
2194. Wang, J., B.-M. Tian, and G.D. Rayson. 1992. Bioaccumulation and voltammetry of gold at flower-biomass modified electrodes. *Talanta* 39:1637–1642.
2195. Peng, T.-Z., G.-S. Wang, and P.-L. Zhu. 1992. Electrostatic adsorption of gold(III) on carbon paste electrode and its voltammetric determination. *Yingyong Huaxue* 9:76–78.
2196. Wang, G.-S., T.-Z. Peng, P. Wang, P.-L. Zhu, and L.-M. Qu, 1994. Determination of gold with 18-crown-6 modified carbon paste electrode. *Fenxi Shiyanshi* 13:54–56.
2197. Vytřas, K., I. Švancara, F. Renger, M. Srey, R. Vankova, and M. Hvizdalova. 1993. Voltammetric and potentiometric determination of gold in gold-plated electro-technical components. *Collect. Czech. Chem. Commun*. 58:2039–2046.
2198. Hu, R.-Z., H. Xu, J.-K. Fu, W.-Y. Hu, and Y.-Z. Chen. 1998. Electrochemical determination of trace amounts of gold(III) by cathodic stripping voltammetry using a carbon paste modified with bacteria. *Dian Huaxue* 4:323–327.
2199. Hu, R.-Z., W. Zhang, J.-K. Fu, W. Zhang, and Y.-Y. Liu. 1999. Determination of trace amounts of gold(III) by cathodic stripping voltammetry using a bacteria-modified carbon paste electrode. *Anal. Commun*. 36:147–148.
2200. Chulkina, L.S. and S.I. Sinyakova. 1969. Inverse voltammetric determination of nanogram amounts of silver using a carbon paste electrode. *J. Anal. Chem (Russ.)*/transl. of *Zh. Anal. Khim*. 24:247–250.

2201. Rubel, S., E. Stryjewska, and J. Golimowski. 1979. Voltammetric determination of trace amounts of silver in metallic copper. *Chem. Anal*. 24:247–254.
2202. Pei, J.-H., Q. Jin, and J.-Y. Zhong. 1991. Potentiometric determination of trace silver based on the use of a carbon paste electrode. *Talanta* 38:1185–1189.
2203. Nikitin, A.A., L.P. Sherbakova, and A.G. Zhulanova. 1991. Determination of trace silver in mercury electrolytes by stripping voltammetry. *Izv. Akad. Nauk Kaz. S.S.R. Sek. Khim*. 1:38–41.
2204. Huang, S.-S., B.-F. Li, H.-G. Lin, S. Liao, Z.-Q. Zhang, and R.-Q. Yu. 1993. Determination of trace Ag(I) on carbon paste electrode modified with 2,9-dichlor-1,10-phenathroline. *Fenxi Huaxue* 21:1423–1427.
2205. Kim, S.-H., M.-S. Won, and Y.-B. Shim. 1994. Determination of Ag(I) ion with chemically modified carbon paste electrode containing cinchonidine. *J. Korean Chem. Soc*. 38:734–740.
2206. Rivas, G.A. and P.I. Ortiz. 1994. Electrochemical determination of Ag(I) and Cu(II) using activated carbon paste electrodes. *Anal. Lett*. 27:751–778.
2207. Labar, C. and L. Lamberts. 1997. Anodic stripping voltammetry with carbon paste electrodes for rapid Ag(I) and Cu(II) determinations. *Talanta* 44:733–742.
2208. Schildkraut, D.E., P.-T. Dao, J.P. Twist, A.T. Davis, and K.A. Robillard. 1998. Determination of silver ions at submicrogram-per-liter levels using anodic square-wave stripping voltammetry. *Environ. Toxic. Chem*. 17:642–649.
2209. Ha, K.-S., J.-H. Kim, Y.-S. Ha, S.-S. Lee, and M.-L. Seo. 2001. Anodic stripping voltammetric determination of silver(I) at a carbon paste electrode modified with S_2O_2-donor podand. *Anal. Lett*. 34:675–686.
2210. Zhang, S.-B., X.-J. Zhang, and X.-Q. Lin. 2002. An ethylenediaminetetraacetic acid modified carbon paste electrode for the determination of silver ion. *Fenxi Huaxue* 30:745–747.
2211. Yang, C.-H., W.-S. Huang, and S.-H. Zhang. 2003. Highly sensitive electrochemical determination of trace Pb^{2+} and Ag^{+} in the presence of cetyltrimethylammonium bromide. *Fenxi Huaxue* 31:794–798.
2212. Hocevar, S.B. and I. Švancara. 2006. Unpublished results.
2213. Mashhadizadeh, M.H.A. Mostafavi, H.A. Abadi, and I. Sheikh Shoai. 2006. New Schiff base modified carbon paste and coated wire PVC membrane for silver ion. *Sens. Actuators, B* 113:930–936.
2214. Emmot, P. 1965. Application of anodic stripping voltammetry to the determination of mercury in lithium sulfate. *Talanta* 12:651–656.
2215. Ulrich, L. and P. Ruegsegger. 1975. Use of the carbon paste electrode for the inverse voltammetric determination of small quantities of mercury. *Fresenius Z. Anal. Chem*. 277:349–353.
2216. Jeong, E.-D., M.-S. Won, and Y.-B. Shim. 1991. Determination of mercury(II) ion at chemically modified carbon paste electrode containing l-sparteine. *J. Korean Chem. Soc*. 35:545–552.
2217. Švancara, I., K. Vytřas, C. Hua, and M.R. Smyth. 1992. Voltammetric determination of mercury(II) at a carbon paste electrode in aqueous solutions containing tetraphenyl-borate ion. *Talanta* 39:391–396.
2218. Huang, W., C. Yang, and S. Zhang. 2002. Anodic stripping voltammetric determination of mercury by use of a sodium montmorillonite-modified carbon-paste electrode. *Anal. Bioanal. Chem*. 274:998–1001.
2219. Kong, Y.-T., G.-H. Choi, M.-S. Won, and Y.-B. Shim. 2002. Determination of $Hg_2^{(2+)}$ ions using the specific reaction with a picolinic acid N-oxide modified electrode. *Chin. Chem. Lett*. 31:54–55.
2220. Filho, N.L.D., D.R. do Carmo, and A.H. Rosa. 2006. Selective sorption of mercury(II) from aqueous solution with an organically modified clay and its electroanalytical application. *Sep. Sci. Technol*. 41:733–746.
2221. Gismera, M.J., J.R. Procopio, and M.T. Sevilla. 2007. Characterization of mercury-humic acids interaction by potentiometric titration with a modified carbon paste mercury sensor. *Electroanalysis* 19:1055–1061.
2222. Zejli, H., J. de Cisneros, I.N. Rodriguez, H. Elbouhouti, M. Choukairi, D. Bouchta, and K.R. Temsamani. 2007. Electrochemical analysis of mercury using a *Cryptofix* carbon-paste electrode. *Anal. Lett*. 40:2788–2798.
2223. Cesarino, I., G. Marino, J.D. Matos, and E.T.G. Cavalheiro. 2008. Evaluation of a carbon paste electrode modified with organofunctionalised SBA-15 nanostructured silica in the simultaneous determination of lead, copper and mercury ions. *Talanta* 15:15–21.
2224. Shawish, A. and M. Hazem. 2009. A mercury(II) selective sensor based on N,N′-bis(salicyl-aldehyde)-phenylenediamine as neutral carrier for potentiometric analysis in water samples. *J. Hazard. Mat*. 167:602–608.
2225. Monien, H., U. Gerlach, and P. Jacob. 1981. Inverse voltammetry of some copper chelates in the carbon paste electrode. Determination of copper in drinking water by oxidation of copper dithiooxamide. *Fresenius Z. Anal. Chem*. 306:136–143.
2226. Torresday, J.G., D. Darnall, and J. Wang. 1988. Bioaccumulation and measurement of copper at an alga-modified carbon paste electrode. *Anal. Chem*. 60:72–76.

2227. Yarnitzky, M.N. and M. Ariel. 1990. Possibilities of determination of copper(II) in biological fluids using FIA-wall jet detector on a carbon paste. *Anal. Chim. Acta* 228:117–122.
2228. Zhang, G.-R. and C.-G. Fu. 1991 Adsorptive voltammetric determination of copper with a benzoin oxime graphite paste electrode. *Talanta* 38:1481–1485.
2229. Qiao, W.-J, Z.-H. Lin, and M. Wu. 1992. The chelating-resin modified electrodes and its application in the detection of copper in human samples. *J Tongji Med. Univ. (China)* 12:80–84.
2230. Peng, T.-Z., Z. Tang, and G.-S. Wang. 1993. Linear scan stripping voltammetry of copper(II) at Cupron-modified carbon paste electrode. *Fenxi Huaxue* 21:221–223.
2231. Bae, Z.-U., H.-S. Jun, and H.-Y. Chang. 1993. Voltammetric determination of Cu(II) at chemically modified carbon paste electrode containing 1-(2-pyridylazo-2-naftol)-PAN. *J. Korean Chem. Soc*. 37:723–727.
2232. Wang, G.-S., T.-Z. Peng, B.-E. Shen, L.-M. Qu, and P.-L. Zhu. 1993. Determination of copper with hectorite carbon paste electrode. *Fenxi Ceshi Xuebao* 12:67–70.
2233. Qiao, W.-J. and H. Ding. 1993. The catalytic stripping voltammetry of trace copper(II) at a chemically modified electrode based on oxine containing carbon paste. *J. Tongji Med. Univ. (China)* 13:90–193.
2234. Wang, G.-S., T.-Z. Peng, X.-H. Yang, and T.-H. Ding. 1994. Catalytická stripping voltammetry of Cu(II) traces based on oxin-modified carbon paste. *Metall. Anal. (China)/Yejin Fenxi* 12:8–12.
2235. Hu, X.-Y. and Z.-Z. Leng. 1995. Highly selective and super-Nernstian potentiometry for determination of Cu^{2+} using carbon paste electrode. *Anal. Lett*. 28:979–989.
2236. Bae, Z.-U., Y.-L. Kim, and H.-Y Chang. 1995. Voltammetric determination of copper(II) at chemically modified carbon paste electrodes containing algae. *Anal. Sci. Technol*. 8:611–615.
2237. Chang, C.-H. and C.-Y. Li. 1997. Preconcentration and determination of Cu(II) at a chemically modified electrode containing salicylaldehyde thiosemicarbazone. *Kexue Xuebao* 44:231–236.
2238. Tymecki, L., M. Jakubovska, S. Achamatowicz, R. Koncki, and S. Glab, Potentiometric thick-film graphite electrodes with improved response to copper ions. *Anal. Lett*. 34:71–78.
2239. Yang, S., X.-Q. Lu, Y.-H. Xue, X.-Q. Feng, and X.-F. Wang. 2003. 4-Methoxy-2,5-bis(3,5-dimethylpyrazoyl)-1,3,5-triazine modified carbon paste electrode for trace Cu(II) determination by differential pulse voltammetry. *Rare Met*. 22:250–253.
2240. Vytřas, K., L. Baldrianova, E. Tesarova, A. Bobrowski, and I. Švancara. 2005. Comments to stripping voltammetric determination of copper(II) at bismuth-modified carbon substrate electrodes. In *Sensing in Electroanalysis*, Eds. K. Vytřas and K. Kalcher, pp. 49–58. Pardubice, Czech Republic: University of Pardubice.
2241. Abu-Shawish, H.M. and S.M. Saadeh. 2007. A new chemically modified carbon paste electrode for determination of copper based on N,N′-disalicylidenehexamethylene-diaminate copper(II) complex. *Sens. Lett*. 5:565–571.
2242. Janegitz, B.C., L.H. Marcolino, and O.F. Filho. 2007. Anodic stripping voltammetric determination of copper (II) in wastewaters using a carbon paste electrode modified with chitosan. *Quim. Nova (Barcelona)* 30:1673–1676.
2243. Taher, M.A., M. Esfandyarpour, S. Abbasi, and A. Mohadesi. 2008. Indirect determination of trace copper(II) by adsorptive stripping voltammetry with Zincon at a carbon paste electrode. *Electroanalysis* 20:374–278.
2244. Gismera, M.J, M.T. Sevilla, and J.R. Procopio. 2008. Flow and batch systems for copper(II) potentiometric sensing. *Talanta* 14:190–197.
2245. Alpat, S.K., S. Alpat, B. Kutlu, O. Ozbayrak, and H.B. Buyukisik. 2008. Development of biosorption-based algal biosensor for Cu(II) using *Tetraselmis chuii. Sens. Actuators B* 128:273–278.
2246. Rohani, T. and M.A. Taher. 2008. A new method for application of the water-soluble dye SPADNS inside a carbon paste electrode for determination of trace amounts of copper. *J. AOAC Int*. 91:1478–1482.
2247. Lubert, K.H. and L. Beyer. 2008. Carbon paste electrode modified with the copper(II) complex of N-benzoyl-N′,N′-Di-N-butyl-thiourea. Voltammetric behavior and response to copper(II). *Solvent Extr. Ion Exch*. 26:321–331.
2248. Stephanie, G.R., M. Etienne, Y. Rousselin, F. Denat, B. Lebeau, and A. Walcarius. 2009. Cyclam-functionalized silica-modified electrodes for selective determination of Cu(II). *Electroanalysis* 21:280–289.
2249. Csoka, B. and Z. Mekhalif. 2009. Carbon paste-based and dual function ion-selective microelectrodes for scanning electrochemical microscopic measurements. *Electrochim. Acta* 54:3225–3232.
2250. Yuce, M., H. Nazir, and G. Donmez. 2010. A voltammetric microbial biosensor modified with *Rhodotorula mucilaginosa* sp. for the determination of Cu(II). *Bioelectrochemistry* 79:66–70.
2251. Kamenev, A.I., M.I. Lunev, P.K. Agasyan, and Z.I. Lisichkina. 1977. Determination of lead in steel and cast iron by inverse voltammetry. *Zh. Anal. Khim (Russ.)* 32:1955–1960.

2252. Kopanica, M. and V. Stara. 1991. Determination of amalgam-forming metals by anodic stripping voltammetry in solutions with dissolved oxygen. *Electroanalysis* 3:925–928.
2253. Shaidarova, L.G., N.A. Ulakhovich, M.A. El Gakhri, and G.K. Budnikov. 1993. Use of dibenzo-18-crown-6 as a modifier of a carbon-paste electrode for lead determination. *Izv. Vysch. Uchebn. Zaved., Khim. Technol. (Russ.)* 35:51–54.
2254. Peng, T.-Z., Z. Tang, G.-S. Wang, and B.-E. Shen. 1995. A cuproin-modified carbon paste electrode for the determination of lead(II) using differential pulse voltammetry. *Curr. Sep*. 13:119–124.
2255. Glebov, A.N., L.G. Shaidarova, M. Al-Gahri, N.A. Ulakhovich, and A.B. Vepritskaya. 1993. Lead(II) macrocyclic complexes with alkali metal cations in voltammetry. *Koordinatsion. Khim. (Russ.)* 19:122–124.
2256. Shaidarova, L.G., N.A. Ulakhovich, M.A. El Gakhri, G.K. Budnikov, and A.N. Glebov. 1995. Inversion voltammetry of lead(II) on a carbon paste electrode modified by macrocyclic complexants. *J. Anal. Chem. (Russ.)*/transl. of *Zh. Anal. Khim*. 50:692–696.
2257. Zhang, Z.-Q., H. Liu, H. Zhang, and Y.-F. Li. 1997. Determination of trace cadmium with 8-hydroxyquinoline mixed adhersion agent-carbon paste electrode. *Lihua Jianyan Huaxue Fence* 33:506–507.
2258. Iliadou, E., S.T. Girousi, A.N. Voulgaropoulos, and K. Vytřas. 1997. Voltammetric determination of heavy metals in natural waters, biological samples, and food-stuff by using chemically modified carbon paste electrodes. *Sci. Pap. Univ. Pardubice Ser. A* 3:87–101.
2259. Huang, S.-S., Y.-D. Cheng, B.-F. Li, and G.-D. Liu. Simultaneous anodic stripping voltammetric determination of lead and cadmium with a carbon paste electrode modified by tributyl phosphate. *Microchim. Acta* 130:97–101.
2260. Bae, Z.-U., J.-E. Choi, and H.-Y. Chang. Anodic stripping voltammetric determination of cadmium(II) using algae-modified carbon paste electrodes. *J. Korean Chem. Soc*. 42:28–35.
2261. Huang, S.-S., Y.-D. Cheng, B.-F. Li, and X.-S. Shi. 1998. A carbon paste electrode containing tributyl phosphate and 1-phenyl-3-methyl-4-benzoyl-pyrazolone and its use for determination of lead traces. *Fenxi Huaxue* 41:126–130.
2262. Pazdera, R. 2001. Stripping potentiometry with carbon paste electrodes in practical analysis. MSc dissertation (in Czech), University of Pardubice, Pardubice, Czech Republic.
2263. Hu, C.-G., K.-B. Wu, X. Dai, and S.-S. Hu. 2003. Simultaneous determination of lead(II) and cadmium(II) at a diacetyldioxime modified carbon paste electrode by differential pulse stripping voltammetry. *Talanta* 60:17–24.
2264. Ismail, K. 2004. Carbon paste electrodes plated with a bismuth film. Some contribution to their voltammetric characterisation and applicability to the determination of heavy metals in crude oil. MSc dissertation, University of Pardubice, Pardubice, Czech Republic.
2265. Švancara, I., L. Baldrianova, E. Tesarova, S.A.A. Elsuccary, A. Economou, S. Sotiropoulos, A. Bobrowski, and K. Vytřas. 2004. Stripping voltammetry of mixtures of heavy ions at electrodes with bismuth film. In *Monitoring of Environmental Pollutants*, Vol. VI, Eds. K. Vytřas, J. Kellner, and J. Fischer, pp. 229–246. Pardubice, Czech Republic: University of Pardubice.
2266. Baldrianova, L., I. Švancara, M. Vlcek, A. Economou, and S. Sotiropoulos. 2006. Effect of BiIII concentration on the stripping voltammetric response of *in-situ* bismuth-coated carbon paste and gold electrodes. *Electrochim. Acta* 52:481–490.
2267. Baldrianova, L., I. Švancara, K. Vytřas, and S. Sotiropoulos. 2006. Variation of the metal analyte-to-bismuth ratio with deposition time in anodic stripping voltammetry at *in-situ* bismuth-coated carbon paste electrodes. In *Sensing in Electroanalysis*, Vol. 2, Eds. K. Vytřas and K. Kalcher, pp. 59–74. Pardubice, Czech Republic: University of Pardubice.
2268. Gismera, M.J., M.T. Sevilla, and J.R. Procopio. 2006. Potentiometric carbon paste sensors for lead(II) based on dithiodibenzoic and mercaptobenzoic acids. *Anal. Sci. (Jpn.)* 22:405–410.
2269. Adraoui, I., M.E. Rhazi, and A. Amine. 2007. Fibrinogen-coated bismuth film electrodes for voltammetric analysis of lead and cadmium using the batch injection analysis. *Anal. Lett*. 40:349–368.
2270. Mojica, E.-R.E., J.M. Vidal, A.B. Pelegrina, and J.R.L. Micor. 2007. Voltammetric determination of lead (II) ions at carbon paste electrode modified with banana tissue. *J. Appl. Sci*. 7:1286–1292.
2271. Gholivand, M.B. and M. Malekian. 2008. Determination of trace amount of lead(II) in sweet fruit-flavored powder drinks by differential pulse adsorptive stripping voltammetry at carbon paste electrode. *Electroanalysis* 20:367–373.
2272. Rievaj, M., P. Tomcik, M. Cernanska, Z. Janosikova, and D. Bustin. 2008. Trace determination of lead in environmental and biological samples by anodic stripping voltammetry on carbon paste electrode. *Chem. Anal*. 53:717–723.
2273. Kuang, Y.F., J.L. Zou, L.Z. Ma, Y.J. Feng, and P.H. Deng. 2008. Determination of trace Cd(II) in water sample using 1,10-phenanthroline-5,6-dione modified carbon paste electrode. *Fenxi Huaxue* 36:103–106.

2274. Švancara, I., T. Mikysek, K. Vytřas, and F.G. Banica. 2008. Carbon paste electrode modified with macroporous thiourea functionalised resin and its use for the determination of lead. In *Monitoring of Environmental Pollutants*, Vol. X, Eds. K. Vytřas, J. Kellner, and J. Fischer, pp. 231–256. Pardubice, Czech Republic: University Centre Press.
2275. Rodriguez, J.A., I.S. Ibarra, C.A.G. Vidal, M. Vega, and E. Barrado. 2009. Multicommutated anodic stripping voltammetry at tubular bismuth film electrode for lead determination in gunshot residues. *Electroanalysis* 21:452–458.
2276. Goubert Renaudin, S., M. Moreau, C. Despas, M. Meyer, F. Denat, B. Lebeau, and A. Walcarius. 2009. Voltammetric detection of Pb(II) using amide-cyclam-functionalized silica-modified carbon paste electrodes. *Electroanalysis* 21:1731–1742.
2277. Ghanjaoui, M.E.A., M. Srij, and M. El Rhazi. 2009. Assessment of lead and cadmium in canned foods by square-wave stripping voltammetry. *Anal. Lett*. 42:1294–1309.
2278. Abbastabar Ahangar, H., A. Shirzadmehr, K. Marjani, H. Khoshsafar, M Chaloosi, and L. Mohammadi. 2009. Ion-selective carbon paste electrode based on a new tripodal ligand for determination of cadmium(II). *J. Inclusion Phenom. Macrocyclic. Chem*. 63:287–293.
2279. Chen, J.-Y, G.-Z. Yang, W.-Y. Li, and J.-S. Sun. 2009. Determination of lead (II) at nanomolar level using H_2O_2-oxidized activated carbon modified electrode. *J. Electrochem. (Russ.)* 45:908–912.
2280. Hradilova, S. 2009. Non-electrolytic processes at carbon paste electrodes and utilisation in electroanalysis. MSc dissertation (in Czech), University of Pardubice, Pardubice, Czech Republic.
2281. Papp, Z., V. Guzsvany, I. Švancara, K. Vytřas, F. Gaal, L. Bjelica, and B. Abramovic. 2009. New applications of tricresyl phosphate-based carbon paste electrodes in voltammetric analysis. In *Sensing in Electroanalysis*, Vol. 4, Eds. K. Vytřas, K. Kalcher, and I. Švancara, pp. 47–58. Pardubice, Czech Republic: University Press Center.
2282. Bing, C. and L. Kryger. 1996. Accumulation and voltammetric determination of complexed metal ions at zeolite-modified sensor electrodes. *Talanta* 43:153–160.
2283. Metelka, R., I. Švancara, and K. Vytřas. 1999. Carbon paste electrodes modified with mercuricoxide. In *Monitoring of Environmental Pollutants*, Eds. K. Vytřas, J. Kellner, and J. Fischer, pp. 113–117. Pardubice, Czech Republic: University of Pardubice.
2284. Konvalina, J. and K. Vytřas. 1999. Determination of thallium(III) at a carbon paste electrode with the aid of potentiometric stripping analysis. In *Monitoring of Environmental Pollutants*, Eds. K. Vytřas, J. Kellner, and J. Fischer, pp. 99–104. Pardubice, Czech Republic: University of Pardubice.
2285. Konvalina, J. 2001. Carbon paste electrodes in stripping potentiometry (in Czech). PhD dissertation, pp. 75–85. University of Pardubice, Pardubice, Czech Republic.
2286. Monien, H. and K. Zinke. 1970. Inverse-voltammetric determination of tin and lead in presence of both at a carbon-paste electrode. *Fresenius Z. Anal. Chem*. 250:178–185.
2287. Yang, Z.-P., M. Alafandy, K. Boutakhrit, J.-M. Kauffmann, and J. Arcos. 1996. Electrochemical oxidation of 8-hydroxyquinoline and selective determination of tin(II) at solid electrodes. *Electroanalysis* 8:25–29.
2288. Xie, H.-Q., Y.-H. Li, F. Q. Zhou, H.-S. Guo, and B. Yi. 2001. Determination of trace tin by adsorptive voltammetry at an alizarin violet modified carbon paste electrode. *Fenxi Huaxue* 29:822–824.
2289. Švancara, I., L. Baldrianova, E. Tesarova, T. Mikysek, and K. Vytřas. 2005. Determination of tin(II) at bismuth-modified carbon paste electrodes: An initial study. In *Monitoring of Environmental Pollutants*, Eds. K. Vytřas, J. Kellner, and J. Fischer, pp. 139–148. Pardubice, Czech Republic: University of Pardubice.
2290. Tesarova, E., L. Baldrianova, A. Krolicka, I. Švancara, A. Bobrowski, and K. Vytřas. 2005. Role of supporting electrolyte in anodic stripping voltammetry of In(III) in the presence of Cd(II) and Pb(II) using bismuth film electrodes. In *Sensing in Electroanalysis*, Eds. K. Vytřas and K. Kalcher, pp. 75–87. Pardubice, Czech Republic: University of Pardubice.
2291. Nghi, T.-V. and F. Vydra. 1975. Voltammetry with disk electrodes and its analytical application. Part X. *J. Electroanal. Chem*. 64:163–173.
2292. Cai, X.-H., K. Kalcher, and R.J. Magee. 1993. Studies on the voltammetric behavior of a bismuthiol I-containing carbon paste electrode: Determination of traces of bismuth. *Electroanalysis* 5:413–419.
2293. Ferri, T., S. Paci, and R. Morabito. 1996. Chemically-modified carbon paste electrode for the voltammetric determination of bismuth. *Ann. Chim*. 86:245–256.
2294. Guo, H.-S. and Y.-H. Li. 2000. Determination of trace bismuth by adsorptive stripping voltammetry with pyrogallol red-modified carbon paste electrode. *Fenxi Huaxue* 28:1527–1530.
2295. Huang, W.-S. 2004. Voltammetric determination of bismuth in water and nickel metal samples with a sodium montmorillonite (SWy-2) modified carbon paste electrode. *Microchim. Acta* 14:125–129.

2296. Mostafa, G.A.E. and A.M. Homoda. 2008. Potentiometric carbon paste electrodes for the determination of bismuth in some pharmaceutical preparations. *Bull. Chem. Soc. Jpn*. 81:257–261.
2297. Watanabe, D., T. Furuike, M. Midorikawa, and T. Tanaka. 2005. Simultaneous determination of copper and antimony by differential pulse anodic stripping voltammetry with a carbon-paste electrode. *Bunseki Kagaku* 54:907–912.
2298. Santos, V.S., W.J.R. Santos, L.T. Kubota, and C.R.T. Tarley. 2009. Speciation of Sb(III) and Sb(V) in meglumine antimoniate pharmaceutical formulations by PSA using carbon nanotube electrode. *J. Pharm. Biomed. Anal*. 50:151–157.
2299. Cepria, G., S. Hamida, F. Laborda, and J.R. Castillo. 2009. Electroanalytical determination of arsenic(III) and total arsenic in 1 M HCl using a carbonaceous electrode without a reducing agent. *Anal. Lett*. 42:1971–1985.
2300. Gevorgyan, A.M., S.V. Vakhnenko, and A.T. Artykov. 2004. Thick film graphite-containing electrodes for determining selenium by stripping voltammetry. *J. Anal. Chem. (Russ.)* 59:374–380.
2301. Ibrahim, H., Y.M. Issa, and O.R. Shehab. 2010. New selenite ion-selective electrodes based on 5,10,15,20-tetrakis-(4-methoxyphenyl)-21H,23H-porphyrin-Co(II). *J. Hazard. Mater*. 181:857–867.
2302. Monien, H. and P. Jacob. 1972. Voltammetric determination of small amounts of iron without separation from the matrix. *Fresenius Z. Anal. Chem*. 260:195–202.
2303. Arrigan, D.W.M., J.D. Glennon, and G. Svehla. 1993. Approaches to electrode modification with hydroxamic acids. *Anal. Proc*. 30:141–142.
2304. Hu, X.-Y., Z.-Z. Leng, N.-N. Xu, and S.-H. Yu. 1996. Determination of iron(III) by potentiometric and oscillographic-potentiometric titration with highly sensitive carbon paste electrode. *Fenxi Huaxue* 24:595–598.
2305. Komersova, A., M. Bartos, K. Kalcher, and K. Vytřas. 1998. Trace iron determination in aminoisophthalic acid using differential-pulse cathodic stripping voltammetry at carbon paste electrodes. *J. Pharm. Biomed. Anal*. 16:1373–1379.
2306. Mikysek, T. M. Stoces, I. Švancara, and J. Ludvik. 2010. Relation between the composition and properties of carbon nanotubes paste electrodes (CNTPEs). In *Sensing in Electroanalysis*, Vol. 5, Eds. K. Vytřas, K. Kalcher, and I. Švancara, pp. 69–75. Pardubice, Czech Republic: University Press Center.
2307. Kasem, K.K. and H. D. Abruna. 1988. Electroanalysis with modified carbon paste electrodes. Coordination trends, selectivity, and sensitivity. *J. Electroanal. Chem*. 242:87–95.
2308. Švancara, I. 1988. Applications of a carbon paste electrode for voltammetric determination of nickel and cobalt at low concentrations (in Czech). MSc dissertation, University of Pardubice, Pardubice, Czech Republic.
2309. Jeong, E.-D., M.-S. Won, D.-S. Park, S.-N. Choi, and Y.-B. Shim. 1993. Differential pulse voltammetric determination of cobalt(II) ion with a chemically modified carbon paste electrode containing l-sparteine. *J. Korean Chem. Soc*. 37:881–888.
2310. Bae, Z.-U., Y.-C. Park, S.-H. Lee, W.-S. Jeon, and H.-Y. 1996. Chang. Voltammetric determination of cobalt(II) using carbon paste electrodes modified with 1-(2-pyridylazo)-2-naphthol. *Bull. Korean Chem. Soc*. 17:995–999.
2311. Huang, S.-S., Y. Chen, X.-F. Li, and F.-M. Li. 1997. Determination of trace cobalt in natural water by ternary complex system with phenanthroline chemically modified carbon paste electrode. *Guangdong Gongye Daxue Xuebao* 14:128–130.
2312. Shaidarova, L.G., N.A. Ulakhovich, I.L. Fedorova, and Yu. G. Galyametdinov. 1996. Stripping-voltammetric determination of transition metals using electrodes modified by azacrown compounds. *J. Anal. Chem. (Russ.)* 51:687–692.
2313. Wu, J.-R., X. Zhang, and Y.-T. Sun. 1996. Determination of microamount of nickel by potentiometry with dimethylglyoxime-modified carbon paste electrode. *Shandong Jiancai Xueyuan Xuebao* 10:14–18.
2314. Gonzalez, P.S., C.A. Fontan, and V.A. Cortinez. 1997. Determination of nickel by direct automatic potentiometric titration with EDTA and a chemically modified electrode based on a strong acid ion exchanger containing 4-(3,5-dichloro-2-pyridylazo)-1,3-diaminobenzene. *Talanta* 44:23–30.
2315. Deng, P.-H., J.-J. Fei, and Y.-L. Feng. 2010. Determination of trace vanadium(V) by adsorptive anodic stripping voltammetry on an acetylene black paste electrode in the presence of alizarin violet. *J. Electroanal. Chem*. 648:85–91.
2316. Hu, X.-Y. and Z.-Z. Leng. 1995. Highly sensitive potentiometry for determination of chromium(VI) with carbon paste electrode. *Anal. Proc*. 32:521–522.
2317. Gevorgyan, A.M., S.V. Vakhnenko, and A.T. Artykov. 2004. Determination of chromium in natural waters by stripping voltammetry. *J. Anal. Chem. (Russ.)* 59:371–373.
2318. Fernandez, M.E.S., L.M.C. Aguilera, and J.M.P. Satander, I.N. Rodriguez, and J.L.H. de Cisneros. 2005. An oxidative procedure for the electrochemical determination of Cr(VI) using modified carbon paste electrodes. *Bull. Electrochem*. 21:529–535.

2319. Moreno, R.A.S., M.J. Gismera, M.T. Sevilla, and J.R. Procopio. 2009. Chromium(III) determination without sample treatment by batch and flow injection potentiometry. *Anal. Chim. Acta* 634:68–74.
2320. Abu Shawish, H.M., S.M. Saadeh, K. Hartani, and H.M. Dalloul. 2009. Comparative study of chromium(III) ion-selective electrodes based on N,N-bis(salicylidene)-o-phenyl-enediaminate-chromium(III). *J. Iran. Chem. Soc*. 6:729–737.
2321. Ghaedi, M., A. Shokrollahi, A.R. Salimibeni, S. Noshadi, and S. Joybar. 2010. Preparation of a new chromium(III) selective electrode based on 1-[(2-hydroxy ethyl) amino]-4-methyl-9H-thioxanthen-9-one as a neutral carrier. *J. Hazard. Mater*. 178:157–163.
2322. Monien, H., P. Jacob, and B. Jaenisch. 1973. Voltammetric determination of molybdenum in the presence of tungsten. *Fresenius Z. Anal. Chem*. 267:108–114.
2323. Zheng, X.-W., Z.-J. Zhang, Q. Wang, and H.-C. Ding. 2003. Electrogenerated chemiluminescence determination of Mo(VI) based on its sensitizing effect in electrochemical reduction of luminol. *Fenxi Huaxue* 31:1076–1078.
2324. Shumilova, M.A., A.V. Trubachev, and D.I. Kurbatov. 1997. Voltammetry of tungsten(VI) on a carbon-paste electrode modified with 8-mercaptoquinoline and dimethylsulfoxide. *J. Anal. Chem. (Russ.)*/transl. of *Zh. Anal. Khim*. 52:753–755.
2325. Farsang, Gy. and L. Tomcsanyi. 1967. Voltammetric behavior of manganese(II) and its determination or a carbon paste electrode. *Acta Chim. Acad. Sci. Hung*. 52:123–132.
2326. Narayanan, A. and R. Neeb. 1974. Adsorptive enrichment of azo dye complexes on a carbon paste electrode and its application to the determination of small concentrations of cobalt and manganese. *Fresenius Z. Anal. Chem*. 269:344–348.
2327. Smit, M.H. and G.A. Rechnitz. 1992. Reagentless enzyme electrode for the determination of manganese through biocatalytic enhancement. *Anal. Chem*. 64:245–249.
2328. Rievaj, M., P. Tomcik, Z. Janosikova, D. Bustin, and R.G. Compton. 2008. Determination of trace Mn(II) in pharmaceutical diet supplements by cathodic strip-ping voltammetry on bare carbon paste electrode. *Chem. Anal. (Warsaw)* 53:153–161.
2329. Ruf, H. and K. Schorb. 1989. Stripping voltammetry of technetium using a TOA-modified carbon paste electrode. *Kernforschungszent. Karlsruhe (Ber.)* p. 18. KfK: KFK 4634.
2330. Galik, M., I. Švancara, and K. Vytřas. 2005. Stripping voltammetric determination of platinum metals at carbon paste electrodes modified with cationic surfactants. In *Sensing in Electroanalysis*, Eds. K. Vytřas and K. Kalcher, pp. 89–107. Pardubice, Czech Republic: University of Pardubice.
2331. Zakieva, D.Z., N.A. Ulakhovich, Y.G. Galyametdinov, and G.K. Budnikov. 1991. Selective determination of Pd(II) using a carbon-paste electrode modified with liquid-crystal azomethines. *Zh. Anal. Khim. (Russ.)* 46:2093–2095.
2332. Raber, G., K. Kalcher, C. Neuhold, C. Talaber, and G. Koelbl. 1995. Adsorptive stripping voltammetry of palladium(II) with thioridazine in situ modified carbon paste electrodes. *Electroanalysis* 7:137–142.
2333. Qiu, D.-F., Q. Zhao, and K.-Z. Liu. 1997. Determination of palladium(II) using flow injection analysis with a detector based on carbon paste chemically modified with dimethylglyoxime. *Huaxue Yanjiu* 8:41–44.
2334. Galik, M., M. Cholota, I. Švancara, A. Bobrowski, and K. Vytřas. 2006. Stripping voltammetry of osmium at carbon paste electrodes. In *Monitoring of Environmental Pollutants* (in Czech), Eds. K. Vytřas, J. Kellner, and J. Fischer, pp. 75–85. Pardubice, Czech Republic: University of Pardubice.
2335. Kalcher, K. 1986. Voltammetric behavior of hexachloroiridate(IV) solutions on chemically modified carbon paste electrodes. *Fresenius Z. Anal. Chem*. 324:47–51.
2336. Zarinskii, V.A. and L.S. Chulkina. 1977. Inverse voltammetric method for determining platinum in industrial solutions. *Zavod. Lab.* 43:148–150.
2337. Hoshi, T., J.-I. Anzai, and T. Osa. 1992. Potentiometric sensors based on carbon paste electrode. *Denki Kagaku* 60:1146–1147.
2338. Wangsa, J., M.A. Targove, and N.D. Danielson. 1990. Indirect electrochemical detection of cations with cerium(III) in the mobile phase. *Talanta* 37:1151–1154.
2339. Walcarius, A., L. Lamberts, and E.G. Derouane. 1995. Cation determination in aqueous solution using the methyl viologen-doped Zeolite-modified carbon paste electrode. *Electroanalysis* 7:120–128.
2340. Lima, A.S., N. Bocchi, H.M. Gomes, M.F.S. and Teixeira. 2009. An electrochemical sensor based on nanostructured hollandite-type manganese oxide for the detection of potassium(I) ions. *Sensors* 9:6613–6625.
2341. Teixeira, M.F.S., B.H. Freitas, P.M. Seraphim, L.O. Salmazo, M.A. Nobre, and S. Lanfredi. 2009. Development of an electrochemical sensor for potassium ions based on the use of KSr2Nb5O15 modified electrode. In *Proceedings of The Eurosensors XXIII Conference*, Lausanne, Switzerland, Eds. J. Brugger and D. Briand, *Proc. Chem*. 1:293–296

2342. Blasius, E. and K.-P. Janzen. 1972. o-(2-Hydroxy-5-methyl-phenylazo)benzoic acid as reagent for polarographic, inverse voltammetric, and photometric determination of Be(II) ions. *Fresenius Z. Anal. Chem*. 258:257–263.
2343. Liu, N. and J.F. Song. 2005. Determination of free calcium at a carbon paste electrode adsorptive stripping voltammetric method. *Fenxi Huaxue* 33:1261–1264.
2344. Specker, H., H. Monien, and B. Lendermann. 1971. Inverse voltammetric determination of aluminum and vanadium on a carbon paste electrode. *Chem. Anal. (Warsaw)* 17:1003–1014.
2345. Monien, H. and H. Specker. 1972. Inverse voltammetric determination of traces of aluminum in beryllium. *Anal. Lett*. 5:837–842.
2346. Cai, Q.T. and S.B. Khoo. 1993. Differential pulse voltammetric determination of aluminum at a 8-hydroxyquinoline modified carbon paste electrode. *Bull. Singapore Natl. Inst. Chem*. 21:157–170.
2347. Liu, H.-L. 2003. Chemically modified carbon paste sensor for aluminium(III) and its application. *Fenxi Huaxue* 31:1511–1513.
2348. Kurbatov, D.I. and L.Y. Buldakova. 1996. Use of a modified carbon-paste electrode for voltammetric determination of gallium and zinc. *Zavod. Lab. (Russ.)* 62:17–18.
2349. Kurbatov, D.I. and L.Y. Buldakova. 1996. Voltammetric determination of gallium(III) and zinc(II) in aqueous-organic supporting electrolytes. *J. Anal. Chem. (Russ.)* 51:386–390.
2350. Liu, S.-M., L.-H. Yi, and J.-N. Li. 2003. Studies on anodic adsorptive stripping voltammetry of gallium(III)-alizarin complexone at carbon paste electrodes and its application. *Fenxi Huaxue* 31:1489–1492.
2351. Wu, J.-R., W.-Z. Xu, and Y.-T. Sun. 1995. Study and application of chemically modified α-nitroso-β-naphthol-Zr(IV)-carbon paste electrodes. *Lihua Jianyan Huaxue Fence* 31:157–158.
2352. Li, J.-N., J. Zhang, P.-H. Deng, and J.-J. Fei. 2001. Carbon paste electrode for trace zirconium(IV) determination by adsorption voltammetry. *Analyst* 126:2032–2035.
2353. Li, J.-N., J. Zhang, P.-H. Deng, and Y.-Q. Peng. 2001. Adsorption voltammetry of the mix-polynuclear complex of zirconium-calcium-Alizarin Red S at a carbon paste electrode. *Anal. Chim. Acta* 431:81–87.
2354. Liu, S.-M., J.-N. Li, and X. Mao. 2003. Stripping voltammetric determination of zirconium with complexing preconcentration of zirconium(IV) at a morin-modified carbon paste electrode. *Electroanalysis* 15:1751–1755.
2355. Liu, S.-M., J.-N. Li, and X. Mao. 2004. Determination of zirconium by 2nd derivative adsorptive voltammetry of zirconium (IV)-*Morin* complex at a carbon paste electrode. *Fenxi Huaxue* 32:195–197.
2356. Li, J.-N., S.-M. Liu, Z.-H. Yan, X. Mao, and P. Gao. 2006. Adsorptive voltammetric studies on the cerium(III)-alizarin complexon complex at a carbon paste electrode: Development of a method for the determination of Ce(III). *Microchim. Acta* 154:241–243.
2357. Liu, S.-M., J.-N. Li, and P. Gao. 2003. Anodic adsorptive stripping voltammetry at a carbon paste electrode for determination of trace thorium. *Anal. Lett*. 36:1381–1392.
2358. Li, J.-N., F.-Y. Yi, Z.-M. Jiang, and J.-J. Fei. 2003. Adsorptive voltammetric study of Th(IV) alizarin complex at a carbon paste electrode. *Microchim. Acta* 143:287–292.
2359. Norouzi, P., Z.R. Sarmazdeh, F. Faridbod, M. Adibi, and M.R. Ganjali. 2010. Er(3+) carbon paste electrode based on new nano-composite. *Int. J. Electrochem. Sci*. 5:367–376.
2360. Ji, K.-B. and S.-S. Hu. 2004. Square wave voltammetric determination of trace amounts of europium(III) at montmorillonite-modified carbon paste electrodes. *Collect. Czech. Chem. Commun*. 69:1590–1599.
2361. Li, J.-N., S.-M. Liu, X. Mao, P. Gao, and Z.-H. Yan. 2004. Trace determination of rare earths by adsorption voltammetry at a carbon paste electrode. *J. Electroanal. Chem*. 56:137–142.
2362. Tomita, S., K. Sato, J.-I. Anzai. 2008. pH-Sensitive thin films composed of poly(methacrylic acid) and carboxyl-terminated dendrimer. *Sens. Lett*. 6:250–252.
2363. Brezina, M. and A. Hofmanova Matejkova. 1973. Electrochemical generation of superoxide ion on carbon paste electrodes. *J. Electroanal. Chem*. 44:460–462.
2364. Guzman, S.Q., O.M. Baudino, and V.A. Cortinez. 1987. Design and evaluation of an electrochemical sensor for determination of dissolved oxygen in water. *Talanta* 34:551–554.
2365. Jalali, F., A.M. Ashrafi, and D. Nematollahi. 2009. Measurement of dissolved oxygen in biological fluids by a modified carbon paste electrode. *Electroanalysis* 21:201–205.
2366. Xu, G.-B and S.-J. Dong. 1999. Chemiluminescent determination of luminol and hydrogen peroxide using hematin immobilized in the bulk of a carbon paste electrode. *Electroanalysis* 11:1180–1184.
2367. Li, C.-Y., Y. Chen, C.-F. Wang, H.-B. Li, and Y.-Y. Chen. 2003. Electrocatalytic oxidation of H_2O_2 at a carbon paste electrode modified with a nickel (II)-5,11,17,23-tetra-tert-butyl-25,27-bis(diethylcarbamoylmethoxy) calix[4]arene complex and its application. *Wuhan Univ. J. Nat. Sci*. 8:857–860.

2368. Kozan, J.V.B., R.P. Silva, S.H.P. Serrano, A.W.O. Lima, and L. Angnes. 2007. Biosensing hydrogen peroxide utilizing carbon paste electrodes containing peroxidases naturally immobilized on coconut fibers. *Anal. Chim. Acta* 591:200–207.
2369. Jian, F.-F., Y.-B. Qiao, H.-Q. Yu, and R.-R. Zhuang. 2007. Hydrogen peroxide biosensor based on the electrochemistry of the myoglobin-TATP composite film. *Anal. Lett*. 40:2664–2672.
2370. Yu, H., Q.-L. Sheng, and J.-B. Zheng. 2007. Preparation, electrochemical behavior and performance of gallium hexacyanoferrate as electrocatalyst of H_2O_2. *Electrochim. Acta* 52:4403–4410.
2371. Alpat, S., S.K. Alpat, Z. Dursun, and A. Telefoncu. 2009. Development of a new biosensor for mediatorless voltammetric determination of H_2O_2 and its application in milk samples. *J. Appl. Electrochem*. 39:971–977.
2372. Nyasulu, F.W. and H.A. Mottola. 1987. Amperometric determination of nitrogen dioxide in air samples by flow injection and reaction at a gas-liquid interface. *J. Automat. Chem*. 9:46–49.
2373. Suye, S.I., Y. Nakamura, S. Inuta, T. Ikeda, and M. Senda. 1996. Mediated amperometric determination of ammonia with a methanol dehydrogenase immobilized carbon paste electrode. *Biosens. Bioelectron*. 11:529–534.
2374. Coutinho, C.F.B., A.A. Muxel, C.G. Rocha, D.A. de Jesus, R.V.S. Alfaya, F.A.S. Almeida, Y. Gushikem, and A.A.S. Alfaya. 2007. Ammonium ion sensor based on SiO_2/ZrO_2/phosphate-NH_4+ composite for quantification of ammonium ions in natural waters. *J. Brazil. Chem. Soc*. 18:189–194.
2375. Zare, H.R. and A. Nasirizadeh. 2006. Electrocatalytic characteristics of hydrazine and hydroxylamine oxidation at coumestan modified carbon paste electrode. *Electroanalysis* 18:507–512.
2376. Cepria, G. and J.R. Castillo. 1998. Electrocatalytic behavior of several cobalt complexes: Determination of hydrazine at neutral pH. *J. Appl. Electrochem*. 28:65–70.
2377. Pessoa, C.A., Y. Gushikem, and S. Nagasaki. 2002. Cobalt porphyrin immobilized on a niobium(V) oxide grafted-silica gel surface: Study of the catalytic oxidation of hydrazine. *Electroanalysis* 14:1072–1076.
2378. Raoof, J.B., R. Ojani, and M. Ramine. 2007. Electrocatalytic oxidation and voltammetric determination of hydrazine on the tetrabromo-p-benzoquinone modified carbon paste electrode. *Electroanalysis* 19:597–603.
2379. Kamyabi, M.A., S. Shahabi, and H.H. Monfared. 2007. Electrocatalytic oxidation of hydrazine at a cobalt(II) Schiff-base-modified carbon paste electrode. *J. Electrochem. Soc*. 155:F08–F12.
2380. Liawruangrath, S., W. Oungpipat, S. Watanesk, B. Liawruangrath, C. Dongduen, and P. Purachat. 2001. Asparagus-based amperometric sensor for fluoride determination. *Anal. Chim. Acta*. 448:37–46.
2381. Shamsipur, M., S. Ershad, N. Samadi, A. Moghimi, and H. Aghabozorg. 2005. A novel chemically modified carbon paste electrode based on a new mercury(II) complex for selective potentiometric determination of bromide ion. *J. Solid. State Electrochem*. 9:788–793.
2382. Malongo, T.K., S. Patris, P. Macours, F. Cotton, J. Nsangu, and J.-M. Kauffmann. 2008. Highly sensitive determination of iodide by ion chromatography with amperometric detection at a silver-based carbon paste electrode. *Talanta* 76:540–547.
2383. Amine, A., M. Alafandy, J.-M. Kauffmann, and M.N. Pekli. 1995. Cyanide determination using an amperometric biosensor based on cytochrome oxidase inhibition. *Anal. Chem*. 67:2822–2827.
2384. Tan, J., J.H. Bergantini, A. Merkoci, S. Alegret, and F. Sevilla. 2004. Oil dispersion of AgI/Ag_2S salts as a new electroactive material for potentiometric sensing of iodide and cyanide. *Sens. Actuators B* 101:57–62.
2385. Samo, A.R., M.Y. Khahawer, S.A. Arbani, and G.A. Qureshi. 1993. Quantitation of azide and lead in lead azide by voltammetric method. *J. Chem. Soc. Pak*. 15:187–190.
2386. Ghaedi, M., A. Shokrollahi, M. Montazerozohori, and S. Derki. 2010. Design and construction of azide carbon paste selective electrode based on a new Schiff's base complex of Iron. *IEEE Sens. J*. 10:814–819.
2387. Sarwar, M. and G.G. Willems. 1980. Voltammetric determination of nitrite: Comparison of carbon paste and glassy carbon electrodes. *J. Chem. Soc. Pak*. 2:123–125.
2388. Asplund, J. 1986. Voltammetric determination of nitrous acid in mixtures of nitric and sulfuric acids by oxidation of nitrite at a carbon paste electrode. *Anal. Chem. Symp. Ser*. 25:91–96.
2389. Lu, G.-H., D.-W. Long, T. Zhan, and H.-Y. Zhao. 2002. Electrochemical behavior of a ruthenium(II) polypyridine complex and its electrocatalysis of nitrite. *Fenxi Huaxue* 30:1115–1118.
2390. Badea, M., A. Amine, M. Benzine, A. Curulli, D. Moscone, A. Lupu, G. Volpe, and G. Palleschi. 2004. Rapid and selective electrochemical determination of nitrite in cured meat in the presence of ascorbic acid. *Mikrochim. Acta* 147:51–58.
2391. Idrissi, L., A. Amine, M. El Rhazi, and F.E. Cherkaoui. 2005. Electrochemical detection of nitrite based on the reaction with 2,3-diaminonaphthalene. *Anal. Lett*. 38:1943–1955.
2392. Ojani, R., J.B. Raoof, and E. Zarei. 2006. Electrocatalytic reduction of nitrite using ferricyanide: Application for its simple and selective determination. *Electrochim. Acta* 52:753–759.

2393. Ojani,R., J.B. Raoof, and E. Zarei. 2008. Poly(o-toluidine) modified carbon paste electrode: A sensor for electrocatalytic reduction of nitrite. *Electroanalysis* 20:379–385.
2394. Shiddiky, M.A., K.-S. Lee, J.-G. Son, D.-S. Park, and Y.-B. Shim. 2009. Development of extraction and analytical methods for nitrite ion from food samples: Microchip electrophoresis with a modified electrode. *J. Agricult. Food Chem*. 57:4051–4057.
2395. Lee, Y.-K., D.-H. Kim, H.-J. Mang, and K.-J. Whang. 1988. Construction of high performance carbon paste coated wire sulfate ion-selective electrode. *Punsok Kwahak* 1:10–18.
2396. Gonzales Alvarez, M.J., A.J. Miranda Ordieres, A. Costa Garcia, and P. Tunon Blanco. 1990. A carbon paste electrode modified with p-dimethyl-N-aniline and lauryl sulphate and its use in electroanalysis. In *Electrospain Analysis '90 in Asturias, An International Conference on Electroanalytical Chemistry*, Book of Abstracts, D-PP-20. Gijon (Spain).
2397. Amini, M.K., S. Shahrokhian, S. Tangestaninejad, and I.M. Baltork. 2001. Voltammetric and potentiometric behavior of 2-pyridinethiol, 2-mercaptoethanol and sulfide at iron(II) phthalocyanine modified carbon-paste electrode. *Iran. J. Chem. Chem. Eng*. 20:29–36.
2398. Nader, P.A., S.S. Vives, and H.A. Mottola. 1990. Studies with a sulfite oxidase-modified carbon paste electrode for detection/determination of sulfite ion and sulfur dioxide (g) in continuous-flow systems. *J. Electroanal. Chem*. 284:323–333.
2399. Kumar, S.S. and S.S. Narayanan. 2008. Electrocatalytic oxidation of sulfite on a nickel aquapentacyanoferrate modified electrode: Application for simple and selective determination. *Electroanalysis* 20:1427–1433.
2400. Soleymanpour, A., E.H. Asl, and M.A. Nasseri. 2006. Chemically modified carbon paste electrode for determination of sulfate ion, SO_4^{2-} by potentiometric method. *Electroanalysis* 18:1598–1604.
2401. Fernandez, J.J., J.R Lopez, X. Correig, and I. Katakis. 1998. Reagentless carbon paste phosphate biosensors: Preliminary studies. *Sens. Actuators B* 47:13–20.
2402. Quintana, J.C, L. Idrissi, G. Palleschi, P. Albertano, A. Amine, M.El Rhazi, and D. Moscone. 2004. Investigation of amperometric detection of phosphate: Application in seawater and cyanobacterial biofilm samples. *Talanta* 63:567–574.
2403. Xue, Y., X.-W. Zheng, and G.-X. Li. 2007. Determination of phosphate in water by means of a new electrochemiluminescence technique based on the combination of liquid–liquid extraction with benzene-modified carbon paste electrode. *Talanta* 72:450–456.
2404. Gurentsova, O.I., G.V. Prokhorova, and E.A. Osipova. 1992. Modified carbon paste electrode for voltammetric determination of trace silicon. *J. Anal. Chem. (Russ.)*/transl. of *Zh. Anal. Khim*. 47:1671–1675.
2405. Kotrly, S. and L. Sucha. 1988. *Handbook of Chemical Equilibria in Analytical Chemistry. Tables and Diagrams*, Orig. Edn. (in Czech), Prague, Czech Republic: SNTL.
2406. Hoegfeldt, E. 1982. *Stability Constants of Metal-Ion Complexes*. Oxford, U.K.: Pergamon.
2407. Heyrovsky, J. and J. Kuta. 1962. *Principles of Polarography*, Orig. Edn. (in Czech), pp. 111–123. Prague, Czech Republic: NCSAV.
2408. Heyrovsky, J. 1922. Electrolysis with mercury drop cathode (in Czech). *Chem. Listy* XVI:258–264.
2409. Burestedt, E., J. Emneus, L. Gorton, G. Marko Varga, E. Dominguez, F. Ortega, A. Narvaez et al. 1995. Optimization and validation of an automated solid phase extraction technique coupled on-line to enzyme-based biosensor detection for the determination of phenolic compounds in surface water samples. *Chromatographia* 41:207–215.
2410. Rogers, K., J.Y. Becker, J. Wang, and F. Lu. 1999. Determination of phenols in environmentally relevant matrices with the use of liquid chromatography with an enzyme electrode detector. *Field Anal. Chem. Technol*. 3:161–169.
2411. Rosatto S.S., G. de Oliveira Neto, and L.T. Kubota. 2001. Effect of DNA on the peroxidase based biosensor for phenol determination in waste waters. *Electroanalysis* 13:445–450.
2412. Chen, Z.-D. and M. Hojo. 2007. Determination of phenol using a carbon paste electrode modified with overoxidized polypyrrole/polyvinylpyrrolidone films. *Jpn. Analyst*/transl. of *Bunseki Kagaku* 56:669–673.
2413. Mulazimoglu, I.E. and E. Yilmaz. 2010. Quantitative determination of phenol in natural decayed leaves using procaine modified carbon paste electrode surface by cyclic voltammetry. *Desalination* 256:64–69.
2414. Eskinja, I., Z. Grabaric, and B.S. Grabaric. 1995. Monitoring of pyrocatechol indoor air pollution. *Atmosph. Environ*. 29:1165–1170.
2415. Vieira da Cruz, I., O. Fatibello Filho, and L. Angnes. 1999. Zucchini crude extract-palladium-modified carbon paste electrode for the determination of hydroquinone in photographic developers. *Anal. Chim. Acta* 398:145–151.

2416. Wang, L.-H. 1995. Simultaneous determination of hydroquinone ethers in cosmetics after preconcentration at a carbon paste electrode. *Analyst* 120:2241–2244.
2417. Yan, Z.-H., J.-N. Li, J.-J. Fei, X. Mao, P. Gao, and Y.-L. Ding. 2005. Study on the adsorptive catalytic voltammetry of emodin at a carbon paste electrode. *Anal. Lett*. 38:1641–1650.
2418. Li, J.-N., P. Gao, X.-L. Li, Z.-H. Yan, and X. Mao. 2005. Study on the adsorptive catalytic voltammetry of aloe-emodin at a carbon paste electrode. *Sci. Chin. Ser. B* 48:442–448.
2419. Babula, P., D. Huska, P. Hanustiak, J. Baloun, S. Krizkova, V. Adam, J. Hubalek et al. 2006. Flow injection analysis coupled with carbon electrodes as the tool for analysis of naphthoquinones. *Sensors* 6:1466–1482.
2420. Stobiecka, A., H. Radecka, and J. Radecki. 2007. Novel voltammetric biosensor for determining acrylamide in food samples. *Biosens. Bioelectron*. 22:2165–2170.
2421. Wang, L.-H., S.-Y. Jiang, and Y.-Z. Lan. 2004. Voltammetric behavior of Coumarins and Psoralens at a carbon fiber ultramicroelectrode and their determination in citrus essential oils. *Bull. Electrochem*. 20:445–451.
2422. De la Fuente, E., G. Villagra, and S. Bollo. 2007. Electrochemical nucleic acid biosensors for the detection of interaction between peroxynitrite and DNA. *Electroanalysis* 19:1518–1523.
2423. Kim, O.-S., K. Maekawa, and K. Kusuda. 1995. Cyclic voltammetry of lipophilic compounds in oil: Direct determination of lipid peroxide with a carbon paste electrode. *J. Am. Oil Chem. Soc*. 72:299–303.
2424. Hernandez, L., P. Hernandez, and Z. Sosa Ferrera. 1988. Differential pulse voltammetric determination of aniline with carbon paste electrode modified by sepiolite. *Fresenius Z. Anal. Chem*. 329:756–759.
2425. Zoulis, N.E. and C.E. Efstathiou. 1988. Voltammetric determination of N-alkylated anilines by adsorption/extraction at a carbon-paste electrode. *Anal. Chim. Acta* 204:201–211.
2426. Vitova, V. 2001. The electrochemistry of amines at carbon paste electrodes. MSc dissertation (in Czech), University of Pardubice, Pardubice, Czech Republic.
2427. Wang, L.-H. and Z.-S. Chen. 1998. Determination of phenylendiamines in oxidative hair dyes by differential pulse voltammetry. *J. Chin. Chem. Soc. (Taipei)* 45:53–58.
2428. Dvorakova, J. 2004. Determination of 1-aminonaphtalene at carbon paste electrodes using voltammetry and HPLC-EC. MSc dissertation (in Czech), Charles University, Prague, Czech Republic.
2429. Zima, J., H. Dejmkova, and J. Barek. 2007. HPLC determination of naphthalene amino derivatives using electrochemical detection at carbon paste electrodes. *Electroanalysis* 19:185–190.
2430. Dejmkova, H. 2005. Determination of naphthalene amino derivatives using HPLC with electrochemical detection. MSc dissertation (in Czech), Charles University, Prague, Czech Republic.
2431. Armalis, S., N. Novikova, E. Kubiliene, J. Zima, and J. Barek. 2002. Voltammetric determination of 2-aminofluorene and 2,7-diaminofluorene using carbon paste electrode. *Anal. Lett*. 35:1551–1559.
2432. German, N., S. Armalis, J. Zima, and J. Barek. V. Voltammetric determination of fluoren-9-ol and 2-acetamidofluorene using carbon paste electrodes. *Collect. Czech. Chem. Commun*. 70:292–304.
2433. Zitova, A. 2004. Determination of aminoquinolines at carbon paste electrodes using voltammetry and HPLC-EC. MSc dissertation (in Czech), Charles University, Prague, Czech Republic.
2434. Stoica, A.I., J. Zima, and J. Barek. 2005. Differential pulse voltammetric determination of 8-aminoquinoline at carbon paste electrode. *Anal. Lett*. 38:149–156.
2435. Zima, J., A.I. Stoica, A. Zitova, and J. Barek. 2006. Voltammetric determination of selected aminoquinolines using a carbon paste electrode. *Electroanalysis* 18:158–162.
2436. Cizek, K., J. Barek, S. Kuecuekkolbasi, M. Ersoez, and J. Zima. 2007. Voltammetric determination of 3-aminofluoranthene at different types of carbon electrodes. *Chem. Anal. (Warsaw)* 52:1003–1013.
2437. Luo, L.-Q., X. Wang, Y.-P. Ding, Q.-X. Li, J.-B. Jia, and D.-M. Deng. 2010. Electrochemical determination of nitrobenzene using bismuth-film modified carbon paste electrode in the presence of cetyltrimethylammonium bromide. *Anal. Methods* 2:1095–1100.
2438. Hranicka, Z. 2010. Determination of selected nitrophenols using modified carbon paste electrodes. MSc dissertation (in Czech), Charles University, Prague, Czech Republic.
2439. Lei, Y., P. Mulchandani, W. Chen., J. Wang, and A. Mulchandani. 2004. *Arthrobacter* sp. JS443-based whole cell amperometric biosensor for p-nitrophenol. *Electroanalysis* 16:2030–2034.
2440. Mulchandani, P., C.M. Hangarter, Y. Lei, W. Chen, and A. Mulchandani. 2005. Amperometric microbial biosensor for p-nitrophenol using *Moraxella* sp.-modified carbon paste electrode. *Biosens. Bioelectron*. 21:523–527.
2441. Jeon, Y.-G., B.-W. Kim, H.-J. Kim, Y.-D. Cho, and C. Chung. 1996. Characteristics of a-cyclodextrin modified carbon paste electrode. *Anal. Sci. Technol. (Korea)* 9:235–243.
2442. Maistrenko, V.N., S.V. Sapelnikova, F.A. Amirkhanova, V.N. Gusakov, and F.Kh. Kudasheva. 1997. Voltammetry of organic nitro-compounds at modified carbon paste electrodes. *Baskhir. Khim. Zh. (Russ.)* 4:54–56.

2443. Dejmkova, H., J. Zima, and J. Barek. 2008. Application of carbon paste electrodes with admixed bismuth powder for the determination of 4-amino-3-nitrophenol. In *Sensing in Electroanalysis*, Vol. 3, Eds. K. Vytřas, K. Kalcher, and I. Švancara, pp. 83–89. Pardubice, Czech Republic: University Press Center.
2444. Maistrenko, V.N., S.V. Sapelnikova, F.Kh. Kudasheva, and F.A. Amirkhanova. 2000. Isomer-selective carbon paste electrodes for the determination of nitrophenol, nitroaniline, and nitrobenzoic acid by adsorptive stripping voltammetry. *J. Anal. Chem. (Russ.)*/transl. of *Zh. Anal. Khim*. 55:586–589.
2445. Sapelnikova, S.V., N.V. Kuzmina, V.N. Maystrenko, and F.Kh. Kudasheva. 2002. Preconcentration and voltammetric determination of some nitro-compounds on carbon paste electrodes. *J. Anal. Chem. (Russ.)*/ transl. of *Zh. Anal. Khim*. 57:443–447.
2446. Kacur, M. 2003. Voltammetric determination of fluorene nitro derivatives using carbon paste electrodes. MSc dissertation (in Czech), Charles University, Prague, Czech Republic.
2447. Nemcova, L. 2008. Determination of 5-amino-6-nitroquinoline at carbon paste electrode. MSc dissertation (in Czech), Charles University, Prague, Czech Republic.
2448. Wang, J. and L. Chen. 1995. Hydrazine detection using a tyrosinase-based inhibition biosensor. *Anal. Chem*. 67:3824–3827.
2449. Wang, J., M. Chicharro, G. Rivas, X.-H. Cai, N. Dontha, A.M. Percio Farias, and H. Shiraishi. 1996. A DNA-biosensor for the detection of hydrazines. *Anal. Chem*. 68:2251–2254.
2450. Chybova, O. and G. Beranova. 1991. Electrochemical reductions of some azo-compounds at a carbon paste electrode. Parts I + II. Two joint MSc dissertation (in Czech), University of Pardubice, Pardubice, Czech Republic.
2451. Vanickova, M., J. Labuda, M. Buckova, I. Surugiu, M. Mecklenburg, and B. Danielsson. 2000. Investigation of catechin and acridine derivatives using voltammetric and fluorimetric DNA-based sensors. *Collect. Czech. Chem. Commun*. 65:1055–1066.
2452. Yang, Y.-H., M.-H. Yang, H. Wang, L. Tang, G.-L. Shen, and R.-Q. Yu. 2004. Inhibition biosensor for determination of nicotine. *Anal. Chim. Acta* 509:151–157.
2453. Masini, J., S. Aragon, and F.W. Nyasulu. 1997. Electrochemistry of brucine. Part II: Brucine-based determination of nitrate. *Anal. Chem*. 69:1077–1081.
2454. Wan, C.-D., Y. Zhang, H.-G. Lin, K.-B. Wu, J.-W. Chen, and Y.-K. Zhou. 2009. Electrochemical determination of p-chlorophenol based on the surface enhancement effect of mesoporous TiO_2-modified electrode. *J. Electrochem. Soc*. 156:F151–F154.
2455. Diaz Goretti, D., C.M. Blanco Lopez, J.M. Lobo Castanon, A.J. Miranda Ordieres, and P. Tunon Blanco. 2009. Chloroperoxidase modified electrode for amperometric determination of 2,4,6-tri-chlorophenol. *Electroanalysis* 21:1348–1353.
2456. Fogg, A.G. and D. Bhanot. 1981. Further voltammetric studies of synthetic food coloring matters at glassy carbon and carbon paste electrodes using static and flowing systems. *Analyst (U.K.)* 106:883–889.
2457. Fanjul Bolado, P., M.B. Gonzales Garcia, and A. Costa Garcia. 2005. Voltammetric determination of Leucoindigo adsorbed on pretreated carbon paste electrodes: Its application in a flow system. *Electroanalysis* 17:148–154.
2458. Ma, M.-M. 2009. Voltammetric determination of dye-uptake for CI-Acid-Blue-120 dyeing silk. *Anal. Lett*. 42:3073–3084.
2459. Cheng, X.-H. and W. Guo. 2007. The oxidation kinetics of reduction intermediate product of Methyl red with hydrogen peroxide. *Dyes Pigm*. 72:372–377.
2460. Huang, W.-S., C.-H. Yang, W.-Y. Qu, and S.-H. Zhang. 2008. Voltammetric determination of Malachite green in fish samples based on enhancement effect of anionic surfactant. *Russ. J. Electrochem*. 44:946–951.
2461. Jezkova, J. 1994. The use of carbon paste electrodes in potentiometry. MSc dissertation (in Czech), University of Pardubice, Pardubice, Czech Republic.
2462. Ticha, I. 1996. Automated potentiometric titrations of surfactants. MSc dissertation (in Czech), University of Pardubice, Pardubice, Czech Republic.
2463. Xue, Y., X.-W. Zheng, and K.-G. Han. 2007. Electrogenerated chemiluminescence detecting sodium dodecyl benzene sulfonate based on its ion-associated complex effect. *Fenxi Huaxue* 35:370–374.
2464. Hattori, T. and K. Ooshima. 2002. Determination of anionic polyelectrolytes by adsorptive stripping voltammetry using ferrocenyltrimethylundecyl ammonium ion at a carbon paste electrode. *Bunseki Kagaku* 51:1171–1174.
2465. Medyantseva, E.P., N.A. Ulakhovich, G.K. Budnikov, and A.T. Groisberg. 1991. Voltammetric determination of the pesticides Carbathion and Amoben by using a carbon-paste electrode. *J. Anal. Chem (Russ)*/ transl. of *Zh. Anal. Khim*. 46:962–966.
2466. Hernandez, L., P. Hernandez, and S. Garcia. 1990 (June 4–8). Determination of Benomyl fungicide using a carbon paste electrode containing silicone oil OV-17. In *Electrospainanalysis '90 in Asturias, An International Conference on Electroanalytical Chemistry,* Book of Abstracts, C-PP-07, Gijon.

2467. Simoes, F.R., L.H.C. Mattoso, and C.M.P. Vaz. 2006. Conducting polymers as sensor materials for the electrochemical detection of pesticides. *Sens. Lett*. 4:319–324.
2468. Medyantseva, E.P., N.A. Ulakhovich, and G.K. Budnikov. 1994. Application of modified carbon-paste electrodes for determination of Kaptax and BM-Ts thiazole. *Zavod. Lab. (Russ.)* 60:5–7.
2469. Beklova, M., S. Krizkova, V. Supalkova, R. Mikelova, V. Adam, J. Pikula, and R. Kizek. 2007. Determination of bromadiolone in pheasants and foxes by using differential pulse voltammetry. *Int. J. Environment. Anal. Chem*. 87:459–469.
2470. Ulakhovich, N.A., E.V. Priimak, E.P. Medyantseva, L.A. Anisimova, and M.A. Al Gahri 1998. Voltammetric determination of phosalone and carbophos pesticides using a modified carbon-paste electrode. *J. Anal. Chem. (Russ)*/transl. of *Zh. Anal. Khim*. 53:147–150.
2471. Sirisha, K., S. Mallipattu, and S.R.J. Reddy. 2007. Differential pulse adsorptive stripping voltammetric determination of chlorpyrifos at a sepiolite modified carbon paste electrode. *Anal. Lett*. 40:1939–1950.
2472. Papp, Zs., V. Guzsvany, I. Švancara, K. Vytřas, F. Gaal, L. Bjelica, and B. Abramovic. 2009. New applications of tricresyl phosphate-based carbon paste electrodes in voltammetric analysis. In *Sensing in Electroanalysis*, Vol. 4, Eds. K. Vytřas, K. Kalcher, and I. Švancara, pp. 47–58. Pardubice, Czech Republic: University Press Center.
2473. Simoes, F.R., L.H.C. Mattoso, and C.M.P. Vaz. 2004. Modified carbon paste poly-aniline electrodes for the electrochemical determination of the herbicide dichloro-phenoxyacetic acid (2,4-D). *Sens. Lett*. 2:221–225.
2474. Walcarius, A. and L. Lamberts. 1996. Square wave voltammetric determination of Paraquat and Diquat in aqueous solution. *J. Electroanal. Chem*. 406:59–68.
2475. El Bakouri, H., J.M. Palacios Santander, L. Cubillana Aguilera, A. Ouassini, I. Naranjo Rodriguez, and J. de Cisneros. 2005. Electrochemical analysis of Endosulfan using a C18-modified carbon-paste electrode. *Chemosphere* 60:1565–1571.
2476. Lei, Y., P. Mulchandani, W. Chen, and A. Mulchandani. 2007. Biosensor for direct determination of Fenitrothion and EPN using recombinant *Pseudomonas putida* JS444 with surface-expressed organophosphorous hydrolase. 2. Modified carbon paste electrode. *Appl. Biochem. Biotechnol*. 136:243–250.
2477. Papp, Zs., I. Švancara, V. Guzsvany, K. Vytřas, and F. Gaal. 2009. Voltammetric determination of Imidacloprid insecticide in selected samples using carbon paste electrodes. *Microchim. Acta* 166:169–175.
2478. Priyantha, N., A. Navaratne, S. Weliwegamage, and C.B. Ekanayake. 2007. Determination of MCPA through electrocatalysis by manganese species. *Int. J. Electrochem. Sci*. 2:433–443.
2479. Arribas, A.S., E. Bermejo, M. Chicharro, and A. Zapardiel. 2006. Voltammetric detection of the herbicide Metamitron at a bismuth film electrode in nondeaerated solution. *Electroanalysis* 18:2331–2336.
2480. Noguer, T., A.M. Balasoiu, A. Avramescu, and J.L. Marty. 2001. Development of a disposable biosensor for the detection of metamsodium and its metabolite MITC. *Anal. Lett*. 34:513–528.
2481. Mulchandani, P., W. Chen, and A. Mulchandani. 2001. Flow injection amperometric enzyme biosensor for direct determination of organophosphate nerve agents. *Environ. Sci. Technol*. 35:2562–2565.
2482. Mulchandani, P., W. Chen, A. Mulchandani, J. Wang, and L. Chen. 2001. Amperometric microbial biosensor for direct determination of organophosphate pesticides using recombinant microorganism with surface expressed organophosphorus hydrolase. *Biosens. Bioelectron*. 16:433–437.
2483. Lei, Y., P. Mulchandani, W. Chen, J. Wang, and A. Mulchandani. 2004. Whole cell-enzyme hybrid amperometric biosensor for determination of organo-phosphorous nerve agents with p-nitrophenyl substituent. *Biotechnol. Bioengineer*. 85:706–713.
2484. Lei, Y., P. Mulchandani, J. Wang, W. Chen, and A. Mulchandani. 2005. Highly sensitive and selective amperometric microbial biosensor for direct determination of p-nitrophenyl-substituted organophosphate nerve agents. *Environ. Sci. Technol*. 39:8853–8857.
2485. Liu, G.-D. and Y.-H. Lin. 2005. Electrochemical stripping analysis of organo-phosphate pesticides and nerve agents. *Electrochem. Commun*. 7:339–343.
2486. Alvarez, E., M. Teresa Sevilla, J. M. Pinilla, and L. Hernandez: Cathodic stripping voltammetry of Paraquat on a carbon paste electrode modified with amberlite XAD-2 resin. *Anal. Chim. Acta* 260 (1992):19–23.
2487. El Mhammedi, M.A., M. Bakasse, R. Bachirat, and A. Chtaini. 2008. Square wave voltammetry for analytical determination of Paraquat at carbon paste electrode modified with fluorapatite. *Food Chem*. 110:1001–1006.
2488. Alizadeh, T. 2009. High selective Parathion voltammetric sensor development by using an acrylic based molecularly imprinted polymer-modified carbon paste electrode. *Electroanalysis* 12:1490–1498.
2489. Papp, Zs.J., V.J. Guzsvany, S. Kubiak, A. Bobrowski, and L.J. Bjelica. 2010. Voltammetric determination of the neonicotinoid insecticide thiamethoxam using a tricresyl phosphate-based carbon paste electrode. *J. Serb. Chem. Soc*. 75:681–687.

2490. Noguer, T., A. Gradinaru, A. Ciucu, and J.L. Marty. 1999. A new disposable biosensor for the accurate and sensitive detection of ethylenebis(dithiocarbamate) fungicides. *Anal. Lett*. 32:1723–1738.
2491. Vytřas, K. Potentiometric titrations based on ion-pair formation. 1985. *Ion-Sel. Electrode Rev*. 7:77–164.
2492. Cullum, D.C. 1994. *Introduction to Surfactant Analysis*. London, U.K.: Chapman & Hall.
2493. Papp, Zs., V. Guzsvany, I. Švancara, and K. Vytřas. 2011. Carbon paste electrodes for the analysis of some agricultural pollutants and trace metals. *J. Agric. Sci. Technol*. 5:85–92.
2494. Acuna, J.A., C. de la Fuente, M.D. Vazquez, M.L. Tascon, M.I. Gomez del Rio, and P. Sanchez Batanero. 1998. Sensitive determination method of Aceclofenac by using voltammetric techniques on carbon paste electrode in aqueous-organic media. *Quim. Anal. (Barcelona)* 17:105–111.
2495. Miner, D.J., J.C. Price, R.M. Riggin, and P.T. Kissinger. 1981. Voltammetry of acetaminophen and its metabolites. *Anal. Chem*. 53:2258–2263.
2496. Wang, C.-Y., X.-Y. Hu, Z.-Z. Leng, G.-J. Yang, and G.-D. Jin. 2001. Differential pulse voltammetry for the determination of Paracetamol at a pumice mixed carbon paste electrode. *Anal. Lett*. 34:2747–2759.
2497. Yu, D.-H., O. Renedo, B. Blankert, V. Sima, R. Sandulescu, J. Arcos, and J.-M. Kauffmann. 2006. A peroxidase-based biosensor supported by nanoporous magnetic silica microparticles for Acetaminophen biotransformation and inhibition studies. *Electroanalysis* 18:1637–1642.
2498. Teixeira, M.F.S., L.H. Marcolino Junior, O. Fatibello Filho, F.C. Moraes, and R.S. Nunes. 2009. Determination of two analgesics (dipyrone and acetaminophen) in pharmaceutical preparations by cyclic voltammetry at a copper(II)-hexacyano-ferrate(III) modified carbon paste electrode. *Curr. Anal. Chem*. 5:303–310.
2499. Baldwin, R.P., D. Packett, and T.M. Woodcock. 1981. Electrochemical behavior of Adriamycin at carbon paste electrodes. *Anal. Chem*. 53:540–542.
2500. Chaney, E.N., Jr., and R.P. Baldwin. 1982. Electrochemical determination of Adriamycin compounds in urine by preconcentration at carbon paste electrodes. *Anal. Chem*. 54:2556–2560.
2501. Zhang, S.-H., K.-B. Wu, and S.-S. Hu. 2002. Carbon paste electrode based on surface activation for trace Adriamycin determination by a preconcentration and voltammetric method. *Anal. Sci. (Jpn.)* 18:1089–1092.
2502. Jalali, F. and R. Maghooli. 2010. Potentiometric determination of trace amounts of amantadine using a modified CPE. *Anal. Sci. (Jpn.)* 25:1227–1230.
2503. Jin, G.-D., X.-Y.Hu, Z.-Z. Leng, and C. Yao. 2002. Anodic voltammetric behavior of ambroxol at carbon paste electrode. *Fenxi Huaxue* 30:214–217.
2504. Kauffmann, J.-M., G.J. Patriarche, M. Chateau Gosselin, and B.L. Gallo Hermosa. 1986. Electrochemical oxidation of Khelline and Amikhelline. A cyclic voltammetry study. *Talanta* 33:733–738.
2505. Hermosa, B.L. Gallo, J.-M. Kauffmann, G.J. Patriarche, and G.G. Guilbault. 1986. Electrochemical behaviour of Benzofuran derivatives of pharmaceutical interest at solid electrodes. *Anal. Lett*. 19:2022–2021.
2506. Liu, N., W. Gao, and J.-F. Song. 2006. Catalytic adsorptive stripping voltammetry at a carbon paste electrode for the determination of Amiodarone. *Chin. J. Chem*. 24:1657–1661.
2507. Wang, L.-H. and C.-C. Wang. 2006. Electrochemical oxidation of Aminophylline at platinum film electrodes and its determination in cosmetic and pharmaceutical products. *Microchim. Acta* 153:95–100.
2508. Biryol, I., B. Uslu, and Z. Kucukyavuz. 1996. Voltammetric determination of Imipramine hydrochloride and amitriptyline hydrochloride using a polymer-modified carbon paste electrode. *J. Pharm. Biomed. Anal*. 15:371–381.
2509. Kazemipour, M., M. Ansari, A. Mohammadi, H. Beitollahi, and R. Ahmadi. 2009. Use of adsorptive square-wave anodic stripping voltammetry at carbon paste electrode for the determination of amlodipine besylate in pharmaceutical preparations. *J. Anal. Chem. (Russ.)* 64:65–70.
2510. Bergamini, M.F., M.F.S. Teixeira, E.R. Dockal, N. Bocchi, and E.T.G. Cavalheiro. 2006. Evaluation of different voltammetric techniques in the determination of Amoxicillin using a carbon paste electrode modified with [N,N′-ethylene-bis-(salicylidene-aminato)] oxovanadium(iv). *J. Electrochem. Soc*. 153:E94–E98.
2511. Cheng, H.-Y., E. Strope, and R.N. Adams. 1979. Electrochemical studies of the oxidation pathways of Apomorphine. *Anal. Chem*. 51:2243–2246.
2512. Supalkova, V., J. Petrek, L. Havel, S. Krizkova, J. Petrlova, V. Adam, D. Potesil et al. 2006. Electrochemical sensors for detection of acetylsalicylic acid (Aspirin). *Sensors* 6:1483–1497.
2513. Patil, R.H., R.N. Hegde, and S.T. Nandibewoor. 2009. Voltammetric oxidation and determination of Atenolol at a carbon paste electrode. *Ind. Eng. Chem. Res*. 48:10206–10210.
2514. Farghaly, O.A. and N.A.L. Mohamed. 2004. Voltammetric determination of Azithromycin at the carbon paste electrode. *Talanta* 62:531–538.

2515. El Maali, N.A. 1998. Electrochemical behavior of the monobactam antibiotic Aztreonam at different electrodes in biological fluids. *Bioelectrochem. Bioenerg*. 45:281–286.
2516. Wang, C.-Y., X.-Y. Hu, Q. Chen, and G. Rong. 2005. Differential pulse voltammetry for determination of Benorilate in pharmaceutical formulations at carbon paste electrode. *Anal. Lett*. 38:893–905.
2517. Kocourkova, M. 2008. Voltammetric determination of Benserazide drug at carbon paste electrodes (in Czech). MSc dissertation, Charles University, Prague, Czech Republic.
2518. Legorburu, M.J., R.M. Alonso, and R.M. Jimenez. 1993. Oxidative behavior of the sulfonamidic diuretic Bumetanide at carbon paste electrode. *Electroanalysis* 5:333–338.
2519. Garcia-Fernandez, M.A., M.T. Fernandez Abedul, and A. Costa Garcia. 1999. Voltammetric study and determination of buprenorphine in pharmaceuticals. *J. Pharm. Biomed. Anal*. 21:809–815.
2520. Garcia-Fernandez, M.A., M.T. Fernandez Abedul, and A. Costa Garcia. 2000. Determination of Buprenorphine in pharmaceuticals and human urine by adsorptive stripping voltammetry in batch and flow systems. *Electroanalysis* 12:483–489.
2521. Stefan-van Staden, R.I., R. Girmai Bokretsion, J.F. van Staden, and H.Y. Aboul Enein. 2009. Enantioanalysis of Butaclamol using enantioselective potentiometric electrodes. *Anal. Lett*. 42:1111–1118.
2522. Mebsout, F., J.-M. Kauffmann, and G.J. Patriarche. 1987. Redox behaviour of antitumor platinum(II) compound (Carboplatin) at solid electrodes. *J. Pharm. Biomed. Anal*. 5:223–231.
2523. Mebsout, F., J.-C. Vire, G.J. Patriarche, and G.D. Christian. 1988. Electrochemical study of carminomycin at solid electrodes. *Talanta* 35:993–996.
2524. El Maali, N.A., A.M.M. Ali, and M.A. Ghandour. 1993. Electrochemical reduction and oxidation of two cephalosporin antibiotics: Ceftriaxone (Rocephin) and Cefoperazone (Cefobid). *Electroanalysis* 5:599–604.
2525. El Maali, N.A., M.A. Ghandour, and J.-M. Kauffmann. 1995. Cephalosporin antibiotics at bare and modified carbon paste electrodes in both aqueous and biological media. *Bioelectrochem. Bioenerg*. 38:91–97.
2526. Yilmaz, N. and I. Biryol. 1998. Anodic voltammetry of Cefotaxime. *J. Pharm. Biomed. Anal*. 17:1335–1344.
2527. Rizk Nashwa, M.H., S.S. Abbas, F.A. El Sayed, and A. Abo Bakr. 2009. Novel ionophore for the potentiometric determination of cetirizine hydrochloride in pharmaceutical formulations and human urine. *Int. J. Electrochem. Sci*. 4:396–406.
2528. Torres, R.F., M.C. Mochon, C.J. Sanchez Jimenez, M.A.B. Lopez, and A.G. Perez. 2001. Electrochemical oxidation of Cisatracurium on carbon paste electrode and its analytical applications. *Talanta* 53:1179–1185.
2529. Mebsout, F., J-M. Kauffmann, and G.J. Patriarche. 1988. Redox behaviour of cisplatin at solid electrodes: Carbon paste, platinum. *J. Pharm. Biomed. Anal*. 6:441–448.
2530. Kotzian, P., I.Ch. Gherghi, S.T. Girousi, and K. Vytřas. 2005. Optimization of DNA accumulation onto carbon paste electrodes when applied in a study of its interaction with Cisplatin, In *Sensing in Electroanalysis*, Eds. K. Vytřas and K. Kalcher, pp. 109–118. Pardubice, Czech Republic: University of Pardubice.
2531. O'Dea, P., A. Costa Garcia, A.J. Miranda Ordierez, P. Tunon Blanco, and M.R. Smyth. 1991. Comparison of adsorptive stripping voltammetry at Hg and C paste electrodes for the determination of Ciprofloxacin in urine. *Electroanalysis* 3:337–342.
2532. Zhang, S.-H. and S. Wei. 2007. Electrochemical determination of Ciprofloxacin based on the enhancement effect of sodium dodecyl benzene sulfonate. *Bull. Korean Chem. Soc*. 28:543–546.
2533. Stefan-van Staden, RI., L. Holo, B. Moeketsi, J.F. van Staden, and H.Y. Aboul-Enein. 2009. Enantioselective determination of R-Clenbuterol using an enantioselective potentiometric membrane electrode based on b-cyclodextrin derivative. *Instrum. Sci. Technol*. 37:189–196.
2534. Pudilova, H. 2006. Determination of chloramphenicol at carbon paste electrodes (in Czech). MSc dissertation, Charles University, Prague, Czech Republic.
2535. Radi, A. 2005. Accumulation and trace measurement of chloroquine drug at DNA-modified carbon paste electrode. *Talanta* 65:271–275.
2536. Khodari, M. 1999. Electrometric studies on the ternary complexes of Me(II) with Chlorpromazine and some amino acids. *Microchim. Acta* 131:231–235.
2537. Peng, T.-Z., Z.-P. Yang, and R.-S. Lu. 1990 Stripping voltammetric determination of Perphenazine and some antipsychotic drugs at carbon paste electrodes. *Yaoxue Xuebao* 25:277–283.
2538. Angelikaki, A.G. and S.T. Girousi. 2008. Sensitive detection of tetracycline, oxytetracycline, and chlortetracycline in the presence of copper(II) ions using a DNA-modified carbon paste electrode. *Chem. Anal. (Warsaw)* 53:445–454.
2539. Ambrosi, A., R. Antiochia, L. Campanella, R. Dragone, and I. Lavagnini. 2005. Electrochemical determination of pharmaceuticals in spiked water samples. *J. Hazard. Mater*. 122:219–225.

2540. Yu, D.-H., B. Blankert, and J.-M. Kauffmann. 2007. Development of amperometric horse-radish peroxidase based biosensors for clozapine and for the screening of thiol compounds. *Biosens. Bioelectron*. 22:2707–2711.
2541. Farhadi, K., R.H. Yamchi, and R. Sabzi. 2007. Electrochemical study of interaction between Clozapine and DNA and its analytical application. *Anal. Lett*. 40:1750–1762.
2542. Fernandez Abedul, M.T., J.R. Barreira Rodriguez, A. Costa Garcia, and P. Tunon Blanco. 1991. Voltammetric determination of cocaine in confiscated samples. *Electroanalysis* 3:409–412.
2543. Abedul, M.T.F. and A.C. Garcia. 1996. Flow injection analysis with amperometric detection of cocaine in confiscated samples. *Anal. Chim. Acta* 328:67–71.
2544. Yu, S.-H., X.-Y. Hu, and Z.-Z. Leng. 1997. Measurement of colchicine by anodic voltammetry with carbon paste electrode. *Yaoxue Xuebao* 32:210–312.
2545. Stanic, Z., A. Voulgaropoulos, and S. Girousi. 2008. Electroanalytical study of the anti-oxidant and anti-tumor agent curcumin. *Electroanalysis* 20:1263–1266.
2546. Palaska, P., E. Aritzoglou, and S. Girousi. 2007. Sensitive detection of Cyclophosphamide using DNA-modified carbon paste, pencil graphite, and hanging mercury drop electrodes. *Talanta* 72:1199–1206.
2547. Rodriguez, R.J.B., A.C. Garcia, A.J.M. Ordierez, and P.T. Blanco. 1989. Electrochemical oxidation of dacarbazine and its major metabolite (AIC) on carbon electrodes. *Electroanalysis* 1:529–534.
2548. Wang, J., M-S. Lin, and V. Villa. 1987. Adsorptive stripping voltammetric determination of low levels of daunorubicin. *Analyst (U.K.)* 112:1303–1307.
2549. Wang, J., M. Ozsos, X.-H. Cai, G. Rivas, H. Shiraishi, D.H. Grant, M. Chicharro, J. Fernandes, and E. Palecek. 1998. Interactions of antitumor drug daunomycin with DNA in solution and at the surface. *Bioelectrochem. Bioenerg*. 45:33–40.
2550. Balaji, K., G.V.R. Reddy, T.M. Reddy, and S.J. Reddy. 2008. Determination of Prednisolone, Dexamethasone, and Hydrocortisone in pharmaceutical formulations and biological fluid samples by voltammetric techniques using b-cyclodextrin modified carbon paste electrode. *Afr. J. Pharm. Pharmacol*. 2:157–166.
2551. Khaled, E., H.N.A. Hassan, M. Mohamed, and A.A. Gehad Gseleim. 2010. Carbon paste and PVC electrodes for the flow injection potentiometric determination of dextromethorphan. *Talanta* 81:510–515.
2552. Li, Y.-F., W.-D. Li, and Z.-Q. Zhang. 1998. Electroanalytical characteristics of diazepam on carbon paste electrode. *Hunan Daxue Xuebao, Ziran Kexueban* 25:25–27,42.
2553. Vanickova, M., M. Buckova, and J. Labuda. 2000. Voltammetric determination of azepine and phenothiazine drugs with DNA biosensors. *Chem. Anal. (Warsaw)* 45:125–133.
2554. Oelschaeger, H., D. Rothley, and U. Dunzendorfer. 1986. Direct determination of diethylstilbestrol and its monoconjugates in plasma. *Arzneimittel Forschung* 36:759–763.
2555. Zhang, S.-H., K.-B. Wu, and S.-S. Hu. 2002. Voltammetric determination of diethylstilbestrol at a carbon paste electrode using cetylpyridine bromide as medium. *Talanta* 58:747–754.
2556. Teixeira, M.F.S., L.H. Marcolino, Jr., O. Fatibello Filho, E.R. Dockal, and E.T.G. Cavalheiro. 2004. Voltammetric determination of dipyrone using a N,N′-ethylene-bis-(salicylidene-aminato) oxovanadium(iv) modified carbon-paste electrode. *J. Braz. Chem. Soc*. 15:803–808.
2557. Liu, L., J.-F. Song, Y. Peng-Fei, and B. Cui. 2008. Enhancement action of lanthanum hydroxide nanowire towards voltammetric response of calcium dobesilate and its application. *Chin. J. Chem*. 26:220–224.
2558. Yang, G.-J., L.-T. Jin, and Z.-Z. Leng. 1998. Adsorptive voltammetry behavior of trace Dobutamine on carbon paste electrode and its determination. *Gaodeng Xuexiao Huaxue Xuebao* 19:1574–1577.
2559. Arranz, A., S.F. de Betono, J.M. Moreda, A. Cid, and J.F. Arranz. 1997. Cathodic stripping voltammetric determination of doxazosin in urine and pharmaceutical tablets using carbon paste electrodes. *Analyst (U.K.)* 122:849–854.
2560. Chaney, E.N. Jr. and R.P. Baldwin. 1985. Voltammetric determination of doxorubicin in urine by adsorptive preconcentration and flow injection analysis. *Anal. Chim. Acta* 176:105–112.
2561. Stefan, R.I., H.Y. Aboul Enein, and G.L. Radu. 1998. Biosensors for the enantioselective analysis of S-Enalapril and S-Ramipril. *Prep. Biochem. Biotechnol*. 28:305–312.
2562. Enein, H.Y. Aboul, R.I. Stefan, and J.F. van Staden. 1999. Potentiometric enantio-selective membrane electrode for S-Enalapril assay. *Analusis (Bruxelles)* 27:53–56.
2563. Stefan, R.I., J.F. van Staden, C. Bala, and H.Y. Aboul Enein. 2004. On-line assay of the S-enantiomers of enalapril, ramipril, and pentopril using a sequential injection analysis/amperometric biosensor system. *J. Pharm. Biomed. Anal*. 36:889–892.
2564. Connor, M.P., J. Wang, W. Kubiak, and M.R. Smyth. 1990. Tissue- and microbe-based electrochemical detectors for liquid chromatography. *Anal. Chim. Acta* 229:139–143.

2565. Erdem, A. and M. Ozsoz. 2001. Interaction of the anticancer drug epirubicin with DNA. *Anal. Chim. Acta* 437:107–114.
2566. Radi, A.E., N. Abd Elghany, and T. Wahdan. 2007. Electrochemical study of the antineoplastic agent etoposide at carbon paste electrode and its determination in spiked human serum by differential pulse voltammetry. *Chem. Pharm. Bull*. 55:1379–1382.
2567. Abbas, M.N. and G.A.E. Mostafa. 2003. Gallamine-tetraphenylborate modified carbon paste electrode for the potentiometric determination of gallamine triethiodide (Flaxedil). *J. Pharm. Biomed. Anal*. 31:819–826.
2568. Stefan-van Staden, R.I., R.G. Bokretsion, K.I. Ozoemena, J.F. van Staden, and H.Y. Aboul-Enein. 2006. Enantioselective, potentiometric membrane electrodes based on different cyclodextrins as chiral selectors for the assay of S-Flurbiprofen. *Electroanalysis* 18:1718–1721.
2569. Stefan-van Staden, R.I., R.G. Bokretsion, and K.I. Ozoemena. 2006. Utilization of maltodextrin-based enantioselective, potentiometric membrane electrodes for the enantioselective assay of S-Flurbiprofen. *Anal. Lett*. 39:1065–1073.
2570. Stefan-van Staden, R.I., J.F. van Staden, and H.Y. Aboul Enein. 2009. Macrocyclic antibiotics as chiral selectors to design enantioselective, potentiometric membrane electrodes for the determination of S-Flurbiprofen. *Anal. Bioanal. Chem*. 394:821–826.
2571. Radi, A. 2004. Voltammetric study of Glibenclamide at carbon paste and sephadex-modified carbon paste electrodes. *Anal. Bioanal. Chem*. 378:822–826.
2572. Radi, A, M.A. El Ries, and G.E. Bekhiet. 1999. Electrochemical oxidation of the hypoglycemic drug gliclazide. *Anal. Lett*. 32:1603–1612.
2573. Rodriguez, R.J.B., V. Cabal Diaz, A.C. Garcia, and P.T. Blanco. 1900. Voltammetric assay of heroin in illicit dosage forms. *Analyst (U.K.)* 115:209–212.
2574. Santamaria, M.d.C., M.D. Vazquez Barbado, M.L. Tascon Garcia, J.A. Acuna, and P.S. Batanero. 1995. Determination of indomethacin by using voltammetric techniques on carbon paste electrode. *Quim. Anal. (Barcelona)* 14:117–120.
2575. Radi, A. 2001. Stripping voltammetric determination of Indapamide in serum at castor oil-based carbon paste electrodes. *J. Pharm. Biomed. Anal*. 24:413–419.
2576. Liu, L., J.-F. Song, P.-F. Yu, and B. Cui. 2006. A novel electrochemical sensing system for inosine and its application for Inosine determination in pharmaceuticals and human serum. *Electrochem. Commun*. 8:1521–1526.
2577. Mebsout, F., J.-M. Kauffmann, G.J. Patriarche, J. Vereecken, and G.D. Christian. 1989. Electrochemical behavior of iproplatin at the carbon paste electrode. *Electroanalysis* 1:161–165.
2578. Hammam, E., A.M. Beltagi, and M.M. Ghoneim. 2004. Voltammetric assay of Rifampicin and Isoniazid drugs in pharmaceutical formulations and human serum at a carbon paste electrode. *Microchem. J*. 77:53–62.
2579. Wahdan, T. 2005. Voltammetric method for the simultaneous determination of Rifampicin and Isoniazid in pharmaceutical formulations. *Chem. Anal. (Warsaw)* 50:457–464.
2580. Radi, A. 1999.Voltammetric study of khellin at a DNA-coated carbon paste electrode. *Anal. Chim. Acta* 386:63–68.
2581. Radi, A. 2003. Anodic voltammetric assay of lansoprazole and omeprazole on a carbon paste electrode. *J. Pharm. Biomed. Anal*. 31:1007–1012.
2582. Radi, A., M.A. El Ries, and S. Kandil. 2003. Electrochemical study of the interaction of levofloxacin with DNA. *Anal. Chim. Acta* 495:61–67.
2583. Arenaza, M.J., B. Gallo, L.A. Berrueta, and F. Vicente. 1995. Electrooxidation and determination of the 1,4-benzodiazepine loprazolam at the carbon-paste electrode. *Anal. Chim. Acta* 305:91–95.
2584. Mebsout, F., J.-M. Kauffmann, and G.J. Patriarche. 1987. Electrochemical behavior of Marcellomycine on solid electrodes. *Analusis (Bruxelles)* 15:243–247.
2585. Liu, L. and J.-F. Song. 2006. voltammetric determination of mefenamic acid at lanthanum hydroxide nanowires modified carbon paste electrodes. *Anal. Biochem*. 354:22–27.
2586. Radi, A., M.A. El Ries, F. El Anwar, and Z. El Sherif. 2001. Electrochemical oxidation of meloxicam and its determination in tablet dosage form. *Anal. Lett*. 34:739–748.
2587. Tian, X.-J. and J.-F. Song. 2007. Catalytic action of copper(II) ion on electrochemical oxidation of metformine and its voltammetric determination in pharmaceuticals. *J. Pharm. Biomed. Anal*. 44:1192–1196.
2588. Khaled, E., H.N.A. Hassan, M.S. Kamel, and B.N. Barsoum. 2007. Novel etformin carbon paste and PVC electrodes. *Curr. Pharm. Anal*. 3:262–267.
2589. Ramirez Barreira, R.J., A. Costa Garcia, and P. Tunon Blanco. 1989. Electrooxidation of Methadone on carbon paste electrodes. *Electrochim. Acta* 34:957–961.

2590. Pekarova, Z. 2004. Voltammetric determination of methotrexate using a carbon paste electrode (in Czech). MSc dissertation, Charles University, Prague, Czech Republic.
2591. Zima, J., J. Pekarova, J. Barek, and I. Švancara. 2007. Possibilities and limitations of carbon paste electrodes in electroanalysis of pharmaceuticals: Voltammetric determination of Methotrexate. In *Sensing in Electroanalysis*, Vol. 2, Eds. K. Vytřas and K. Kalcher, pp. 141–158. Pardubice, Czech Republic: University of Pardubice.
2592. Abd El Hady, D., M.M. Selim, R. Gotti, and N.A. El Maali. 2006. Novel voltammetric method for enantioseparation of racemic methotrexate: Determination of its enantiomeric purity in some pharmaceuticals. *Sens. Actuators B* 113:978–988.
2593. Farghaly, O.A., M.A. Taher, A.H. Naggar, and A.Y. El Sayed. 2005. Square-wave anodic stripping voltammetric determination of metoclopramide in tablet and urine at carbon paste electrode. *J. Pharm. Biomed. Anal*. 38:14–20.
2594. Joseph, R. and K.G. Kumar. 2009. Electrochemical reduction and voltammetric determination of Metronidazole Benzoate at modified carbon paste electrode. *Anal. Lett*. 42:2309–2321.
2595. Gu, K., J.-J. Zhu, Y.-L. Zhu., J.-Z. Xu, and H.-Y. Chen. 2000. Voltammetric determination of mifepristone at a DNA-modified carbon paste electrode. *Fresenius J. Anal. Chem*. 368:832–835.
2596. Ozkan, D., H. Karadeniz, A. Erdem, M. Mascini, and M. Ozsoz. 2004. Electrochemical genosensor for Mitomycin-C/DNA interaction based on guanine signal. *J. Pharm. Biomed. Anal*. 35:905–912.
2597. Cerna, P. 2005. Voltammetric determination of mitoxantron on a carbon paste electrode (in Czech). MSc dissertation, Charles University, Prague, Czech Republic.
2598. Sandulescu, R., I. Marian, S. Mirel, R. Oprean, and L. Roman. 1998. Voltammetric study of 2-mercapto-5-phenylamino-1,3,4-thiadiazole using carbon paste electrodes. *J. Pharm. Biomed. Anal*. 18:75–81.
2599. Fernandez-Abedul, M.T., M.S. Velazquez Rodriguez, J.R.B. Rodriguez, and A.C. Garcia. 1997. Voltammetric determination of naltrexone in pharmaceuticals. *Anal. Lett*. 30:1491–1502.
2600. Fernandez-Abedul, M.T. and A.C. Garcia. 1997. Flow injection analysis with amperometric detection of Naltrexone in pharmaceuticals. *J. Pharm. Biomed. Anal*. 16:15–19.
2601. Aki, C., S. Yilmaz, Y. Dilgin, S. Yagmur, and E. Suren. 2005. Electrochemical study of Natamycin. Analytical application to pharmaceutical dosage forms by differential pulse voltammetry. *Pharmazie* 60:747–750.
2602. Wang, J., B.K. Desmukh, and M. Bonakdar. 1985. Electrochemical behavior and determination of nicardipine. *Anal. Lett*. 18:1087–1090.
2603. Radi, A. 1999. Preconcentration and voltammetric study of nicergoline at a carbon paste electrode. *Microchim. Acta* 132:49–53.
2604. Buchberger, W., G. Niessner, and R. Bakry. 1998. Determination of nifuroxazide with polarography and adsorptive stripping voltammetry at mercury and carbon paste electrodes. *Fresenius J. Anal. Chem*. 362:205–208.
2605. Radi, A. 1999. Voltammetric study of nifuroxazide at unmodified and sephadex-modified carbon paste electrodes. *Fresenius J. Anal. Chem*. 364:590–594.
2606. Radi, A. 2003. Determination of pantoprazole by adsorptive stripping voltammetry at carbon paste electrode. *Farmaco (Brazil)* 58:535–539.
2607. Stefan, R.I., J.F. van Staden, and H.Y. Aboul Enein. 1999. S-Perindopril assay using a potentiometric enantioselective membrane electrode. *Chirality* 11:631–634.
2608. Ozoemena, K.I., R.I. Stefan, J.F. van Staden, and H.Y. Aboul Enein. 2005. Enantioanalysis of S-Perindopril using different cyclodextrin-based potentiometric sensors. *Sens. Actuators B* 105:425–429.
2609. Raoof, J.B., R. Ojani, and F. Chekin. 2009. Voltammetric sensor for D-Penicillamine determination based on its electrocatalytic oxidation at the surface of ferrocenes modified carbon paste electrodes. *J. Chem. Sci*. 121:1083–1091.
2610. Raoof, J.B., R. Ojani, M. Majidian, and F. Chekin. 2009. Homogeneous electrocatalytic oxidation of D-Penicillamine with ferrocyanide at a carbon paste electrode: Application to voltammetric determination. *J. Appl. Electrochem*. 39:799–805.
2611. Radi, A., M.A. El Ries, and S. Kandil. 2005. Spectroscopic and voltammetric studies of Pefloxacin bound to calf thymus double stranded DNA. *Anal. Bioanal. Chem*. 381:451–455.
2612. Kubota, L.T. and L. Gorton. 1999. Electrochemical study of flavins, phenazines, phenoxazines, and phenothiazines immobilized on zirconium phosphate. *Electroanalysis* 1:719–728.
2613. Citak, M., S. Yilmaz, Y. Dilgin, G. Turker, S. Yagmur, H. Erdugan, and N. Erdugan. 2007. Osteryoung square wave voltammetric determination of phenazopyridine hydrochloride in human urine and tablet dosage forms based on electrochemical reduction at carbon paste electrode. *Curr. Pharm. Anal*. 3:141–145.

2614. Ibrahim, H. 2005. Chemically modified carbon paste electrode for the potentiometric flow injection analysis of piribedil in pharmaceutical preparation and urine. *J. Pharm. Biomed. Anal*. 38:624–632.
2615. Vire, J.-C., J.-M. Kauffmann, J. Braun, and G.J. Patriarche. 1985. Electrochemical characteristics of a novel non-steroidal anti-inflammatory drug: The piroxicam. *Analusis (Bruxelles)* 13:134–140.
2616. El Maali, N.A. and R.M. Hassan. 1990. Electrooxidation and determination of anti-inflammatory drugs piroxicam and tenoxicam at the CPE. *Bioelectrochem. Bioenerg*. 24:155–163.
2617. Panigua, A.R., M.D. Vazquez, M.L. Tascon, and P. Sanchez Batanero. 1994. Voltammetric determination of piroxicam after incorporation within carbon pastes. *Electroanalysis* 6:265–268.
2618. Rucki, R.J., A. Ross, and S.A. Moros. 1980. Application of an electrochemical detector to the determination of Procarbazine hydrochloride by high performance liquid chromatography. *J. Chromatogr. A* 190:359–365.
2619. Wang, C.-Y., X.-Y. Hu, G.-D. Jin, and Z.-Z. Leng. 2002. Differential pulse adsorption voltammetry for determination of procaine hydrochloride at a pumice modified carbon paste electrode in pharmaceutical preparations and urine. *J. Pharm. Biomed. Anal*. 30:131–139.
2620. Radi, A., A.A. Wassel, and M.A. El Ries. 2004. Adsorptive behaviour and voltammetric analysis of propranolol at a carbon paste electrode. *Chem. Anal. (Warsaw)* 49:51–58.
2621. El-Ries, M.A.N., G.G. Mohamed, and A.K. Attia. 2008. Electrochemical determination of the antidiabetic drug Repaglinide. *Yakugaku Zashi* 128:171–177.
2622. Girousi, S.T., I.C. Gherghi, and M.K. Karava. 2004. DNA-modified carbon paste electrode applied to the study of interaction between rifampicin and DNA in solution and at the electrode surface. *J. Pharm. Biomed. Anal*. 36:851–858.
2623. Mebsout, F., J-M. Kauffmann, G.J. Patriarche, J. Vereecken, and G.D. Christian. 1989. Electrochemical behavior of spiroplatin at carbon paste and platinum electrodes. *Electroanalysis* 1:257–261.
2624. Guo, X.-X., Z.-J. Song, X.-J. Tian, and J.-F. Song. 2008. Single-sweep voltammetric determination of tamoxifen at a carbon paste electrode. *Anal. Lett*. 41:1225–1235.
2625. Tian, X.-J. and J.-F. Song. 2006. Voltammetric behavior and determination of Tanshinone II-A at carbon paste electrode. *Fenxi Huaxue* 34:1283–1286.
2626. Wang, L.-H., H.-J. Tien, and C.-Y. Tai. 2006. Use of a disposable modified carbon paste electrode for liquid chromatography-amperometric detection of theophylline and three metabolites in human serum. *J. Chin. Chem. Soc. (Taiwan)* 53:1523–1530.
2627. Zima, J., M. Cienciala, J. Barek, and J.C. Moreira. 2007. Determination of thymol using HPLC-ED with a glassy CP-electrode. *Chem. Anal. (Warsaw)* 52:1049–1057.
2628. Kauffmann, J.-M., B. Lopez Ruiz, M.F. Gotor, and G.J. Patriarche. 1992. Electrochemical behaviour of Tizanidine at solid electrodes. *J. Pharm. Biomed. Anal*. 10:763–767.
2629. Abu Shawish, H.M., N. Abu Ghalwa, F.R. Zaggout, S.M. Saadeh, A.R. Al Dalou, and A.A. Abou Assi. 2010. Improved determination of tramadol hydrochloride in biological fluids and pharmaceutical preparations utilizing a modified carbon paste electrode. *Biochem. Eng. J*. 48:237–245.
2630. Kauffmann, J.-M., J.-C. Vire, G.J. Patriarche, L.J. Nunez Vergara, and J.A. Squella. 1987. Voltammetric oxidation of trazodone. *Electrochim. Acta* 32:1159–1162.
2631. Ortiz, M.C., J. Arcos, J.V. Juarros, J. Lopez Palacios, and L.A. Sarabia. 1993. Robust procedure for calibration and calculation of detection limit of trimipramine by adsorptive stripping voltammetry at a carbon paste electrode. *Anal. Chem*. 65:678–682.
2632. Zayed, S.I.M. 2004. New plastic membrane and carbon paste ion-selective electrodes for potentiometric determination of triprolidine. *Anal. Sci. (Jpn.)* 20:1043–1048.
2633. Guo, H.-S., N.Y. He, S.-X. Ge, D. Yang, and J.-N. Zhang. 2005. Molecular sieves materials modified carbon paste electrodes for the determination of cardiac Troponin I by anodic stripping voltammetry. *Micropor. Mesopor. Mater*. 85:89–95.
2634. He, N.-Y., H.-S. Guo, S.-X. Ge, D. Yang, and J.-N. Zhang. 2005. Determination of cardiac Troponin I by anodic stripping voltammetry over mesoporous materials modified carbon paste electrode. *Stud. Surf. Sci. Catal*. 158:2041–2048.
2635. Legorburu, M.J., R.M. Alonso, and R.M. Jimenez. 1993. Voltammetric study of the diuretic Xipamide. *Bioelectrochem. Bioenerg*. 32:57–66.
2636. Cosofret, V.V. 1982. *Membrane Electrodes in Drug-Substances Analysis*. Oxford, U.K.: Pergamon Press.
2637. Popkov, V.A. and V. Yu. Reshetnyak. 1983. Application of ion-selective electrodes in medicine and pharmacy. *Farmatsiya (Russ.)* 32:79–81.
2638. Kauffmann, J.-M., G.J. Patriarche, J.-C. Vire, and W.R. Heineman. 1985. Unusual electrochemical behaviour of a new phenothiazine. *Analyst (U.K.)* 110:349–351.

2639. Adams, R.N. 1969. Applications of modern electroanalytical techniques in pharmaceutical chemistry. *J. Pharm. Sci*. 58:1171–1184.
2640. Patriarche, G.J. and H. Zhang. 1990. Electroanalytical techniques for drug analysis (a review). *Electroanalysis* 2:573–579.
2641. Kauffmann, J.-M. and J.-C. Vire. 1993. Pharmaceutical and biomedical application of electroanalysis: A critical review. *Anal. Chim. Acta* 273:329–334.
2642. Lima, E.C., P.G. Fenga, J.R. Romero, and W.F. De Giovani. 1997. Electrochemical behavior of [Ru(4,4′-Me_2bpy)$_2$(PPh_3)(H_2O)](ClO_4)$_2$ in homogeneous solution and incorporated into a carbon paste electrode. Application to oxidations of benzylic compounds. *Polyhedron* 17:313–318.
2643. Kutner, W. 1989. A carbon molecular-sieve paste electrode modified with the ruthenium oxo-bridged dimer, diaqua-M-oxotetrakis(2,2′-bipyridine)diruthenium(4+), for electrocatalysis of benzyl alcohol oxidation. *J. Electroanal. Chem*. 259:99–111.
2644. Kutner, W., T.J. Meyer, and R.W. Murray. 1985. Electrochemical and electrocatalytic reactions of a ruthenium oxo complex in solution and in cation exchange beads in carbon paste electrodes. *J. Electroanal. Chem. Interfacial Electrochem*. 195:375–394.
2645. Razola, S.S., S. Pochet, K. Grosfils, and J.-M. Kauffmann. 2003. Amperometric determination of choline released from rat submandibular gland acinar cells using a choline oxidase biosensor. *Biosens. Bioelectron*. 18:185–191.
2646. Cardoso, W.S., V.L.N. Dias, W.M. Costa, I. Araujo Rodrigues, E.P. Marques, A.G. Sousa, J. Boaventura et al. 2009. Nickel-dimethylglyoxime complex modified graphite and carbon paste electrodes: Preparation and catalytic activity towards methanol/ethanol oxidation. *J. Appl. Electrochem*. 39:55–64.
2647. Bilitewski, U. and R.D. Schmid. 1989. Alcohol determination by modified carbon paste electrodes. *GBF Monographs (Biosens. Appl. Med. Environ. Prot. Process. Control)* 13:99–102.
2648. Boujtita, M. and N. El Murr. 1995. Biosensors for analysis of ethanol in foods. *J. Food Sci*. 60:201–204.
2649. Koyuncu, D., P.E. Erden, S. Pekyardimci, and E. Kilic. 2007. A new amperometric carbon paste enzyme electrode for ethanol determination. *Anal. Lett*. 40:1904–1922.
2650. Yao, Q., S. Yabuki, and F. Mizutani. 1998. Preparation of a carbon paste/alcohol dehydrogenase electrode based on oil-soluble mediator. *Chem. Sens*. 14 (Suppl. A, *Proceedings of the 26th Chemical Sensor Symposium*):153–156.
2651. Yabuki, S. and F. Mizutani. 1997. Preparation of carbon paste-enzyme electrode using polyethylene glycol-alcohol dehydrogenase hybrid. *Denki Kagaku Oyobi Kogyo Butsuri Kagaku* 65:471–473.
2652. Larsson, N. and L. Gorton. 1998. The effect of various polyelectrolytes on alcohol oxidase/horseradish peroxidase/ferrocene modified carbon paste electrodes. *Sci. Pap. Univ. Pardubice Ser. A* 3:31–39.
2653. Liden, H., A.R. Vijayakumar, L. Gorton, and G. Marko-Varga. 1998. Rapid alcohol determination in plasma and urine by column liquid chromatography with biosensor detection. *J. Pharm. Biomed. Anal*. 17:1111–1128.
2654. Marko Varga, G., K. Johansson, and L. Gorton. 1993. A reagentless coimmobilized alcohol biosensor as a detection unit in column liquid chromatography for the determination of methanol and ethanol. *Quim. Anal. (Barcelona)* 12:24–29.
2655. Marko Varga, G., K. Johansson, and L. Gorton. 1994. Enzyme-based biosensor as a selective detection unit in column liquid chromatography. *J. Chromatogr. A* 660:153–167.
2656. Marko Varga, G., K. Johansson, and L. Gorton. 1993. An enzyme electrode as a detection unit in column liquid chromatography for the determination of methanol and ethanol. In *Bioelectroanalysis, 2nd Symposium*, Ed. E. Pungor, pp. 377–391. Budapest: Akademiai Kiado.
2657. Gorton, L., G. Joensson-Pettersson, E. Csoregi, K. Johansson, E. Dominguez, and G. Marko-Varga. 1992. Amperometric biosensors based on an apparent direct electron transfer between electrodes and immobilized peroxidases. *Analyst* 117:1235–1241.
2658. Johansson, K., G. Joensson-Pettersson, L. Gorton, G. Marko-Varga, and E. Csoregi. 1993. A reagentless amperometric biosensor for alcohol detection in column liquid chromatography based on co-immobilized peroxidase and alcohol oxidase in carbon paste. *J. Biotechnol*. 31:301–316.
2659. Azevedo, A.M., D.M.F. Prazeres, J.M.S. Cabral, and L.P. Fonseca. 2005. Ethanol biosensors based on alcohol oxidase. *Biosens. Bioelectron*. 21:235–247.
2660. Ying, Q. and G. Huan. 1992. The primary study of yeast-carbon paste electrode for alcohol determination. *Shipin Yu Fajiao Gongye* 1:44–48.
2661. Kubiak, W.W. and J. Wang. 1989. Yeast-based carbon paste bioelectrode for ethanol. *Anal. Chim. Acta* 221:43–51.
2662. Lu, Y., J. Wang, P. Li, and W. Zhang. 1997. Study on yeast electrode for determining alcohol. *Weishengwuxue Tongbao* 24:218–220.

2663. Ozsoz, M. and J. Wang. 1991. Tomato seed-based amperometric sensor for the determination of alcohols. *Electroanalysis* 3:655–658.
2664. Kondo, T. and T. Ikeda. 1999. An electrochemical method for the measurements of substrate-oxidizing activity of acetic acid bacteria using a carbon-paste electrode modified with immobilized bacteria. *Appl. Microbiol. Biotechnol*. 51:664–668.
2665. Yazgan, I., T. Aydin, D. Odaci, and S. Timur. 2008. Use of pyranose oxidase enzyme in inhibitor biosensing. *Anal. Lett*. 41:2088–2096.
2666. Barranco, J. and A.R. Pierna. 2009. Kinetics of methanol electro-oxidation on Pt, Pt-Sn and Pt-Ru amorphous metallic alloys. *J. New Mater. Electrochem. Syst*. 12:69–76.
2667. Barranco, J. and A.R. Pierna. 2007. Bifunctional amorphous alloys more tolerant to carbon monoxide. *J. Power Sources* 169:71–76.
2668. Ojani, R., J.-B. Raoof, and B. Norouzi. 2009. Platinum-doped cobalt hexacyanoferrate film-carbon paste electrode for electrocatalytic oxidation of methanol. *Asian J. Chem*. 21:6752–6762.
2669. Ojani, R., J.-B. Raoof, and S. Fathi. 2009. Nickel-poly(o-aminophenol)-modified carbon paste electrode; an electrocatalyst for methanol oxidation. *J. Solid State Electrochem*. 13:927–934.
2670. Ojani, R., J.-B. Raoof, and S.R.H. Zavvarmahalleh. 2008. Electrocatalytic oxidation of methanol on carbon paste electrode modified by nickel ions dispersed into poly(1,5-diaminonaphthalene) film. *Electrochim. Acta* 53:2402–2407.
2671. Barranco, J. and A.R. Pierna. 2007. Amorphous $Ni_{59}Nb_{40}Pt_{(1-x)}Y_x$ (Y = Sn, Ru; x = 0%, 0.4%) modified carbon paste electrodes and their role in the electrochemical methanol deprotonation and CO oxidation process. *J. Non-Cryst. Solids* 353:851–854.
2672. Timur, S., D. Odaci, A. Dincer, F. Zihnioglu, A. Telefoncu, and L. Gorton. 2007. Sulfhydryl oxidase modified composite electrode for the detection of reduced thiolic compounds. *Sens. Actuators B* B125:234–239.
2673. Miki, K., H. Kinoshita, Y. Yamamoto, N. Taniguchi, and T. Ikeda. 1995. An amperometric pyruvate sensor based on a pyruvate dehydrogenase-immobilized carbon paste electrode containing vitamin K3 as a mediator. *Denki Kagaku Oyobi Kogyo Butsuri Kagaku* 63:1121–1127.
2674. Oungpipat, W. and P.W. Alexander. 1994. An amperometric bi-enzyme sensor for glycolic acid determination based on spinach tissue and ferrocene-mediation. *Anal. Chim. Acta* 295:37–46.
2675. Zhu, L., Y. Li, and G. Zhu. 2004. A novel renewable plant tissue-based electrochemiluminescent biosensor for glycolic acid. *Sens. Actuators B* B98:115–121.
2676. Liawrungrath, S., P. Purachat, W. Oungpipat, and C. Dongduen. 2008. Sunflower leaves tissue-based bioelectrode with amperometric flow-injection system for glycolic acid determination in urine. *Talanta* 77:500–506.
2677. Spohn, V.U. 1998. Enzyme-modified carbon paste electrodes—A new way to reagent-free enzymic analysis. *Nova Acta Leopold. Suppl*. 15:155–175.
2678. Shu, H.-C., L. Gorton, B. Persson, and B. Mattiasson. 1995. A reagentless amperometric electrode based on carbon paste, chemically modified with D-lactate dehydrogenase, NAD+, and mediator containing polymer for D-lactic acid analysis. II. Online monitoring of fermentation process. *Biotechnol. Bioeng*. 46:280–284.
2679. Shu, H.-C. and N.-P. Wu. 2001. A chemically modified carbon paste electrode with d-lactate dehydrogenase and alanine aminotransferase enzyme sequences for d-lactic acid analysis. *Talanta* 54:361–368.
2680. Pohanka, M. and P. Zboril. 2008. Amperometric biosensor for D-lactate assay. *Food Technol. Biotechnol*. 46:107–110.
2681. Ledru, S. and M. Boujtita. 2004. Electrocatalytic oxidation of ascorbate by heme-FeIII/heme-FeII redox couple of the HRP and its effect on the electrochemical behavior of an L-lactate biosensor. *Bioelectrochemistry* 64:71–78.
2682. Boujtita, M., M. Chapleau, and N. El Murr. 1996. Enzymic electrode for the determination of L-lactate. *Electroanalysis* 8:485–488.
2683. Spohn, U., D. Narasaiah, and L. Gorton. 1997. Reagentless hydrogen peroxide and L-lactate sensors based on carbon paste electrodes modified with different peroxidases and lactate oxidases. *J. Prakt. Chem*. 339:607–614.
2684. Spohn, U., D. Narasaiah, and L. Gorton. 1996. The influence of the carbon paste composition on the performance of an amperometric bienzyme sensor for L-lactate. *Electroanalysis* 8:507–514.
2685. Garjonyte R,V. Melvydas, and Malinauskas. 2008. Effect of yeast pretreatment on the characteristics of yeast-modified electrodes as mediated amperometric biosensors for lactic acid. *Bioelectrochemistry* 74:188–194.

2686. Kulys, J., L. Wang, and V. Razumas. 1992. Sensitive yeast bioelectrode to L-lactate. *Electroanalysis* 4:527–532.
2687. Gan, N. and C. Ge. 2006. Separation of organic acids by capillary zone electrophoresis and electrochemical detection in fruit juices. *Yingyang Xuebao* 28:255–258, 262.
2688. Liu, Y., J. Huang, D. Wang, H. Hou, and T. You. 2010. Electrochemical determination of oxalic acid using palladium nanoparticle-loaded carbon nanofiber modified electrode. *Anal. Methods* 2:855–859.
2689. Shaidarova, L.G., S.A. Zaripova, L.N. Tikhonova, G.K. Budnikov, and I.M. Fitsev. 2001. Electrocatalytic determination of oxalate ions on chemically modified electrodes. *Russ. J. Appl. Chem*. 74:750–754.
2690. Santos, L.M. and R.P. Baldwin. 1987. Profiling of oxalic acid and a-keto acids in blood and urine by liquid chromatography with electrochemical detection at a chemically modified electrode. *J. Chromatogr. Biomed. Appl*. 414:161–166.
2691. Wang, J. and N. Naser. 1995. Modified carbon-wax composite electrodes. *Anal. Chim. Acta* 316:253–259.
2692. Ramos, A.R., J. Arguello, H.A. Magosso, and Y. Gushikem. 2008. Al_2O_3 coated with 3-n-propyl-1-azonia-4-azabicyclo[2.2.2]octane silsesquioxane chloride and its use for immobilization of cobalt(II) tetrasulfonated phthalocyanine in oxalic acid electrooxidation. *J. Braz. Chem. Soc*. 19:755–761.
2693. Mishra, R., H. Yadav, and C.S. Pundir. 2010. An amperometric oxalate biosensor based on sorghum leaf oxalate oxidase immobilized on carbon paste electrode. *Anal. Lett*. 43:151–160.
2694. Zhou, D.-M., P. Nigam, J. Jones, and R. Marchant. 1995. Production of salicylate hydroxylase from *Pseudomonas putida* UUC-1 and its application in the construction of a biosensor. *J. Chem Technol. Biotechnol*. 64:331–338.
2695. Wimmerova, M. and L. Macholan. 1999. Sensitive amperometric biosensor for the determination of biogenic and synthetic amines using pea seedlings amine oxidase: A novel approach for enzyme immobilisation. *Biosens. Bioelectron*. 14:695–702.
2696. Rodriguez Mendez, M.L., M. Gay, C. Apetrei, and J.A. De Saja. 2009. Biogenic amines and fish freshness assessment using a multisensor system based on voltammetric electrodes. Comparison between CPE and screen-printed electrodes. *Electrochim. Acta* 54:7033–7041.
2697. Castilho, T.J., M.d.P.T. Sotomayor, and L.T. Kubota. 2005. Amperometric biosensor based on horseradish peroxidase for biogenic amine determinations in biological samples. *J. Pharm. Biomed. Anal*. 37:785–791.
2698. Zagorovskiy, G.M., I.G. Sydorenko, N.M. Vlasova, and V.V. Lobanov. 2008. Voltammetric determination of biogenic amines on the electrodes of carbon nanotubes modified with polyaniline. *Khim. Fiz. Tekhnol. Poverkh. (Ukr.)* 14:317–324.
2699. Kondo, T., J. Matsui, I. Takahashi, and S. Hatano. 2003. Construction of histamine sensor. *Aichi-ken Sangyo Gijutsu Kenkyusho Kenkyu Hokoku* 2:130–131.
2700. Sidorenko, I.G., O.V. Markitan, N.N. Vlasova, G.M. Zagorovskii, and V.V. Lobanov. 2007. Voltammetric determination of the content of biogenic amines in water using carbon nanotube electrode. *Khim. Fiz. Tekhnol. Poverkh. (Ukr.)* 13:195–200.
2701. Yang, J.-K., K.S. Ha, H.S. Baek, S.S. Lee, and M.L. Seo. 2004. Amperometric determination of urea using enzyme-modified carbon paste electrode. *Bull. Korean Chem. Soc*. 25:1499–1502.
2702. Wang, C. and Z. Gao. 2008. Electrocatalytic oxidation of N-acetyl-L-cysteine at caffeic acid modified carbon paste electrode. *Fenxi Ceshi Xuebao* 27:1326–1329.
2703. Bai, L. and Z.-N. Gao. 2008. Electrocatalytic oxidation of N-acetyl-L-cysteine at 10-methylphenothiazine modified carbon paste electrode and its practical analytical application. *Yingyong Huaxue* 25:702–705.
2704. Luque, G.L., N.F. Ferreyra, and G.A. Rivas. 2007. Electrochemical sensor for amino acids and albumin based on composites containing carbon nanotubes and copper microparticles. *Talanta* 71:1282–1287.
2705. Cui, S. 1993. Flow injection amperometric determination of cucurbitin and some other amino acids with copper-modified carbon paste electrode. *Yanbian Daxue Xuebao, Ziran Kexueban* 19:37–41.
2706. Chen, Q., J. Wang, G. Rayson, B. Tian, and Y. Lin. 1993. Sensor array for carbohydrates and amino acids based on electrocatalytic modified electrodes. *Anal. Chem*. 65:251–254.
2707. Liu, J. and J. Wang. 1999. Remarkable thermostability of bioelectrodes based on enzymes immobilized within hydrophobic semi-solid matrices. *Biotechnol. Appl. Biochem*. 30:177–183.
2708. Kacaniklic, V., K. Johansson, G. Marko-Varga, L. Gorton, G. Joensson-Pettersson, and E. Csoeregi. 1994. Amperometric biosensors for detection of L- and D-amino acids based on co-immobilized peroxidase and L- and D-amino acid oxidases in carbon paste electrodes. *Electroanalysis* 6:381–390.
2709. Wu, X., B.J. Van Wie, and D.A. Kidwell. 2004. An enzyme electrode for amperometric measurement of D-amino acid. *Biosens. Bioelectron*. 20:879–886.

2710. Gorton, L., G. Marko-Varga, B. Persson, Z. Huan, H. Linden, E. Burestedt, S. Ghobadi, M. Smolander, S. Sahni, and T. Skotheim. 1996. Amperometric biosensors based on carbon paste electrodes chemically modified with redox-enzymes. *Adv. Mol. Cell Biol*. 15B:421–450.
2711. Maleki, N., A. Safavi, F. Sedaghati, and F. Tajabadi. 2007. Efficient electrocatalysis of L-cysteine oxidation at carbon ionic liquid electrode. *Anal. Biochem*. 369:149–153.
2712. Wu, J., Y. Zou, N. Gao, J. Jiang, G. Shen, and R. Yu. 2005. Electrochemical performances of C/Fe nanocomposite and its use for mediator-free glucose biosensor preparation. *Talanta* 68:12–18.
2713. Baldrianova, L., P. Agrafiotou, I. Švancara, K. Vytřas, and S. Sotiropoulos. 2008. The determination of cysteine at Bi-powder carbon paste electrodes by cathodic stripping voltammetry. *Electrochem. Comm*. 10:918–921.
2714. Shaidarova, L.G., S.A. Ziganshina, and G.K. Budnikov. 2003. Electrocatalytic oxidation of cysteine and cystine at a carbon-paste electrode modified with ruthenium(IV) oxide. *J. Anal. Chem*./transl. of *Zh. Anal. Khim*. 58:577–582.
2715. Ojani, R., J.-B. Raoof, and E. Zarei. 2010. Preparation of poly N,N-dimethylaniline/ferrocyanide film modified carbon paste electrode: Application to electrocatalytic oxidation of L-cysteine. *J. Electroanal. Chem*. 638:241–245.
2716. Sugawara, K., S. Tanaka, and M. Taga. 1991. Voltammetric behavior of cysteine by a chemically modified carbon-paste electrode with copper(II) cyclohexylbutyrate. *J. Electroanal. Chem*. 316:305–314.
2717. Bai, L. and Z. Gao. 2008. Electrocatalytic oxidation of L-cysteine at acetylferrocene modified carbon paste electrode and its electrochemical kinetics. *Fenxi Ceshi Xuebao* 27:273–276.
2718. Khaloo, S.S., M.K. Amini, S. Tangestaninejad, S. Shahrokhian, and R. Kia. 2004. Voltammetric and potentiometric study of cysteine at cobalt(II) phthalocyanine modified carbon-paste electrode. *J. Iran. Chem. Soc*. 1:128–135.
2719. Zhang, Y.-J., X. Fang, J. Wang, and J.-D. Wang. 2008. Carbon paste electrode incorporating multi-walled carbon nanotube/a-(2,4-di-tert-butylphenoxy) phthalo-cyaninatocobalt for determination of L-cysteine. *Yingyong Huaxue* 25:909–912.
2720. Lima, P.R., W.J.R. Santos, R.d.C.S. Luz, F.S. Damos, A.B. Oliveira, M.O.F. Goulart, and L.T. Kubota. 2008. An amperometric sensor based on electrochemically triggered reaction: Redox-active Ar-NO/Ar-NHOH from 4-nitrophthalonitrile-modified electrode for the low voltage cysteine detection. *J. Electroanal. Chem*. 612:87–96.
2721. Huang, T.H., T. Kuwana, and A. Warsinke. 2002. Analysis of thiols with tyrosinase-modified carbon paste electrodes based on blocking of substrate recycling. *Biosens. Bioelectron*. 17:1107–1113.
2722. Amine, A. and J.M. Kauffmann. 1992. Preparation and characterization of a fragile enzyme immobilized carbon paste electrode. *Bioelectrochem. Bioenerg*. 28:117–125.
2723. Amine, A., J.M. Kauffmann, and G. Palleschi. 1993. Investigation of the batch injection analysis technique with amperometric biocatalytic electrodes using a modified small-volume cell. *Anal. Chim. Acta* 273:213–218.
2724. Ghobadi, S., E. Csoeregi, G. Marko-Varga, and L. Gorton. 1996. Bienzyme carbon paste electrodes for L-glutamate determination. *Curr. Sep*. 14:94–102.
2725. Wang, G., T. Peng, B. Shen, P. Zhu, and L. Qu. 1995. Determination of amino acid with carbon paste electrode. III. Determination of histidine. *Fenxi Huaxue* 23:703–706.
2726. Zou, Y., J. Wang, J. Mo, and R. Zhang. 1999. Voltammetric determination of amino acids by modified carbon paste electrodes: II. Study on the electrochemical behavior of histidine on alumina-modified carbon paste electrode. *Fenxi Ceshi Xuebao* 18:47–49.
2727. Stefan-van Staden, R.-I. and L. Holo. 2007. Enantioselective, potentiometric membrane electrodes based on cyclodextrins for the determination of L-histidine. *Sens. Actuators B* B120:399–402.
2728. Stefan-van Staden, R.-I., B. Lal, and L. Holo. 2007. Enantioselective potentiometric membrane electrodes based on C60 fullerene and its derivatives for the assay of L-Histidine. *Talanta* 71:1434–1437.
2729. Akalu G., A. Belay, E. Csoregi, L. Gorton, G. Johansson, K. Kalcher, N. Larsson et al. 2004. Glutamate oxidase advances the selective bioanalytical detection of the neurotoxic amino acid β-ODAP in grass pea: A decade of progress. *Pure Appl. Chem*. 76:765–775.
2730. Beyene, N.W., H. Moderegger, and K. Kalcher. 2004. Development of an amperometric biosensor for β-ODAP. *Electroanalysis* 16:268–274.
2731. Beyene, N.W., H. Moderegger, and K. Kalcher. 2004. Simple and effective procedure for immobilization of oxidases onto MnO_2-bulk-modified, screen-printed carbon electrodes. *S. Afr. J. Chem*. 57:1–7.
2732. Weiss, D.J., M. Dorris, A. Loh, and L. Peterson. 2007. Dehydrogenase based reagentless biosensor for monitoring phenylketonuria. *Biosens. Bioelectron*. 22:2436–2441.

2733. Huang, T., A. Warsinke, T. Kuwana, and F.W. Scheller. 1998. Determination of L-phenylalanine based on an NADH-detecting biosensor. *Anal. Chem*. 70:991–997.
2734. Ozoemena, K.I. and R.-I. Stefan. 2005. Enantioselective potentiometric membrane electrodes based on α-, β- and γ-cyclodextrins as chiral selectors for the assay of L-proline. *Talanta* 66:501–504.
2735. Linders, C.R., B.J. Vincke, J.C. Vire, J.M. Kauffmann, and G.J. Patriarche. 1985. Voltammetry of tryptophan using solid electrodes. *J. Pharm. Belg*. 40:27–33.
2736. Fiorucci, A.R. and E.T.G. Cavalheiro. 2002. The use of carbon paste electrode in the direct voltammetric determination of tryptophan in pharmaceutical formulations. *J. Pharm. Biomed. Anal*. 28:909–915.
2737. Zoulis, N.E., D.P. Nikolelis, and C.E. Efstathiou. 1990. Preconcentration of indolic compounds at a carbon paste electrode and indirect determination of L-tryptophan in serum by adsorptive stripping voltammetry. *Analyst (U.K.)* 115:291–295.
2738. Inada, K., K. Nishiyama, and I. Taniguchi. 2009. Voltammetric determination of tryptophan and serotonin at glassy carbon paste electrodes in a potential region free from interfering substances. *Chem. Lett*. 38:686–687.
2739. Wang, H., A. Zhang, and H. Cui. 1997. Electrochemical activation of a carbon-paste electrode with paraffin as a binder and its application to the determination of tryptophan. *Fenxi Huaxue* 25:85–88.
2740. Zou, Y.-D., J. Wang, J.-Y. Mo, and R.-J. Zhang. 1999. Voltammetric determination of amino acids by modified carbon paste electrodes. Part I. Electrochemical behavior of tryptophan and tyrosine. *Fenxi Ceshi Xuebao* 18:25–28.
2741. Wu, J., Q. Shi, G. Wang, and T. Peng. 1994. Potato-juice-modified carbon paste electrode for the determination of tryptophan. *Fenxi Huaxue* 22:599–601.
2742. Wang, G., T. Peng, B. Shen, P. Zhu, and L. Qu. 1993. Determination of an amino acid with montmorillonite-modified carbon paste electrode. I. Determination of tryptophan. *Fenxi Huaxue* 21:779–782.
2743. Kitagawa, T. and S. Tsushima. 1971. Simultaneous determination of tyrosine and dopa using rotating carbon paste disk electrode. *Bunseki Kagaku* 20:1561–1565.
2744. Toyokichi, K. and Y. Kanei. 1970. Voltammetry at solid electrode. VI. Anodic oxidation of tyrosine at carbon paste electrode. *Bunseki Kagaku* 19:642–649.
2745. Wang, G., T. Peng, B. Shen, P. Zhu, and L. Qu. 1994. Determination of amino acid with montmorillonite-modified carbon paste electrode. II. Determination of tyrosine. *Fenxi Huaxue* 22:590–592.
2746. Kong, Y., G.-T. Huang, Z.-D. Chen, and W.-C. Wang. 2007. Molecular-imprinted electrochemical sensor for recognition of enantiomorphs of D-tyrosine and L-tyrosine. *Lihua Jianyan, Huaxue Fence* 43:997–999, 1003.
2747. He, Q. 2003. Studies on the electrochemical behavior of tyrosine at a polyvinyl-pyrrolidone modified carbon paste electrode and its determination. *Fenxi Kexue Xuebao* 19:346–348.
2748. Reis, N.S., S.H.P. Serrano, R. Meneghatti, and E.d.S. Gil. 2009. Electrochemical methods used for the evaluation of the antioxidant activities of natural products. *Lat. Am. J. Pharm*. 28:949–953.
2749. Diego, E., L. Agui, A. Gonzalez-Cortes, P. Yanez-Sedeno, J.M. Pingarron, and J.M. Kauffmann. 1998. Critical comparison of paraffin carbon paste and graphite-poly(tetrafluorethylene) composite electrodes concerning the electroanalytical behavior of various antioxidants of different hydrophobicity. *Electroanalysis* 10:33–38.
2750. Jayasri, D. and S. Sriman Narayanan. 2006 (volume date 2007). Manganese(II) hexacyanoferrate based renewable amperometric sensor for the determination of butylated hydroxyanisole in food products. *Food Chem*. 101:607–614.
2751. Fernandes, S.C., I.R.W. Zwirtes de Oliveira, and I.C. Vieira. 2007. A green bean homogenate immobilized on chemically crosslinked chitin for determination of caffeic acid in white wine. *Enzyme Microb. Technol*. 40:661–668.
2752. Arduini, F., F. Di Giorgio, A. Amine, F. Cataldo, D. Moscone, and G. Palleschi. 2010. Electroanalytical characterization of carbon black nanomaterial paste electrode: Development of highly sensitive tyrosinase biosensor for catechol detection. *Anal. Lett*. 43:1688–1702.
2753. Gil, E.S., L. Muller, M.F. Santiago, and T.A. Garcia. 2009. Biosensor based on brut extract from laccase (*Pycnoporus sanguineus*) for environmental analysis of phenolic compounds. *Portugaliae Electrochim. Acta* 27:215–225.
2754. Szewczynska, M. and M. Trojanowicz. 2000. Amperometric enzymatic detection of phenols for HPLC. *Chem. Anal. (Warsaw)* 45:667–679.
2755. Dantoni, P., S.H.P. Serrano, A.M.O. Brett, and I.G.R. Gutz. 1998. Flow-injection determination of catechol with a new tyrosinase/DNA biosensor. *Anal. Chim. Acta* 366:137–145.
2756. Lima, A.W.O., E.K. Vidsiunas, V.B. Nascimento, and L. Angnes. 1998. Vegetable tissue from *Latania* sp.: An extraordinary source of naturally immobilized enzymes for the detection of phenolic compounds. *Analyst (U.K.)* 123:2377–2382.

2757. Tan, X.-C., Z.-W. Huang, J.-L. Zhang, Z.-R. Huang, and H. Liang. 2008. Determination of catechol in beer based on amperometric biosensor potato tissue. *Hubei Minzu Xueyuan Xuebao, Ziran Kexueban* 26:294–296.
2758. Cevik, S. and U. Anik. 2010. Banana tissue-nanoparticle/nanotube based glassy carbon paste electrode biosensors for catechol detection. *Sens. Lett*. 8:667–671.
2759. Grabaric, B.S., I. Kruhak, J. Velikonja, and M. Tkalcec. 1993. Electrochemical investigation of dopamine and pyrocatechol with unmodified and banana tissue modified carbon paste electrodes. *Prehrambeno-Tehnol. Biotehnol. Rev. (Serbo-Croat.)* 31:131–135.
2760. Eggins, B.R., C. Hickey, S.A. Toft, and D. Min Zhou. 1997. Determination of flavanols in beers with tissue biosensors. *Anal. Chim. Acta* 347:281–288.
2761. Adam, V., R. Mikelova, J. Hubalek, P. Hanustiak, M. Beklova, P. Hodek, A. Horna et al. 2007. Utilizing of square wave voltammetry to detect flavonoids in the presence of human urine. *Sensors* 7:2402–2418.
2762. Zoulis, N.E. and C.E. Efstathiou. 1996. Preconcentration at a carbon-paste electrode and determination by adsorptive-stripping voltammetry of rutin and other flavonoids. *Anal. Chim. Acta* 320:255–261.
2763. Volikakis, G.J. and C.E. Efstathiou. 2000. Determination of rutin and other flavonoids by flow-injection/adsorptive stripping voltammetry using nujol-graphite and diphenylether-graphite paste electrodes. *Talanta* 51:775–785.
2764. Hodek, P., P. Hanustiak, J. Krizkova, R. Mikelova, S. Krizkova, M. Stiborova, L. Trnkova, A. Horna, M. Beklova, and R. Kizek. 2006. Toxicological aspects of flavonoid interaction with biomacromolecules. *Neuroendocrinol. Lett*. 27(Suppl. 2):14–17.
2765. Ying, T., S. Hu, and T. Qi. 1994. Development of apple tissue-carbon paste electrode for hydroquinone determination. *Shanghai Gongye Daxue Xuebao* 15:280–282.
2766. Jenkins, S.H., Heineman W.R., and Halsall, H. 1988. Extending the detection limit of solid-phase electrochemical enzyme immunoassay to the attomole level. *Anal. Biochem*. 168:292–299.
2767. Lu, Y., J. Ma, S. Cao, C. Xu, and S. Hu. 1996. Electrochemical oxidation and determination of phenol. *Fenxi Kexue Xuebao* 12:323–325.
2768. Zou, Y-D. and J.-Y. Mo. 1997. The 2.5th order differential voltammetric determination of phenol with a composite carbon paste/polyamide electrode. *Anal. Chim. Acta* 353:71–78.
2769. Chen, W.-H., S. Yuan, and C.-G. Hu. 2005. Voltammetric detection of phenol at CTAB-modified carbon paste electrode. *Fenxi Kexue Xuebao* 21:54–56.
2770. Wang, G., T. Peng, and P. Zhu. 1993. Determination of phenol with montmorillonite-modified carbon paste electrode. *Fenxi Huaxue* 21:672–675.
2771. Tzang, C.H., C.-W. Li, J. Zhao, and M. Yang. 2005. Electrocatalytic phenol oxidation on mixed Pt-RuO2 nanoparticle modified electrode. *Anal. Lett*. 38:1735–1746.
2772. Pei, H.-L., H. Li, and W. Liu. 2007. Determination of phenol on a carbon paste electrode modified with cobalt phthalocyanine. *Fenxi Shiyanshi* 26:102–105.
2773. Tingry, S., C. Innocent, S. Touil, A. Deratani, and P. Seta. 2006. Carbon paste biosensor for phenol detection of impregnated tissue: Modification of selectivity by using β-cyclodextrin-containing PVA membrane. *Mater. Sci. Eng., C* 26:222–226.
2774. Kim, G.-Y., N.M. Cuong, S.-H. Cho, J. Shim, J.-J. Woo, and S.-H. Moon. 2007. Improvement of an enzyme electrode by poly(vinyl alcohol) coating for amperometric measurement of phenol. *Talanta* 71:129–135.
2775. Makhaeva, G., L. Sigolaeva, L. Zhuravleva, A. Eremenko, I. Kurochkin, V. Malygin, and R. Richardson. 2003. Biosensor detection of neuropathy target esterase in whole blood as a biomarker of exposure to neuropathic organophosphorus compounds. *J. Toxicol. Environ. Health Part A* 66:599–610.
2776. Sigolaeva, L.V., A. Makower, A.V. Eremenko, G.F. Makhaeva, V.V. Malygin, I.N. Kurochkin, and F.W. Scheller. 2001. Bioelectrochemical analysis of neuropathy target esterase activity in blood. *Anal. Biochem*. 290:1–9.
2777. Bassi, A.S. and C. McGrath. 1999. Carbon paste biosensor based on crude soybean seed hull extracts for phenol detection. *J. Agric. Food Chem*. 47:322–326.
2778. Ortega, F., E. Dominguez, E. Burestedt, J. Emneus, L. Gorton, and G. Marko-Varga. 1994. Phenol oxidase-based biosensors as selective detection units in column liquid chromatography for determination of phenolic compounds. *J. Chromatogr. A* 675:65–78.
2779. Petit, Chr., A. Nagy, G. Quarin, and J.-M. Kauffmann. 1996. Enzymic electrode for the analysis of phenol and catechol derivatives of pharmaceutical interest. *J. Pharm. Belg*. 51:1–8.
2780. Cui, L. and F. Meng. 2003. Study on determination of phenols with tyrosinase based biosensor activated by polysaccharide. *Lihua Jianyan, Huaxue Fence* 39:629–632.

2781. Cui, L. and F. Meng. 2003. Study of polysaccharide modified amperometric biosensor for the determination of phenols based on tyrosinase. *Huaxue Chuanganqi* 23:49–57.
2782. Lindgren, A., T. Ruzgas, J. Emneus, E. Csoeregi, L. Gorton, and G. Marko-Varga. 1996. Flow injection analysis of phenolic compounds with carbon paste electrodes modified with tyrosinase purchased from different companies. *Anal. Lett*. 29:1055–1068.
2783. Erdem, A., N. Altinigne, E. Kilinc, L. Gokgunnec, T. Dalbasti, and M. Ozsoz. 1998. Amperometric biosensor based on mushroom tissue tyrosinase for the determination of phenolic compounds. *FABAD Farmasotik Bilimler Dergisi* 23:1–6.
2784. Rogers K.R., F. Lu, and J. Wang. 1997. Liquid chromatography system with an enzyme biosensor for measurement of phenolics. In *Field Analytical Methods for Hazardous Wastes and Toxic Chemicals, Proceedings of a Specialty Conference*, Las Vegas, NV, pp. 861–869.
2785. Ruzgas, T., J. Emneus, L. Gorton, and G. Marko-Varga. 1995. The development of a peroxidase biosensor for monitoring phenol and related aromatic compounds. *Anal. Chim. Acta* 311:245–253.
2786. Wollenberger, U. and B. Neumann. 1997. Quinoprotein glucose dehydrogenase-modified carbon paste electrode for the detection of phenolic compounds. *Electroanalysis* 9:366–371.
2787. Apetrei, C., M.L. Rodriguez-Mendez, and J.A. de Saja. 2005. Modified carbon paste electrodes for discrimination of vegetable oils. *Sens. Actuators B* 111:403–409.
2788. Apetrei, C., I.M. Apetrei, I. Nevares, M. Del Alamo, V. Parra, M.L. Rodriguez-Mendez, and J.A. De Saja. 2007. Using an e-tongue based on voltammetric electrodes to discriminate among red wines aged in oak barrels or aged using alternative methods. *Electrochim. Acta* 52:2588–2594.
2789. Santhiago, M., R.A. Peralta, A. Neves, G.A. Micke, and I.C. Vieira. 2008. Rosmarinic acid determination using biomimetic sensor based on purple acid phosphatase mimetic. *Anal. Chim. Acta* 613:91–97.
2790. Franzoi, A.C., R.A. Peralta, A. Neves, and I.C. Vieira. 2009. Biomimetic sensor based on MnIII/MnII complex as manganese peroxidase mimetic for determination of rutin. *Talanta* 78:221–226.
2791. Zwirtes de Oliveira, I.R.W., S.C. Fernandes, and I.C. Vieira. 2006. Development of a biosensor based on gilo peroxidase immobilized on chitosan chemically crosslinked with epichlorohydrin for determination of rutin. *J. Pharm. Biomed. Anal*. 41:366–372.
2792. Arribas, A.S., E. Bermejo, A. Zapardiel, H. Tellez, J. Rodriguez-Flores, M. Zougagh, A. Rios, and M. Chicharro. 2009. Screening and confirmatory methods for the analysis of macrocyclic lactone mycotoxins by CE with amperometric detection. *Electrophoresis* 30:499–506.
2793. Smolander, M., L. Gorton, H.S. Lee, T. Skotheim, and H.-L. Lan. 1995. Ferrocene-containing polymers as electron transfer mediators in carbon paste electrodes modified with PQQ-dependent aldose dehydrogenase. *Electroanalysis* 7:941–946.
2794. Smolander, M. 1995. Electrochemical aldose detection with PQQ-dependent aldose dehydrogenase. *VTT Publ*. 229:105.
2795. Maestre, E., I. Katakis, A. Narvaez, and E. Dominguez. 2005. A multianalyte flow electrochemical cell: Application to the simultaneous determination of carbohydrates based on bioelectrocatalytic detection. *Biosens. Bioelectron*. 21:774–781.
2796. Chien, H.-C. and T.-C. Chou. 2010. Glassy carbon paste electrodes for the determination of fructosyl valine. *Electroanalysis* 22:688–693.
2797. Wang, Q.-L., B.-J. Yang, and G.-X. Lu. 2003. Direct electrochemistry of hemoglobin immobilized on carbon paste electrode by inorganic film. *Gaodeng Xuexiao Huaxue Xuebao* 24:1561–1566.
2798. Tsugawa, W., F. Ishimura, K. Ogawa, and K. Sode. 2000. Development of an enzyme sensor utilizing a novel fructosyl amine oxidase from a marine yeast. *Electrochemistry* 68:869–871.
2799. Liu, L., J.-F. Song, P.-F. Yu, and B. Cui. 2007. Voltammetric determination of glucose based on reduction of copper(II)-glucose complex at lanthanum hydroxide nanowire modified carbon paste electrodes. *Talanta* 71:1842–1848.
2800. Yang, T., K. Jiao, J. Yang, C. Zhao, and W. Qu. 2006. Electrocatalytic oxidation of glucose by poly(o-aminophenol)/nickel modified carbon paste electrode. *Fenxi Huaxue* 34:1415–1418.
2801. Gorton, L., G. Bremle, E. Csoeregi, G. Joensson-Pettersson, and B. Persson. 1991. Amperometric glucose sensors based on immobilized glucose-oxidizing enzymes and chemically modified electrodes. *Anal. Chim. Acta* 249:43–54.
2802. Cespedes, F., E. Martinez-Fabregas, J. Bartoli, and S. Alegret. 1993. Amperometric enzymatic glucose electrode based on an epoxy-graphite composite. *Anal. Chim. Acta* 273:409–417.
2803. Kurusu, F., H. Tsunoda, A. Saito, A. Tomita, A. Kadota, N. Kayahara, I. Karube, and M. Gotoh. 2006. The advantage of using carbon nanotubes compared with edge plane pyrolytic graphite as an electrode material for oxidase-based biosensors. *Analyst* 131:1292–1298.

2804. Savitri, D. and C.K. Mitra. 1998. Electrochemistry of reconstituted glucose oxidase on carbon paste electrodes. *Bioelectrochem. Bioenerg*. 47:67–73.
2805. Kotzian, P., P. Brazdilova, K. Kalcher, K. Handlir, and K. Vytřas. 2007. Oxides of platinum metal group as potential catalysts in carbonaceous amperometric biosensors based on oxidases. *Sens. Actuators B* B124:297–302.
2806. Ikeda, T. 1992. Electrochemical biosensors based on biocatalyst electrodes. *Bull. Electrochem*. 8:145–159.
2807. Ikeda, T., H. Hiasa, and M. Senda. 1988. In *Redox Chemistry and Interfacial Behavior of Biological Molecules*. Eds. G. Dryhurst and K. Niki. pp. 193–201. New York: Plenum Press.
2808. Inagaki, T., H.S. Lee, P.D. Hale, T.A. Skotheim, and Y. Okamoto. 1989. Synthesis and electrochemical characterization of siloxane polymers containing hydroquinone and 1,4-naphthohydroquinone. *Macromolecules* 22:4641–4643.
2809. Narvaez, A., J. Parellada, E. Dominguez, and I. Katakis. 1996. Effects of mediator and paste hydrophobicity on the response of amperometric carbon paste electrodes: Binder paste electrodes. *Quim. Anal. (Barcelona)* 15:75–82.
2810. Sakura, S. and R.P. Buck. 1992. Amperometric processes with glucose oxidase embedded in the electrode. *Bioelectrochem. Bioenerg*. 28:387–400.
2811. Slilam M., L. Charpentier, and N. El Murr. 1991. Glucose determination in must. *Analusis* 19:M49–M52.
2812. Turner A.P.F., I. Karube, and G.S. Wilson, Eds. 1987. *Biosensors. Fundamentals and Applications*. pp. 276–290. Oxford, U.K.: University Press.
2813. Amine, A., J.-M. Kauffmann, G.J. Patriarche, and A.E. Kaifer. 1991. Long-term operational stability of a mixed glucose oxidase-redox mediator-carbon paste electrode. *Anal. Lett*. 24:1293–1315.
2814. Hale, P.D., T. Inagaki, H.I. Karan, Y. Okamoto, and T.A. Skotheim. 1989. A new class of amperometric biosensor incorporating a polymeric electron-transfer mediator. *J. Am. Chem. Soc*. 111:3482–3484.
2815. Hale, P.D., L.I. Boguslavsky, T. Inagaki, H.S. Lee, T.A. Skotheim, H.I. Karan, and Y. Okamoto. 1990. Ferrocene-modified siloxane polymers as electron relay systems in amperometric glucose sensors. *Mol. Cryst. Liq. Cryst*. 190:251–258.
2816. Hale, P.D., T. Inagaki, H.S. Lee, T.A. Skotheim, H.I. Karan, and Y. Okamoto. 1990. In *Biosensor Technology—Fundamentals and Applications*. Eds. R.P. Buck, W.E. Hatfield, M. Umaiia, and E.F. Bowden, pp. 195–200. New York: Marcel Dekker.
2817. Hale, P.D., L.I. Boguslavsky, T.A. Skotheim, L.F. Liu, H.S. Lee, H.I. Karan, H.L. Lan, and Y. Okamoto. 1992. Polymer developments for biosensors. In *Biosensors and Chemical Sensors*. Eds. P.G. Edelman and J. Wang. *ACS Symposium Series No. 487*. pp. 111–124. Washington, D.C: American Chemical Society.
2818. Saito, T. and M. Watanabe. 1999. Electron transfer reaction from glucose oxidase to an electrode via redox copolymers. *Polym. J*. 31:1149–1154.
2819. Casado, C.M., M. Moran, J. Losada, and I. Cuadrado. 1995. Siloxane and organosilicon dimers, monomers, and polymers with amide-linked ferrocenyl moieties. synthesis, characterization, and redox properties. *Inorg. Chem*. 34:1668–1680.
2820. Hale, P.D., H.S. Lee, and Y. Okamoto. 1993. Electrical communication between glucose oxidase and novel ferrocene-containing siloxane-ethylene oxide copolymers: Biosensor applications. *Anal. Lett*. 26:1–16.
2821. Saito, T., N. Kurosawa, M. Watanae, Y. Iwasaki, and K. Ishihara. 1998. Design of enzymic glucose sensor using biocompatible polymeric mediator. *Kobunshi Ronbunshu* 55:200–206.
2822. Nagasaka, H., T. Saito, H. Hatakeyama, and M. Watanabe. 1995. Preparation of novel redox copolymers: Poly[ferrocenylmethyl methacrylate-co-methoxy-oligo(ethylene oxide) methacrylate], and their use as polymeric mediators in amperometric glucose sensors. *Denki Kagaku oyobi Kogyo Butsuri Kagaku* 63:1088–1094.
2823. Rosen-Margalit, I. and J. Rishpon. 1993. Novel approaches for the use of mediators in enzyme electrodes. *Biosens. Bioelectron*. 8:315–323.
2824. Sun, C., Y. Zhang, Q. Gao, and H. Xu. 1993. Amperometric biosensors for glucose based on the carbon paste electrode modified by 1,1′-dimethylferrocene and $(C_6H_5)_4B{\cdot}N(CH_3)_4$ ion associate complex. *Fenxi Huaxue* 21:882–886.
2825. Serban, S., A.F. Danet, and N. El Murr. 2004. Rapid and sensitive automated method for glucose monitoring in wine processing. *J. Agric. Food Chem*. 52:5588–5592.
2826. Gueguen, S., M. Boujtita, and N. El Murr. 1999. Effect of the mutarotase on the analytical behaviour of modified carbon paste type glucose biosensor. *Analusis (Brux.)* 27:587–591.
2827. Lawrence, N.S., R.P. Deo, and J. Wang. 2004. Biocatalytic carbon paste sensors based on a mediator pasting liquid. *Anal. Chem*. 76:3735–3739.

2828. Evans, R.G., C.E. Banks, and R.G. Compton. 2004. Amperometric detection of glucose using self-catalytic carbon paste electrodes. *Analyst (U.K.)* 129:428–431.
2829. Toyama, S., Y. Chisuwa, S. Yamauchi, and Y. Ikariyama. 1996. Less positive potential workable blood glucose sensor. *Chem. Sensors* 12 (Suppl. A):141–144.
2830. Rosen-Margalit, I., A. Bettelheim, and J. Rishpon. 1993. Cobalt phthalocyanine as a mediator for the electrooxidation of glucose oxidase at glucose electrodes. *Anal. Chim. Acta* 281:327–333.
2831. Turdean, G., I.C. Popescu, and L. Oniciu. 1998. Glucose oxidase-cobalt(II) phthalocyanine-carbon paste biosensor for amperometric detection of glucose. *Rev. Roum. Chim*. 43:203–208.
2832. Mizutani, F., S. Yabuki, and T. Katsura. 1992. Amperometric enzyme sensor for glucose with glucose oxidase and carbon paste electrode modified with catalyst for hydrogen peroxide oxidation. *Denki Kagaku oyobi Kogyo Butsuri Kagaku* 60:1141–1142.
2833. Luque, G.L., M.C. Rodriguez, and G.A. Rivas. 2005. Glucose biosensors based on the immobilization of copper oxide and glucose oxidase within a carbon paste matrix. *Talanta* 66:467–471.
2834. Wang, C.-J. and X.-Y. Hu. 2008. Potentiometric response of glucose on MnO_2-GOx carbon paste electrode. *Dianhuaxue* 14:76–82.
2835. Waryo, T.T., S. Begic, E. Turkusic, K. Vytřas, and K. Kalcher. 2005. Metal oxide-modified carbon amperometric H_2O_2-transducers and oxidase-biosensors. In *Sensing in Electroanalysis*, Eds. K. Vytřas and K. Kalcher, pp. 145–191. Pardubice, Czech Republic: University of Pardubice.
2836. Wang, J., M. Musameh, and J.-W. Mo. 2006. Acid stability of carbon paste enzyme electrodes. *Anal. Chem*. 78:7044–7047.
2837. Wang, J. and F. Lu. 1998. Oxygen-rich oxidase enzyme electrodes for operation in oxygen-free solutions. *J. Am. Chem. Soc*. 120:1048–1050.
2838. Sugawara, K., T. Kase, C. Kunugi, A. Shimodaira, N. Kamiya, and G. Hirabayashi. 2008. Development of glucose sensor using carbon paste electrode modified with keratin/glucose oxidase. *Gunma Daigaku Kyoikugakubu Kiyo, Shizenkagaku-hen* 56:97–103.
2839. Ming, L., X. Xi, and J. Liu. 2006. Electrochemically platinized carbon paste enzyme electrodes: A new design of amperometric glucose biosensors. *Biotechnol. Lett*. 28:1341–1345.
2840. Wang, J., N. Naser, and U. Wollenberger. 1993. Use of tyrosinase for enzymic elimination of acetaminophen interference in amperometric sensing. *Anal. Chim. Acta* 281:19–24.
2841. Gunasingham, H., C.H. Tan, and T.C. Aw. 1990. Clinical evaluation of amperometric enzyme electrodes in continuous-flow analysis for glucose in undiluted whole blood. *Clin. Chem*. 36:1657–1661.
2842. Gunasingham, H., C.-H. Tan, and T.C. Aw. 1990. Comparative study of first-, second- and third-generation amperometric glucose enzyme electrodes in continuous-flow analysis of undiluted whole blood. *Anal. Chim. Acta* 234:321–330.
2843. Gunasingham, H. and C.-H. Tan. 1990. Conducting organic salt amperometric glucose sensor in continuous-flow monitoring using a wall-jet cell. *Anal. Chim. Acta* 229:83–91.
2844. Pandey, P.C., A.M. Kayastha, and V. Pandey. 1992. Amperometric enzyme sensor for glucose based on graphite paste-modified electrodes. *Appl. Biochem. Biotechnol*. 33:139–144.
2845. Sun, C.-Q., W.-B. Song, D. Zhao, Q. Gao, and H.-D. Xu. 1995. Tetrabutylammonium-tetracyanoquinodimethane as electron-transfer mediator in amperometric glucose sensor. *Chin. Chem. Lett*. 6:141–142.
2846. Pandey, P.C., S. Upadhyay, H.C. Pathak, and C.M.D. Pandey. 1998. Sensitivity, selectivity and reproducibility of some mediated electrochemical biosensors/sensors. *Anal. Lett*. 31:2327–2348.
2847. Gruendig, B. and C. Krabisch. 1989. Electron mediator-modified electrode for the determination of glucose in fermentation media. *Anal. Chim. Acta* 222:75–81.
2848. Savitri, D. and C.K. Mitra. 1999. Modeling the surface phenomena in carbon paste electrodes by low frequency impedance and double-layer capacitance measurements. *Bioelectrochem. Bioenerg*. 48:163–169.
2849. Savitri, D. and C.K. Mitra. 1999. Role of mediators in electron transport from glucose oxidase redox center to electrode surface in a covalently coupled enzyme paste electrode. *J. Biosci*. 24:43–48.
2850. Baronas, R., F. Ivanauskas, and J. Kulys. 1999. Modeling a biosensor based on the heterogeneous microreactor. *J. Math. Chem*. 25:245–252.
2851. Kawakami, M., N. Uriuda, H. Koya, Y. Tajima, and S. Gondo. 1994. Amperometric glucose sensor based on ubiquinone-mixed carbon paste electrode. *Fukuoka Kogyo Daigaku Erekutoronikusu Kenkyusho Shoho* 11:35–40.
2852. Qiao, Y.-G., T.-L. Ying, and D.-Y. Qi. 1994. Glucose sensor based on carbon-paste electrode modified with ubiquinone-glucose oxidase. *Fenxi Huaxue* 22:709–711.
2853. Yabuli, S., F. Mizutani, and T. Katsura. 1992. In *Biosensor 92 Proceedings: The Second World Congress on Biosensors*. Eds. A.P.F. Turner, W.R. Heinemann, I. Karube, and R.D. Schmid, pp. 149–152. Amsterdam, the Netherlands: Elsevier Science.

2854. Okuda, A., F. Mizutani, and S. Yabuki. 1991. Glucose-sensing electrode based on carbon paste-containing polyethylene glycol-attached glucose oxidase and ferrocene. *Hokkaidoritsu Kogyo Shikenjo Hokoku* 290:173–177.
2855. Longchamp, S., M. Herrmann, J.-M. Nigretto, O. Gallet, L. Poulouin, and J.-M. Imhoff. 1998. Enhanced sensitivity of a first generation glucose amperometric biosensor based on fibrinogen-precoating to carbon paste electrode. *Electroanalysis* 10:1064–1066.
2856. El Rhazi, M. and H.N. Randriamahazaka. 1997. The pH-dependent permselectivity of the fibrinogen-modified carbon paste electrode. *Electroanalysis* 9:403–406.
2857. Kulys, J. and H.E. Hansen. 1995. Long-term response of an integrated carbon paste based glucose biosensor. *Anal. Chim. Acta* 303:285–294.
2858. Kulys, J. and H.E. Hansen. 1994. Carbon-paste biosensors array for long-term glucose measurement. *Biosens. Bioelectron*. 9:491–500.
2859. Gorton, L., M. Bardheim, G. Bremle, E. Csoregi, B. Persson, and G. Pettersson. 1991. In *Flow Injection Analysis (FIAJ Based on Enzymes or Antibodies)*. Eds. R.D. Schmid, pp. 305–314. Weinheim, Germany: VCH.
2860. Persson, B., H.L. Lan, L. Gorton, Y. Okamoto, P.D. Hale, L.I. Boguslavsky, and T. Skotheim. 1992. In *Biosensor 92 Proceedings: The Second World Congress on Biosensors*. Eds. A.P.F. Turner, W.R. Heinemann, I. Karube, and R.D. Schmid, pp. 149–152. Amsterdam, the Netherlands: Elsevier Science Ltd.
2861. Kurtinaitiene, B., V. Liauksminas, R. Meskys, R. Rudomanskis, and V. Laurinavicius. 1995. Mediated glucose biosensor based on PQQ-dependent glucose dehydrogenase. *Biologija (Vilnius)* 1995:50–52.
2862. Ivanauskas, F., I. Kaunietis, V. Laurinavicius, J. Razumiene, and R. Simkus. 2005. Computer simulation of the steady state currents at enzyme doped carbon paste electrodes. *J. Math. Chem*. 38:355–366.
2863. Babkina, E., E. Chigrinova, O. Ponamoreva, V. Alferov, and A. Reshetilov. 2006. Bioelectrocatalytic oxidation of glucose by immobilized bacteria Gluconobacter oxydans. Evaluation of water-insoluble mediator efficiency. *Electroanalysis* 18:2023–2029.
2864. Ikeda, T., T. Kurosaki, K. Takayama, and H. Kinoshita. 1993. Mediated bioelectrocatalysis based on a whole-cell at a carbon paste electrode coated with immobilized Gluconobacter industrius. *Denki Kagaku oyobi Kogyo Butsuri Kagaku* 61:889–890.
2865. Zhao, M., D.B. Hibbert, and J.J. Gooding. 2003. An oxygen-rich fill-and-flow channel biosensor. *Biosens. Bioelectron*. 18:827–833.
2866. Li, Y.-X., L.-D. Zhu, and G.-Y. Zhu. 2001. Optical fiber biosensor based on electrochemiluminescence for glucose analysis. *Fenxi Shiyanshi* 20:89–92.
2867. Katsu, T., X. Zhang, and G.A. Rechnitz. 1994. Simultaneous determination of lactose and glucose in milk using two working enzyme electrodes. *Talanta* 41:843–848.
2868. Liden, H., J. Volc, G. Marko-Varga, and L. Gorton. 1998. Pyranose oxidase-modified carbon paste electrodes for monosaccharide determination. *Electroanalysis* 10:223–230.
2869. Lin, L., J. Chen, L. Huang, and X. Lin. 2008. Electrochemical and UV-Vis spectrophotometric studies on the interaction between isorhamnetin and deoxyribonucleic acid. *Fenxi Ceshi Xuebao* 27:635–637, 640.
2870. Safavi, A., N. Maleki, and F. Tajabadi. 2010. SE-30 graphite composite electrode: An alternative for the development of electrochemical biosensors. *Electroanalysis* 22:2460–2466.
2871. Valentini, F., S. Orlanducci, M.L. Terranova, A. Amine, and G. Palleschi. 2004. Carbon nanotubes as electrode materials for the assembling of new electrochemical biosensors. *Sens. Actuators B* B100:117–125.
2872. Dai, H., H. Xu, Y. Lin, X. Wu, and G. Chen. 2009. A highly performing electrochemical sensor for NADH based on graphite/poly(methylmethacrylate) composite electrode. *Electrochem. Comm*. 11:343–346.
2873. Saidman, S.B. 2003. Electrochemical behavior of NAD+-modified carbon paste electrodes. *Indian J. Chem., Sect. A* 42:769–773.
2874. Saidman, S.B. and J.B. Bessone. 2000. The influence of electrode material on NAD+ oxidation. *Electrochim. Acta* 45:3151–3156.
2875. Huang, J., D. Wang, H. Hou, and T. You. 2008. Electrospun palladium nanoparticle-loaded carbon nanofibers and their electrocatalytic activities towards hydrogen peroxide and NADH. *Adv. Funct. Mater*. 18:441–448.
2876. Pinho da Silva, R. and S.H.P. Serrano. 2003. Electrochemical oxidation of biological molecules at carbon paste electrodes pre-treated in guanine solutions. *J. Pharm. Biomed. Anal*. 33:735–744.
2877. Zare, H.R., N. Nasirizadeh, S.-M. Golabi, M. Namazian, M. Mazloum-Ardakani, and D. Nematollahi. 2006. Electrochemical evaluation of coumestan modified carbon paste electrode: Study on its application as a NADH biosensor in presence of uric acid. *Sens. Actuators B* B114:610–617.
2878. Antiochia, R., I. Lavagnini, P. Pastore, and F. Magno. 2004. A comparison between the use of a redox mediator in solution and of surface modified electrodes in the electrocatalytic oxidation of nicotinamide adenine dinucleotide. *Bioelectrochemistry* 64:157–163.

2879. Delbem, M.F., W.J. Baader, and S.H.P. Serrano. 2002. Mechanism of 3,4-dihydroxybenzaldehyde electropolymerization at carbon paste electrodes-catalytic detection of NADH. *Quim. Nova (Barcelona)* 25:741–747.
2880. Lazarin, A.M. and C. Airoldi. 2004. Intercalation of methylene blue into barium phosphate-synthesis and electrochemical investigation. *Anal. Chim. Acta* 523:89–95.
2881. Wang, J., P.V.A. Pamidi, and M. Jiang. 1998. Low-potential stable detection of _-NADH at sol-gel derived carbon composite electrodes. *Anal. Chim. Acta* 360:171–178.
2882. Ladiu, C.I., R. Garcia, I.C. Popescu, and L. Gorton. 2007. NADH electro-catalytic oxidation at glassy carbon paste electrodes modified with Meldola Blue adsorbed onatitanium phosphate. *Rev. Chim. (Roum.)* 58:465–469.
2883. Ladiu, C.I., J.R. Garcia, I.C. Popescu, and L. Gorton. 2007. NADH electrocatalytic oxidation at glassy carbon paste electrodes modified with Meldola Blue adsorbed on acidic a-zirconium phosphate. *Rev. Roum. Chim*. 52:67–74.
2884. Ladiu, C.I., I.C. Popescu, and L. Gorton. 2005. Electrocatalytic oxidation of NADH at carbon paste electrodes modified with meldola blue adsorbed on zirconium phosphate: Effect of Ca^{2+} and polyethyleneimine. *J. Solid State Electrochem*. 9:296–303.
2885. Hoffmann, A.A., S.L.P. Dias, E.V. Benvenutti, E.C. Lima, F.A. Pavan, J.R. Rodrigues, R. Scotti, E.S. Ribeiro, and Y. Gushikem. 2007. Cationic dyes immobilized on cellulose acetate surface modified with titanium dioxide: Factorial design and an application as sensor for NADH. *J. Braz. Chem. Soc*. 18:1462–1472.
2886. Wu, J. 2001. Determination of reduced nicotinamide adenine dinucleotide with p-nitrophenylcarboxyltoluidine blue O carbon paste electrode and its electrochemical mechanism. *Fenxi Huaxue* 29:117.
2887. Gligor, D., F. Balaj, A. Maicaneanu, R. Gropeanu, I. Grosu, L. Muresan, and I.C. Popescu. 2009. Carbon paste electrodes modified with a new phenothiazine derivative adsorbed on zeolite and on mineral clay for NADH oxidation. *Mater. Chem. Phys*. 113:283–289.
2888. Safavi, A., O. Moradlou, and M. Saadatifar. 2010. Methylated azopyridine as a new electron transfer mediator for the electrocatalytic oxidation of NADH. *Electroanalysis* 22:1072–1077.
2889. Kinoshita, H., M. Torimura, K. Yamamoto, K. Kano, and T. Ikeda. 1999. Amperometric determination of NAD(P)H with peroxidase-based H_2O_2-sensing electrodes and its application to isocitrate dehydrogenase activity assay in serum. *J. Electroanal. Chem*. 478:33–39.
2890. Todoriki, S., K. Miki, T. Ikeda, and M. Senda. 1990. The chemically amplified response of a membrane-covered diaphorase and glucose-6-phosphate dehydrogenase co-immobilized carbon paste electrode to NADH and NAD. *Denki Kagaku Oyobi Kogyo Butsuri Kagaku* 58:1089–1096.
2891. Safavi, A., N. Maleki, E. Farjami, and F.A. Mahyari. 2009. Simultaneous electrochemical determination of glutathione and glutathione disulfide at a nanoscale copper hydroxide composite carbon ionic liquid electrode. *Anal. Chem*. 81:7538–7543.
2892. Kinoshita, H., T. Mira, and S. Kamihira. 1999. Amperometric determination of glutathione in yeast extract using a membrane-covered phthalocyanine embedded carbon-paste electrode. *Bunseki Kagaku* 48:117–120.
2893. Elyacoubi, A., S.I.M. Zayed, B. Blankert, and J.-M. Kauffmann. 2006. Development of an amperometric enzymatic biosensor based on gold modified magnetic nanoporous microparticles. *Electroanalysis* 18:345–350.
2894. Martinez-Montequin, S., C. Fernandez-Sanchez, and A. Costa-Garcia. 2000. Voltammetric monitoring of the interaction between streptavidin and biotinylated alkaline phosphatase through the enzymatic hydrolysis of 3-indoxyl phosphate. *Anal. Chim. Acta* 417:57–65.
2895. Kinoshita, H. 2002. Amperometric assay of γ-glutamyltransferase using glutathione as a substrate. *Bunseki Kagaku* 51:1183–1185.
2896. Rodriguez, M.C. and G.A. Rivas. 2009. Label-free electrochemical aptasensor for the detection of lysozyme. *Talanta* 78:212–216.
2897. Longchamp, S., H.N. Randriamahazaka, and J.-M. Nigretto. 1994. The catalytic activity and thermal denaturation of plasmin adsorbed to graphite carbon surfaces. *J. Colloid Interface Sci*. 166:444–450.
2898. Daraio de Peuriot, M. Nigretto, and J.M. Jozefowicz. 1981. Electrochemical activity determination of trypsin-like enzymes. IV. Coupled electrochemical and spectrophotometric assay of thrombin using the same H-D-Phe-Pip-Arg-4 MeO _ naphthylamide, 2HCl (S-2421) substrate. *Thrombosis Res*. 22:303–308.
2899. Reynaud, J.A., B. Malfoy, and A. Bere. 1980. The electrochemical oxidation of three proteins: RNAse A, bovine serum albumin and concanavalin A at solid electrodes. *Bioelectrochem. Bioenerg*. 7:595–606.
2900. Hernandez-Santos, D., M.B. Gonzalez-Garcia, and A. Costa-Garcia. 2000. Electrochemical determination of gold nanoparticles in colloidal solutions. *Electrochim. Acta* 46:607–615.

2901. Ito, S., S.-I. Yamazaki, K. Kano, and T. Ikeda. 2000. Highly sensitive electrochemical detection of alkaline phosphatase. *Anal. Chim. Acta* 424:57–63.
2902. Krizkova, S., V. Hrdinova, V. Adam, E.P.J. Burgess, K.J. Kramer, M. Masarik, and R. Kizek. 2008. Chip-Based CE for avidin determination in transgenic tobacco and its comparison with square-wave voltammetry and standard gel electrophoresis. *Chromatographia* 67(Suppl.):S75–S81.
2903. Tang, D. and B. Xia. 2008. Electrochemical immunosensor and biochemical analysis for carcinoembryonic antigen in clinical diagnosis. *Microchim. Acta* 163:41–48.
2904. Erabi T., Higuti, T., Sakata, K., Kakuno, T., Yamashita, J., Tanaka, M., and Horio, T. 1976. Polarographic studies in presence of Triton X-100 on oxidation-reduction components bound with chromatophores from *Rhodospirillum rubrum. J. Biochem*. 79:497–503.
2905. Lee, T.-Y., H.-J. Kim, J.-O. Moon, and Y.-B. Shim. 2004. Determination of cytochrome C with cellulose—DNA modified carbon paste electrodes. *Electroanalysis* 16:821–826.
2906. Merino, M., L.J. Nunez-Vergara, and J.A. Squella. 2000. Cytochrome c reductase immobilized on carbon paste electrode and its electrocatalytic effect on the reduction of cytochrome c. *Bol. Soc. Chil. Quim*. 45:433–439.
2907. Arkoub, I.A., H. Randriamahazaka, and J.-M. Nigretto. 1997. Effect of surface activation on charge and mass transfer rates of the hexacyanoferrate(III)/(II) redox probe at fibrinogen-modified carbon paste electrodes. *Anal. Chim. Acta* 340:99–108.
2908. Lu, Q., C. Hu, R. Cui, and S. Hu. 2007. Direct electron transfer of hemoglobin founded on electron tunneling of CTAB monolayer. *J. Phys. Chem. B* 111:9808–9813.
2909. Xu, Y., C. Hu, and S. Hu. 2009. Single-chain surfactant monolayer on carbon paste electrode and its application for the studies on the direct electron transfer of hemoglobin. *Bioelectrochemistry* 74:254–259.
2910. Jian, F., Y. Qiao, and R. Zhuang. 2007. Direct electrochemistry of hemoglobin in TATP film: Application in biological sensor. *Sens. Actuators B* B124:413–420.
2911. Sun, W., Z. Zhai, and K. Jiao. 2008. Hemoglobin modified carbon paste electrode: Direct electrochemistry and electrocatalysis. *Anal. Lett*. 41:2819–2831.
2912. Guan, L. and Q. Wang. 2006. Study on direct electrochemistry and peroxidase-like electrocatalysis of hemoglobin in organic solvents. *Huaxue Yanjiu, Yu Yingyong* 18:1035–1040.
2913. Sun, W., D.D. Wang, R.F. Gao, J. Sun, and K. Jiao. 2006. Direct electrochemistry of hemoglobin immobilized in sodium alginate film on the ionic liquid [BMIM]PF6 modified carbon paste electrode. *Chin. Chem. Lett*. 17:1589–1591.
2914. Li, Y., H. Cao, and Y. Zhang. 2005. Reductive dechlorination of trichloroacetic acid by bioelectrochemically catalytic method. *Huanjing Kexue* 26:55–58.
2915. Li, Y.-P., H.-B. Cao, and Y. Zhang. 2005. Direct electrochemistry of hemoglobin immobilized on carbon paste electrode modified by carbon nanotubes. *Wuli Huaxue Xuebao* 21:187–191.
2916. Sun, W., X. Li, Z. Zhai, and K. Jiao. 2008. Direct electrochemistry of hemoglobin on single-walled carbon nanotubes modified carbon ionic liquid electrode and its electrocatalysis. *Electroanalysis* 20:2649–2654.
2917. Qiao, L., R. Gao, and J. Zheng. 2010. Direct electrochemistry of hemoglobin immobilized on hydrophilic ionic liquid-chitosan-ZrO_2 nanoparticles composite film with carbon ionic liquid electrode as the platform. *Anal. Sci*. 26:1181–1186.
2918. Han, J., J. Wei, and H. Chen. 1993. Electrocatalysis of biomolecules at modified electrodes. (III). Catalytic reduction of hemoglobin at chemically modified carbon paste electrode containing cresyl fast violet. *Gaodeng Xuexiao Huaxue Xuebao* 14:332–333.
2919. Fernandez Sanchez, C., M.B. Gonzalez Garcia, and A. Costa Garcia. 2000. AC voltammetric carbon paste-based enzyme immunosensors. *Biosens. Bioelectron*. 14:917–924.
2920. Fernandez Sanchez, C. and A. Costa Garcia. 1999. Competitive enzyme immunosensor developed on a renewable carbon paste electrode support. *Anal. Chim. Acta* 402:119–127.
2921. Fernandez Sanchez, C. and A. Costa Garcia. 1997. Adsorption of immunoglobulin G on carbon paste electrodes as a basis for the development of immunoelectrochemical devices. *Biosens. Bioelectron*. 12:403–413.
2922. Fernandez Sanchez, C. and A. Costa Garcia. 1999. Inhibition of adsorbed alkaline phosphatase activity by an anti-enzyme antibody. An approach to carbon paste immunoelectrodes. *Electroanalysis* 11:1350–1354.
2923. Liu, G. and Y. Lin. 2005. A renewable electrochemical magnetic immunosensor based on gold nanoparticle labels. *J. Nanosci. Nanotechnol*. 5:1060–1065.
2924. Adam, V., O. Zitka, P. Dolezal, L. Zeman, A. Horna, J. Hubalek, J. Sileny, S. Krizkova, L. Trnkova, and R. Kizek. 2008. Lactoferrin isolation using monolithic column coupled with spectrometric or microamperometric detector. *Sensors* 8:464–487.

2925. Qiao, Y., F. Jian, H. Yu, and L. Hu. 2007. Composite films of lecithin and heme proteins with electrochemical and electrocatalytic activities. *J. Colloid Interface Sci*. 315:537–543.
2926. Bobes, C.F., M.T.F. Abedul, and A. Costa-Garcia. 2001. Pneumolysin ELISA with adsorptive voltammetric detection of indigo in a flow system. *Electroanalysis* 13:559–566.
2927. Bengoechea Alvarez, M.J., C. Fernandez Bobes, M.T. Fernandez Abedul, and A. Costa-Garcia. 2001. Sensitive detection for enzyme-linked immunosorbent assays based on the adsorptive stripping voltammetry of indigo in a flow system. *Anal. Chim. Acta* 442:55–62.
2928. Bartosik, M., V. Ostatna, and E. Palecek. 2009. Electrochemistry of riboflavin-binding protein and its interaction with riboflavin. *Bioelectrochemistry* 76:70–75.
2929. Lappin, A.G., C.A. Lewis, and W.J. Ingledew. 1985. Kinetics and mechanisms of reduction of rusticyanin, a blue copper protein from Thiobacillus ferrooxidans, by inorganic cations. *Inorg. Chem*. 24:1446–1450.
2930. Masarik, M., A. Stobiecka, R. Kizek, F. Jelen, Z. Pechan, W. Hoyer, T.M. Jovin, V. Subramaniam, and E. Palecek. 2004. Sensitive electrochemical detection of native and aggregated a-synuclein protein involved in Parkinson's disease. *Electroanalysis* 16:1172–1181.
2931. Batista, I.V., M.R.V. Lanza, I.L.T. Dias, S.M.C.N. Tanaka, A.A. Tanaka, and M.D.P.T. Sotomayor. 2008. Electrochemical sensor highly selective for estradiol valerate determination based on a modified carbon paste with iron tetrapyridinoporphyrazine. *Analyst (U.K.)* 133:1692–1699.
2932. Wu, K.-B., Q. He, and S.-S. Hu. 2002. Voltammetric determination of estrogens based on the enhancement effect of surfactant at carbon paste electrode. *Wuhan Univ. J. Natl. Sci*. 7:463–469.
2933. Raba, J., C.A. Fontan, and V.A. Cortinez. 1994. 4-(3,5-Dichloro-2-pyridylazo)-1,3-diaminobenzene-graphite paste electrode for end-point detection in the automatic potentiometric titration of zinc(II) with EDTA. *Talanta* 41:273–278.
2934. Wang, J., G. Rivas, X. Cai, M. Chicharro, P.A.M. Farias, and E. Palecek. 1996. Trace measurements of insulin by potentiometric stripping analysis at carbon paste electrodes. *Electroanalysis* 8:902–906.
2935. Bekheit, G.E. 2000. Determination of melatonin by differential pulse voltammetry at modified carbon paste electrode. *Asian J. Chem*. 12:541–547.
2936. Wang, S. and T. Peng. 2000. Adsorptive/extractive behavior of melatonin at carbon paste electrodes and its electrochemical determination. *Fenxi Huaxue* 28:1350–1354.
2937. Radi, A. and G.E. Bekhiet. 1998. Voltammetry of melatonin at carbon electrodes and determination in capsules. *Bioelectrochem. Bioenerg*. 45:275–279.
2938. Corujo-Antuna, J.L., E.M. Abad-Villar, M.T. Fernandez-Abedul, and A. Costa-Garcia. 2003. Voltammetric and flow amperometric methods for the determination of melatonin in pharmaceuticals. *J. Pharm. Biomed. Anal*. 31:421–429.
2939. Corujo-Antuna, J.L., S. Martinez-Montequin, M.T. Fernandez-Abedul, and A. Costa-Garcia. 2003. Sensitive adsorptive stripping voltammetric methodologies for the determination of melatonin in biological fluids. *Electroanalysis* 15:773–778.
2940. He, Q., X. Dang, C. Hu, and S. Hu. 2004. The effect of cetyltrimethyl ammonium bromide on the electrochemical determination of thyroxine. *Colloids Surf. B* 35:93–98.
2941. Dang, X.-P., W.-H. Chen, and S.-S. Hu. 2004. Enhanced effects of surfactants on electrooxidation of two species with opposite charges. *Wuhan Daxue Xuebao, Lixueban* 50:141–145.
2942. Hu, C., Q. He, Q. Li, and S. Hu. 2004. Enhanced reduction and determination of trace thyroxine at carbon paste electrode in the presence of trace cetyltrimethylammonium bromide. *Anal. Sci. (Jpn.)* 20:1049–1054.
2943. Sun, Y. 2005. Study on voltammetric determination of thyroxine by using carbon paste electrode based on the activity effect of surfactant. *Lihua Jianyan, Huaxue Fence* 41:229–231.
2944. Stefan-van Staden, R.-I., J.F. van Staden, H.Y. Aboul-Enein, M.C. Mirica, I. Balcu, and N. Mirica. 2008. Determination of (+)-3,3′,5,5′-tetraiodo-L-thyronine (L-T4) in serum and pharmaceutical formulations using a sequential injection analysis/immunosensor system. *J. Immunoassay Immunochem*. 29:348–355.
2945. Hooda, V., A. Gahlaut, H. Kumar, and C.S. Pundir. 2009. Biosensor based on enzyme coupled PVC reaction cell for electrochemical measurement of serum total cholesterol. *Sens. Actuators B* B136:235–241.
2946. Zhu, Q., M. Han, H. Wang, L. Liu, J. Bao, Z. Dai, and J. Shen. 2010. Electrogenerated chemiluminescence from CdS hollow spheres composited with carbon nanofiber and its sensing application. *Analyst* 135:2579–2584.
2947. Kinoshita, H., M. Torimura, K. Kano, and T. Ikeda. 1998. Amperometric determination of high-density lipoprotein cholesterol using polyethylene glycol-modified enzymes and a peroxidase-entrapped electrode. *Ann. Clin. Biochem*. 35:739–744.
2948. Kinoshita, H., T. Chijiwa, M. Torimura, K. Kano, and T. Ikeda. 1998. Direct determination of high-density lipoprotein- and total cholesterol in serum using a peroxidase-entrapped electrode and polyethylene glycol-modified enzymes. *Bunseki Kagaku* 47:233–238.

2949. Sweetser, P.B. and D.G. Swartzfager. 1978. Indole-3-acetic acid levels of plant tissue as determined by a new high performance liquid chromatographic method. *Plant Physiol*. 61:254–258.
2950. Zhang, S. and K. Wu. 2004. Square wave voltammetric determination of indole-3-acetic acid based on the enhancement effect of anionic surfactant at the carbon paste electrode. *Bull. Korean Chem. Soc*. 25:1321–1325.
2951. Li, C.-X., J. Li, L.-T. Xiao, G.-L. Shen, and R.-Q. Yu. 2003. Study on the electrochemical biosensor for photohormone indole 3-acetic acid. *Fenxi Kexue Xuebao* 19:205–208.
2952. Ballesteros, Y., M.J. Gonzalez De La Huebra, M.C. Quintana, P. Hernandez, and L. Hernandez. 2003. Voltamperometric determination of kinetin with a carbon paste modified electrode. *Microchem. J*. 74:193–202.
2953. Leite, O.D., O. Fatibello-Filho, and A.d.M. Barbosa. 2003. Determination of catecholamines in pharmaceutical formulations using a biosensor modified with a crude extract of fungi laccase (*Pleurotus ostreatus*). *J. Braz. Chem. Soc*. 14:297–303.
2954. Leite, O.D., K.O. Lupetti, O. Fatibello-Filho, I.C. Vieira, and A.d.M. Barbosa. 2003. Synergic effect studies of the bi-enzymatic system laccase-peroxidase in a voltammetric biosensor for catecholamines. *Talanta* 59:889–896.
2955. Ensafi, A.A., A. Arabzadeh, and H. Karimi-Maleh. 2010. Sequential determination of benserazide and levodopa by voltammetric method using chloranil as a mediator. *J. Braz. Chem. Soc*. 21:1572–1580.
2956. Serpentini, C.-L., C. Gauchet, D. De Montauzon, M. Comtat, J. Ginestar, and N. Paillous. 2000. First electrochemical investigation of the redox properties of DOPA-melanins by means of a carbon paste electrode. *Electrochim. Acta* 45:1663–1668.
2957. Wang, J. and B.A. Freiha. 1983. Evaluation of differential pulse voltammetry at carbon electrodes. *Talanta* 30:317–322.
2958. Liu, D., Y. Liu, H. Hou, and T. You. 2010. A new strategy to pretreat carbon nanofiber and its application in determination of dopamine. *J. Nanomater*., ID 659207, 6 pages; DOI: 10.1155/2010/659207.
2959. Li, Z., J.-M. Xu, H.-D. Xu, N. Lu, and J.-R. Qi. 2007. Determination of dopamine using rice hull activated carbon modified carbon paste electrode by voltammetry. *Jilin Daxue Xuebao, Lixueban* 45:98–102.
2960. Pandurangachar, M., B.E.K. Swamy, B.N. Chandrashekar, O. Gilbert, S. Reddy, and B.S. Sherigara. 2010. Electrochemical investigations of potassium ferricyanide and dopamine by 1-butyl-4-methylpyridinium tetrafluoro borate modified carbon paste electrode: A cyclic voltammetric study. *Int. J. Electrochem. Sci*. 5:1187–1202.
2961. Zhang, Y., H.-F. Zhang, and J.-B. Zheng. 2008. A nafion/ionic liquid/modified carbon paste electrode for selective detection of dopamine in the presence of ascorbic acid and uric acid. *Fenxi Shiyanshi* 27:34–37.
2962. Shankar, S.S., B.E.K. Swamy, M. Pandurangachar, U. Chandra, B.N. Chandrashekar, J.G. Manjunatha, and B.S. Sherigara. 2010. Electrocatalytic oxidation of dopamine on acrylamide modified carbon paste electrode: A voltammetric study. *Int. J. Electrochem. Sci*. 5:944–954.
2963. Shreenivas, M.T., B.E.K. Swamy, U. Chandra, S.S. Shankar, J.G. Manjunatha, and B.S. Sherigara. 2010. Electrochemical investigations of dopamine at chemically modified Losartan carbon paste electrode: A cyclic voltammetric study. *Int. J. Electrochem. Sci*. 5:774–781.
2964. Wei, J., J.-B. He, S.-Q. Cao, Y.-W. Zhu, Y. Wang, and G.-P. Hang. 2010. Enhanced sensing of ascorbic acid, dopamine and serotonin at solid carbon paste electrode with a nonionic polymer film. *Talanta* 83:190–196.
2965. Chandrashekar, B.N., B.E.K. Swamy, M. Pandurangachar, S.S. Shankar, O. Gilbert, J.G. Manjunatha, and B.S. Sherigara. 2010. Electrochemical oxidation of dopamine at polyethylene glycol modified carbon paste electrode: A cyclic voltammetric study. *Int. J. Electrochem. Sci*. 5:578–592.
2966. Zheng, J. and X. Zhou. 2007. Sodium dodecyl sulfate-modified carbon paste electrodes for selective determination of dopamine in the presence of ascorbic acid. *Bioelectrochemistry* 70:408–415.
2967. Corona-Avendano, S., G. Alarcon-Angeles, M.T. Ramirez-Silva, G. Rosquete-Pina, M. Romero-Romo, and M. Palomar-Pardave. 2007. On the electrochemistry of dopamine in aqueous solution. Part I: The role of [SDS] on the voltammetric behavior of dopamine on a carbon paste electrode. *J. Electroanal. Chem*. 609:17–26.
2968. Patrascu, D.G., V. David, I. Balan, A. Ciobanu, I.G. David, P. Lazar, I. Ciurea, I. Stamatin, and A.A. Ciucu. 2010. Selective DPV method of dopamine determination in biological samples containing ascorbic acid. *Anal. Lett*. 43:1100–1110.
2969. Han, X.-X. and Z.-N. Gao. 2007. Electrochemical behaviors of dopamine and ascorbic acid at CPB modified carbon paste electrodes. *Fenxi Ceshi Xuebao* 26:612–616.
2970. Han, X.-X. and Z.-N. Gao. 2007. Electrochemical behavior of dopamine and ascorbic acid at CPB/CPE and its application. *Yingyong Huaxue* 24:770–773.

2971. Han, X.-X. and Z.-N. Gao. 2007. Electrochemical behaviors of uric acid and ascorbic acid at cetylpyridinium bromide in situ modified carbon paste electrodes. *Huaxue Yanjiu, Yu Yingyong* 19:254–257.
2972. Han, X.-X., B. Liang, Z.-N. Gao, and Z.-X. Zheng. 2007. Electrochemical behaviors of ascorbic acid and uric acid at cetylpyridinium bromide in situ modified carbon paste electrodes and their selective determination. *Fenxi Shiyanshi* 26:30–33.
2973. Shangguan, X.-D., J.-B. Zheng, Q.-L. Sheng, and Y.-P. He. 2010. Electrocatalytic oxidation and determination of dopamine at a carbon ionic liquid electrode modified with nafion-L-aspartic acid composite film. *Acad. J. Xi'an Jiatong Univ*. 22:1–6.
2974. Ramirez-Silva, M.T., S. Corona-Avendano, G. Alarcon-Angeles, A. Rojas-Hernandez, M. Romero-Romo, and M. Palomar-Pardave. 2009. Dopamine electrochemical behavior onto an electrode modified with a β-cyclodextrin polymer. *ECS Trans*. 20:151–157.
2975. Alarcon-Angeles, G., S. Corona-Avendano, M.E. Palomar-Pardave, M.A. Romero-Romo, A. Rojas-Hernandez, and M.T. Ramirez-Silva. 2008. Electrochemical and spectrophotometric evaluation of the formation constants of the AA-βCD and DA-βCD inclusion complexes. *ECS Trans*. 15:507–516.
2976. Alarcon-Angeles, G., S. Corona-Avendano, M.E. Palomar-Pardave, A. Merkoci, M.A. Romero-Romo, A. Rojas-Hernandez, and M.T. Ramirez-Silva. 2008. Electrochemical study of dopamine and ascorbic acid by means of supramolecular systems. *ECS Trans*. 15:325–334.
2977. Rubianes, M.D., A.S. Arribas, E. Bermejo, M. Chicharro, A. Zapardiel, and G. Rivas. 2010. Carbon nanotubes paste electrodes modified with a melanic polymer: Analytical applications for the sensitive and selective quantification of dopamine. *Sens. Actuators B* 144:274–279.
2978. Atta, N.F., A. Galal, F.M. Abu-Attia, and S.M. Azab 2010. Carbon paste gold nanoparticles sensor for the selective determination of dopamine in buffered solutions. *J. Electrochem. Soc*. 157:F116–F123.
2979. Sivanesan, A. and A. John. 2009. Gold nanoparticles modified electrodes for biosensors. In *Nanostructured Materials for Electrochemical Biosensors*. Eds. Y. Umasankar, S.A. Kumar, and S.M. Chen, pp. 97–128. New York: Nova Science Publishers.
2980. Chi, Y., Y. Wang, and Z. Zhu. 2009. Voltammetric behavior of dopamine at poly (o-aminophenol)/nickel modified carbon paste electrode. *Jisuanji Yu Yingyong Huaxue* 26:566–570.
2981. Navaratne, A. and G.A. Rechnitz. 1992. Use of tin oxide electrodes in flow injection analysis with application to plant tissue-based biosensors. *Anal. Lett*. 25:191–203.
2982. Wei, P. and G. Li. 2005. Electrochemical oxidation of dopamine at a carbon paste electrode modified with 3-mercaptopropyltrimethoxysilane copper encapsulated in mesoporous crystalline molecular sieve. *Fenxi Huaxue* 33:703–706.
2983. Rekha, B.E., K. Swamy, R. Deepa, V. Krishna, O. Gilbert, U. Chandra, and B.S. Sherigara. 2009. Electrochemical investigations of dopamine at chemically modified alcian blue carbon paste electrode: A cyclic voltammetric study. *Int. J. Electrochem. Sci*. 4:832–845.
2984. Naik, R.R., E. Niranjana, B.E.K. Swamy, B.S. Sherigara, K.R.V. Reddy, and H. Jayadevappa. 2010. Simultaneous detection of dopamine and uric acid at cobalt (II) octanitro phthalocyanine modified carbon paste electrode. *Res. Rev. Electrochem*. 2:33–36.
2985. Wohnrath, K., C.A. Pessoa, P.M. dos Santos, J.R. Garcia, A.A. Batista, and O.N. Oliveira. 2006. Electrochemical properties of a ruthenium complex immobilized as thin films and in carbon paste electrodes. *Progr. Solid State Chem*. 33:243–252.
2986. Raghavendra Naik, R., B.E.K. Swamy, U. Chandra, E. Niranjana, B.S. Sherigara, and H. Jayadevappa. 2009. Separation of ascorbic acid, dopamine and uric acid by acetone/water modified carbon paste electrode: A cyclic voltammetric study. *Int. J. Electrochem. Sci*. 4:855–862.
2987. Yoo, J.H., B.W. Woo, S.S. Kim, J.H. Uhm, H. Nam, and G.S. Cha. 2001. Voltammetric determination of dopamine with the N-hydroxysuccinimide modified carbon paste electrode. *J. Korean Electrochem. Soc*. 4:109–112.
2988. Deng, Z., Z. Zhu, T. Yao, and T. Li. 1999. Electrocatalytic oxidation determination of dopamine by tetracyanoquinodimethane modified carbon paste electrode. *Lihua Jianyan, Huaxue Fence* 35:8–9, 11.
2989. Chandra, U., B.E.K. Swamy, O. Gilbert, and B.S. Sherigara. 2010. Determination of dopamine in presence of ascorbic acid at Eriochrome Black T modified carbon paste electrode: A voltammetric study. *Int. J. Electrochem. Sci*. 5:1475–1483.
2990. Mazloum-Ardakani, M., R. Arazi, H. Beitollahi, and H. Naeimi. 2010. 2,2′-(1,3-propanediylbisnitriloethylidine)bis-hydroquinone/TiO_2 nanoparticles modified carbon paste electrode for selective determination of dopamine in the presence of uric acid and tryptophan. *Anal. Meth*. 2:1078–1084.
2991. Manjunatha, J.G., B.E.K. Swamy, G.P. Mamatha, O. Gilbert, B.N. Chandrashekar, and B.S. Sherigara. 2010. Electrochemical studies of dopamine and epinephrine at a poly (tannic acid) modified carbon paste electrode: A cyclic voltammetric study. *Int. J. Electrochem. Sci*. 5:1236–1245.

2992. Chandra, U., B.E.K. Swamy, O. Gilbert, and B.S. Sherigara. 2010. Voltammetric resolution of dopamine in the presence of ascorbic acid and uric acid at poly (calmagite) film coated carbon paste electrode. *Electrochim. Acta* 55:7166–7174.
2993. Petit, C., A. Gonzalez-Cortes, and J.-M. Kauffmann. 1995. Preparation and characterization of a new enzyme electrode based on solid paraffin and activated graphite particles. *Talanta* 42:1783–1789.
2994. Petit, C. and J.-M. Kauffmann. 1995. New carbon paste electrode for the development of biosensors. *Anal. Proc*. 32:11–12.
2995. Ding, H. and W. Qiano. 1992. Mixed plant tissue-carbon paste biomicroelectrode and its application to determination of dopamine in vitro and in vivo. *Chem. Res. Chin. Univ*. 8:147–151.
2996. Ding, H. and W. Qiao. 1992. Mixed banana tissue-carbon paste biomicroelectrode and its application in in vivo dopamine detection. *Fenxi Huaxue* 20:556–559.
2997. Ding H and Qiao W. 1992. Measurement of dopamine in rat striatum in vivo with a biomicroelectrode made from mixed plant tissue-carbon paste. *Yao xue xue bao/Acta Pharm. Sin*. 27:86–89.
2998. Raoof, J.-B., R. Ojani, and A. Kiani. 2005. Apple-modified carbon paste electrode: A biosensor for selective determination of dopamine in pharmaceutical formulations. *Bull. Electrochem*. 21:223–228.
2999. Qi, D., T. Ying, and S. Hu. 1993. A new bio-electrode based on mixed potato tissue-carbon paste. *Fenxi Huaxue* 21:212–214.
3000. Forzani, E.S., G.A. Rivas, and V.M. Solis. 1995. Amperometric determination of dopamine on an enzymically modified carbon paste electrode. *J. Electroanal. Chem*. 382:33–40.
3001. Wang, J., N. Naser, and M. Ozsoz. 1990. Plant tissue-based amperometric electrode for eliminating ascorbic acid interferences. *Anal. Chim. Acta* 234:315–320.
3002. Wu, M. and Z. Lin. 1996. A new two plant tissue-based carbon paste microelectrode for neurotransmitter detection. *J. Tongji Med. Univ*. 16:152–154.
3003. Caruso, C.S., I. Da Cruz Vieira, and O. Fatibello-Filho. 1999. Determination of epinephrine and dopamine in pharmaceutical formulations using a biosensor based on carbon paste modified with crude extract of cara root (*Dioscorea bulbifera*). *Anal. Lett*. 32:39–50.
3004. Cai, P., H. Huang, X. Yu, and B. Nie. 1996. Plant tissue-modified carbon paste electrode for determination of dopamine. *Chuangan Jishu Xuebao* 9:75–78.
3005. Frattini, P., G. Santagostino, S. Schinelli, M.L. Cucchi, and G. Corona. 1983. Assay of urinary vanilmandelic, homovanillic, and 5-hydroxyindole acetic acids by liquid chromatography with electrochemical detection. *J. Pharmacol. Meth*. 10:193–198.
3006. Joseph, M.H., B.V. Kadam, and D. Risby. 1981. Simple high-performance liquid chromatographic method for the concurrent determination of the amine metabolites vanillylmandelic acid, 3-methoxy-4-hydroxyphenylglycol, 5-hydroxyindoleacetic acid, dihydroxyphenylacetic acid and homovanillic acid in urine using electrochemical detection. *J. Chromatogr*. 226:361–368.
3007. Yang, G., L. Jin, and Z. Leng. 1998. Study on adsorptive voltammetry for adrenaline on carbon paste electrode. *Yaoxue Xuebao* 33:534–537.
3008. Ye, X., J. Hou, S. Gao, X. Gao, and D. Wang. 1991. Voltammetric behaviors of adrenaline and its Be(II) complex. *Chin. Chem. Lett*. 2:731–734.
3009. Salimi, A., H. MamKhezri, and R. Hallaj. 2006. Simultaneous determination of ascorbic acid, uric acid and neurotransmitters with a carbon ceramic electrode prepared by sol-gel technique. *Talanta* 70:823–832.
3010. Corona-Avendano, S., G. Alarcon-Angeles, M.T. Ramirez-Silva, M. Romero-Romo, A. Cuan, and M. Palomar-Pardave. 2009. Simultaneous electrochemical determination of adrenaline and ascorbic acid: Influence of [CTAB]. *J. Electrochem. Soc*. 156:J375–J381.
3011. Avendano, S.C., G.A. Angeles, M.R. Romo, M.T.R. Silva, and M.P. Pardave. 2008. Effect of CTAB interfacial supramolecular systems on the voltammetry signals of adrenalin and ascorbic acid. *ECS Trans*. 15:489–498.
3012. Xie, P., X. Chen, F. Wang, C. Hu, and S. Hu. 2006. Electrochemical behaviors of adrenaline at acetylene black electrode in the presence of sodium dodecyl sulfate. *Colloids Surf. B* 48:17–23.
3013. Lupetti, K.O., I.C. Vieira, H.J. Vieira, and O. Fatibello-Filho. 2002. Electroregenerable anion-exchange resin with triiodide carbon paste electrode for the voltammetric determination of adrenaline. *Analyst (U.K.)* 127:525–529.
3014. Chernyshov, D.V., N.V. Shvedene, E.R. Antipova, and I.V. Pletnev. 2008. Ionic liquid-based miniature electrochemical sensors for the voltammetric determination of catecholamines. *Anal. Chim. Acta* 621:178–184.
3015. Yu, A., J. Zhou, and H. Chen. 1997. Electrocatalytic oxidation of epinephrine at a methylene green chemically modified carbon paste electrode and its flow injection analysis. *Fenxi Huaxue* 25:959–961.

3016. Beitollahi, H., M.M. Ardakani, B. Ganjipour, and H. Naeimi. 2008. Novel 2,2′-[1,2-ethanediylbis(nitrilo ethylidyne)]-bis-hydroquinone double-wall carbon nanotube paste electrode for simultaneous determination of epinephrine, uric acid and folic acid. *Biosens. Bioelectron*. 24:362–368.
3017. Beitollahi, H., H. Karimi-Maleh, and H. Khabazzadeh. 2008. Nanomolar and selective determination of epinephrine in the presence of norepinephrine using carbon paste electrode modified with carbon nanotubes and novel 2-(4-Oxo-3-phenyl-3,4-dihydro-quinazolinyl)-N?-phenyl-hydrazinecarbothioamide. *Anal. Chem*. 80:9848–9851.
3018. Mataveli, L.R.V., N.d.J. Antunes, M.R.P.L. Brigagao, C. Schmidt de Magalhaes, C. Wisniewski, and P.O. Luccas. 2010. Evaluation of a simple and low cost potentiometric biosensor for pharmaceutical and in vivo adrenaline determination. *Biosens. Bioelectron*. 26:798–802.
3019. Felix, F.S., M. Yamashita, and L. Angnes. 2006. Epinephrine quantification in pharmaceutical formulations utilizing plant tissue biosensors. *Biosens. Bioelectron*. 21:2283–2289.
3020. Albery, W.J., T.W. Beck, W.N. Brooks, and M. Fillenz. 1981. The determination of noradrenaline using differential double pulse voltammetry. *J. Electroanal. Chem*. 125:205–217.
3021. Brent, P.J., S. Hall, A.J. Smith, and J. Aylward. 1985. A simplified liquid chromatography and electrochemical detection method for measurement of plasma noradrenaline. *J. Pharmacol. Methods* 14:243–248.
3022. Yaghoubian, H., V. Soltani-Nejad, and S. Roodsaz. 2010. Simultaneous voltammetric determination of norepinephrine, uric acid, and folic acid at the surface of modified chloranil carbon nanotube paste electrode. *Int. J. Electrochem. Sci*. 5:1411–1421.
3023. Verbiese-Genard, N., J.-M. Kauffmann, M. Hanocq, and L. Molle. 1984. Study of the electrooxidative behavior of 5-hydroxyindole-3-acetic acid, 5-hydroxytryptophan and serotonine in the presence of sodium ethylenediaminetetraacetic acid. *J. Electroanal. Chem*. 170:243–254.
3024. Cheung, W., P.-L. Chiu, R.-R. Parajuli, Y. Ma, S.-R. Ali, and H. He. 2009. Fabrication of high performance conducting polymer nanocomposites for biosensors and flexible electronics: Summary of the multiple roles of DNA dispersed and functionalized single walled carbon nanotubes. *J. Mater. Sci*. 19:6465–6480.
3025. Wang, J., G. Rivas, X. Cai, E. Palecek, P. Nielsen, H. Shiraishi, N. Dontha et al. 1997. DNA electrochemical biosensors for environmental monitoring. A review. *Anal. Chim. Acta* 347:1–8.
3026. Diculescu, V.C., A.-M.C. Paquim, and A.M.O. Brett. 2005. Electrochemical DNA sensors for detection of DNA damage. *Sensors* 5:377–393.
3027. Bowater, R.P., R.J.H. Davies, E. Palecek, and M. Fojta. 2009. Sensitive electrochemical assays of DNA structure: Electrochemical analysis of DNA. *Chim. Oggi* 27:50–54.
3028. Palecek, E. 2009. Fifty years of nucleic acid electrochemistry. *Electroanalysis* 21:239–251.
3029. Chang, X., D. Zhou, and Y. Xie. 1989. A comparative study on the anodic behavior of adenine, adenosine, and 5′-AMP at carbon paste electrode. *Huaxue Xuebao* 47:158–162.
3030. Zhang, L., S. Zuo, Y. Zhao, Y. Teng, H. Yuan, and M. Lan. 2008. Differential pulse voltammetry method for the determination of adenine and ssDNA concentration using an electrochemically pretreated carbon paste electrode. *Xiandai Yiqi* 1:19–22, 26.
3031. Gilmartin, M.A.T. and J.P. Hart. 1992. Comparative study of the voltammetric behavior of guanine at carbon paste and glassy carbon electrodes and its determination in purine mixtures by differential-pulse voltammetry. *Analyst* 117:1613–1618.
3032. Liu, L., J.-F. Song, P.-F. Yu, and B. Cui. 2007. Sensing system integrating lanthanum hydroxide nanowires with Copper(II) ion for uracil and its application. *Anal. Lett*. 40:2562–2573.
3033. Stempkowska, I., M. Ligaj, J. Jasnowska, J. Langer, and M. Filipiak. 2007. Electrochemical response of oligonucleotides on carbon paste electrode. *Bioelectrochemistry* 70:488–494.
3034. Wang, J., L. Chen, and M. Chicharro. 1996. Trace measurements of nucleic acids using flow injection amperometry. *Anal. Chim. Acta* 319:347–352.
3035. Cai, X., G. Rivas, P.A.M. Farias, H. Shiraishi, J. Wang, M. Fojta, and E. Palecek. 1996. Trace measurements of plasmid DNAs by adsorptive stripping potentiometry at carbon paste electrodes. *Bioelectrochem. Bioenerg*. 40:41–47.
3036. Pedano, M.L. and G.A. Rivas. 2010. Adsorption and electrooxidation of DNA at glassy carbon paste electrodes. *Anal. Lett*. 43:1703–1712.
3037. Swaile, B.A.H. and J.Q. Chambers. 1991. Electrochemical release of ethidium into and fluorescence detection of DNA-ethidium complexes in the diffusion layer at a carbon paste electrode. *Anal. Biochem*. 196:415–420.
3038. Chambers, J.Q., M.A. Lange, D.S. Trimble, and R.D. Mounts. 1989. Electrochemically controlled binding of ethidium to calf thymus DNA at a carbon-paste/ethidium tetracyanoquinodimethane electrode. *J. Electroanal. Chem*. 266:277–285.

3039. Li, J. and D. Fei. 2007. Determination of DNA using methylene blue modified magnetic electrode. *Chuangan Jishu Xuebao* 20:1940–1944.
3040. Wang, J., A.-N. Kawde, E. Sahlin, C. Parrado, and G. Rivas. 2000. Factors influencing the adsorptive stripping potentiometric response of synthetic oligonucleotides. *Electroanalysis* 12:917–920.
3041. Jiang, M. and J. Wang. 2001. Recognition and detection of oligonucleotides in the presence of chromosomal DNA based on entrapment within conducting-polymer networks. *J. Electroanal. Chem*. 500:584–589.
3042. Wang, J., G. Rivas, J.R. Fernandes, M. Jiang, J.L. Lopez Paz, R. Waymire, T.W. Nielsen, and R.C. Getts. 1998. Adsorption and detection of DNA dendrimers at carbon electrodes. *Electroanalysis* 10:553–556.
3043. Arguelho, M.L.P.M., J.D.P.H. Alves, N.R. Stradiotto, V. Lacerda, Jr., J.M. Pires, and A. Beatriz. 2010. Electrochemical and theoretical evaluation of the interaction between DNA and amodiaquine. Evidence of the guanine adduct formation. *Quim. Nova (Barcelona)* 33:1291–1296.
3044. Stanic, Z. and S. Girousi. 2008. Electrochemical study of the interaction between dsDNA and copper(I) using carbon paste and hanging mercury drop electrode. *Talanta* 76:116–121.
3045. Stanic, Z. and S. Girousi. 2009. Electrochemical study of the interaction between dsDNA and copper(II) using carbon paste and hanging mercury drop electrodes. *Microchim. Acta* 164:479–485.
3046. Panagoulis, D., E. Pontiki, E. Skeva, C. Raptopoulou, S. Girousi, D. Hadjipavlou-Litina, and C. Dendrinou-Samara. 2007. Synthesis and pharmacochemical study of new Cu(II) complexes with thiophen-2-yl saturated and alpha,beta-unsaturated substituted carboxylic acids. *J. Inorg. Biochem*. 101:623–634.
3047. Jasnowska, J., M. Ligaj, B. Stupnicka, and M. Filipiak. 2004. DNA sensor for o-dianisidine. *Bioelectrochemistry* 64:85–90.
3048. Yang, T., K. Jiao, J. Yang, C.-Z. Zhao, and W.-Y. Qu. 2006. Voltammetric behavior of dopamine at dsDNA-modified Ni2+/poly(o-aminophenol) carbon paste electrode. *Gaodeng Xuexiao Huaxue Xuebao* 27:2294–2296.
3049. Radi, A.-E. 2010. Application of electrochemical methods for analysis of fluoroquinolones antibacterial agents and fluoroquinolones-DNA interactions. *Open Chem. Biomed. Meth. J*. 3:27–36.
3050. Sun, W., Y. Wang, X. Li, J. Wu, T. Zhan, and K. Jiao. 2009. Electrochemical biosensor based on carbon ionic liquid electrode modified with Nafion/hemoglobin/DNA composite film. *Electroanalysis* 21:2454–2460.
3051. Du, M., T. Yang, and K. Jiao. 2010. Carbon nanotubes/(pLys/dsDNA)n layer-by-layer multilayer films for electrochemical studies of DNA damage. *J. Solid State Electrochem*. 14:2261–2266.
3052. Gherghi, I.Ch., S.Th. Girousi, A. Voulgaropoulos, and R. Tzimou-Tsitouridou. 2004. Adsorptive transfer stripping voltammetry applied to the study of the interaction between DNA and actinomycin D. *Int. J. Environ. Anal. Chem*. 84:865–874.
3053. Gherghi, I.Ch., S.Th. Girousi, A.N. Voulgaropoulos, and R. Tzimou-Tsitouridou. 2004. DNA modified carbon paste electrode applied to the voltammetric study of the interaction between DNA and acridine orange. *Chem. Anal. (Warsaw)* 49:467–480.
3054. Ozsoz, M., A. Erdem, P. Kara, K. Kerman, and D. Ozkan. 2003. Electrochemical biosensor for the detection of interaction between arsenic trioxide and DNA based on guanine signal. *Electroanalysis* 15:613–619.
3055. Kerman, K., B. Meric, D. Ozkan, P. Kara, A. Erdem, and M. Ozsoz. 2001. Electrochemical DNA biosensor for the determination of benzo[a]pyrene-DNA adducts. *Anal. Chim. Acta* 450:45–52.
3056. Serpi, C., Z. Stanic, and S. Girousi. 2010. Electroanalytical study of the interaction between double stranded DNA and antitumor agent curcumin. *Anal. Lett*. 43:1491–1506.
3057. Serpi, C., Z. Stanic, and S. Girousi. 2010. Electroanalytical study of the interaction between dsDNA and curcumin in the presence of copper(II). *Talanta* 81:1731–1734.
3058. Erdem, A., K. Kerman, D. Ozkan, O. Kucukoglu, E. Erciyas, and M. Ozsoz. 2001. Electrochemical determination of interaction between an alkylating anticancer agent and DNA in solution and at the surface. *Proc. Electrochem. Soc.* 18:563–575.
3059. Meric, B., K. Kerman, D. Ozkan, P. Kara, A. Erdem, O. Kucukoglu, E. Erciyas, and M. Ozsoz. 2002. Electrochemical biosensor for the interaction of DNA with the alkylating agent 4,4′-dihydroxy chalcone based on guanine and adenine signals. *J. Pharm. Biomed. Anal*. 30:1339–1346.
3060. Ioannou, A.K., A.A. Pantazaki, S.Th. Girousi, M.-C. Millot, C. Vidal-Madjar, and A.N. Voulgaropoulos. 2006. DNA biosensor based on carbon paste electrodes modified by polymer multilayer. *Electroanalysis* 18:456–464.
3061. Gherghi, I.Ch., S.Th. Girousi, A.N. Voulgaropoulos, and R. Tzimou-Tsitouridou. 2004. Differentiations in the electrochemical behavior of the interactions between DNA and compounds with affinity for DNA. *Anal. Lett*. 37:957–966.

3062. Gherghi, I.Ch., S.Th. Girousi, A. Voulgaropoulos, and R. Tzimou-Tsitouridou. 2004. Interaction of the mutagen ethidium bromide with DNA, using a carbon paste electrode and a hanging mercury drop electrode. *Anal. Chim. Acta* 505:135–144.
3063. Gherghi, I.Ch., S.Th. Girousi, A.A. Pantazaki, A.N. Voulgaropoulos, and R. Tzimou-Tsitouridou. 2003. Electrochemical DNA biosensors applicable to the study of interactions between DNA and DNA intercalators. *Int. J. Environm. Anal. Chem*. 83:693–700.
3064. Gherghi, I.Ch., S.T. Girousi, A.N. Voulgaropoulos, and R. Tzimou-Tsitouridou. 2003. Study of interactions between actinomycin D and DNA on carbon paste electrode (CPE) and on the hanging mercury drop (HMDE) surface. *J. Pharm. Biomed. Anal*. 31:1065–1078.
3065. Naik, T.R.R. and H.S.B. Naik. 2008. Electrochemical investigation of DNA binding on carbaldehyde oxime by cyclic voltammetry. *Int. J. Electrochem. Sci*. 3:409–415.
3066. Kara, P., K. Dagdeviren, and M. Ozsoz. 2007. An electrochemical DNA biosensor for the detection of DNA damage caused by radioactive iodine and technetium. *Turkey J. Chem*. 31:243–249.
3067. Diopan, V., P. Babula, V. Shestivska, V. Adam, M. Zemlicka, M. Dvorska, J. Hubalek, L. Trnkova, L. Havel, and R. Kizek. 2008. Electrochemical and spectrometric study of antioxidant activity of pomiferin, isopomiferin, osajin and catalposide. *J. Pharm. Biomed. Anal*. 48:127–133.
3068. Karadeniz, H., B. Gulmez, F. Sahinci, A. Erdem, G.I. Kaya, N. Unver, B. Kivcak, and M. Ozsoz. 2003. Disposable electrochemical biosensor for the detection of the interaction between DNA and lycorine based on guanine and adenine signals. *J. Pharm. Biomed. Anal*. 33:295–302.
3069. Kerman, K., D. Oezkan, P. Kara, H. Karadeniz, Z. Oezkan, A. Erdem, F. Jelen, and M. Oezsoez. 2004. Electrochemical detection of specific DNA sequences from PCR amplicons on carbon and mercury electrodes using meldola's blue as an intercalator. *Turk. J. Chem*. 28:523–533.
3070. Erdem, A. and M. Ozsoz. 2001. Voltammetry of the anticancer drug mitoxantrone and DNA. *Turk. J. Chem*. 25:469–475.
3071. Zhu, J.-J., K. Gu, J.-Z. Xu, and H.-Y. Chen. 2001. DNA modified carbon paste electrode for the detection of 6-mercaptopurine. *Anal. Lett*. 34:329–337.
3072. Ly, S-Y. 2008. Voltammetric assay of mercury ion in fish kidneys. *Toxicol. Res*. 24:23–28.
3073. Qi, H., P. Chen, and C. Zhang. 2007. Determination of ofloxacin and its interaction with DNA. *Yaowu Fenxi Zazhi* 27:96–99.
3074. Wang, Y., H.-Y. Xiong, X.-H. Zhang, and S.-F. Wang. 2010. Detection of rutin at DNA modified carbon paste electrode based on a mixture of ionic liquid and paraffin oil as a binder. *Microchim. Acta* 170:27–32.
3075. Snevajsova, P., L. Tison, I. Brozkova, J. Vytřas ova, R. Metelka, and K. Vytřas. 2010. Carbon paste electrode for voltammetric detection of a specific DNA sequence from potentially aflatoxigenic Aspergillus species. *Electrochem. Comm*. 12:106–109.
3076. Cai, X., G. Rivas, H. Shirashi, P. Farias, J. Wang, M. Tomschik, F. Jelen, and E. Palecek. 1997. Electrochemical analysis of formation of polynucleotide complexes in solution and at electrode surfaces. *Anal. Chim. Acta* 344:65–76.
3077. Li, J., W. Zhu, and H. Wang. 2009. Novel magnetic single-walled carbon nanotubes/methylene blue composite amperometric biosensor for DNA determination. *Anal. Lett*. 42:366–380.
3078. Hejazi, M.S., J.-B. Raoof, R. Ojani, S.M. Golabi, and E.H. Asl. 2010. Brilliant cresyl blue as electroactive indicator in electrochemical DNA oligonucleotide sensors. *Bioelectrochemistry* 78:141–146.
3079. Xu, G., J. Fan, and K. Jiao. 2008. Studies on the electrochemical property of dinuclear copper(II) complex containing dimethylglyoxime and its interaction with DNA. *Electroanalysis* 20:1209–1214.
3080. Ioannou, A.K., D.K. Alexiadou, S.A. Kouidou, A.N. Voulgaropoulos, and S.T. Girousi. 2010. Electroanalytical study of SYBR Green I and ethidium bromide intercalation in methylated and unmethylated amplicons. *Anal. Chim. Acta* 657:163–168.
3081. Girousi, S. and V. Kinigopoulou. 2010. Detection of short oligonucleotide sequences using an electrochemical DNA hybridization biosensor. *Cent. Eur. J. Chem*. 8:732–736.
3082. Alexiadou, D.K., A.K. Ioannou, S. Kouidou-Andreou, A.N. Voulgaropoulos, and S.T. Girousi. 2008. Electrochemical study of the interaction mechanism of proflavine (PF) with DNA using carbon paste (CPE) and hanging mercury drop (HMDE) electrode. *Anal. Lett*. 41:1742–1750.
3083. Wang, J., G. Rivas, C. Parrado, X. Cai, and M.N. Flair. 1997. Electrochemical biosensor for detecting DNA sequences from the pathogenic protozoan Cryptosporidium parvum. *Talanta* 44:2003–2010.
3084. Wang, J., G. Rivas, J.R. Fernandes, J.L. Lopez Paz, M. Jiang, and R. Waymire. 1998. Indicator-free electrochemical DNA hybridization biosensor. *Anal. Chim. Acta* 375:197–203.
3085. Wang, J., X. Cai, G. Rivas, and H. Shirashi. 1996. Stripping potentiometric transduction of DNA hybridization processes. *Anal. Chim. Acta* 326:141–147.

3086. Wang, J., J.R. Fernandes, and L.T. Kubota. 1998. Polishable and renewable DNA hybridization biosensors. *Anal. Chem*. 70:3699–3702.
3087. Ozkan, D., A. Erdem, P. Kara, K. Kerman, B. Meric, J. Hassmann, and M. Ozsoz. 2002. Allele-specific genotype detection of factor V Leiden mutation from polymerase chain reaction amplicons based on label-free electrochemical genosensor. *Anal. Chem*. 74:5931–5936.
3088. Kara, P., D. Ozkan, A. Erdem, K. Kerman, S. Pehlivan, F. Ozkinay, D. Unuvar, G. Itirli, and M. Ozsoz. 2003. Detection of Achondroplasia G380R mutation from PCR amplicons by using inosine modified carbon electrodes based on electrochemical DNA chip technology. *Clin. Chim. Acta* 336:57–64.
3089. Wang, J., G. Rivas, X. Cai, M. Chicharro, C. Parrado, N. Dontha, A. Begleiter, M. Mowat, E. Palecek, and P.E. Nielsen. 1997. Detection of point mutation in the p53 gene using a peptide nucleic acid biosensor. *Anal. Chim. Acta* 344:111–118.
3090. Wang, J., E. Palecek, P.E. Nielsen, G. Rivas, X. Cai, H. Shiraishi, N. Dontha, D. Luo, and P.A.M. Farias. 1996. Peptide nucleic acid probes for sequence-specific DNA biosensors. *J. Am. Chem. Soc*. 118:7667–7670.
3091. Kerman, K., D. Ozkan, P. Kara, A. Erdem, B. Meric, P.E. Nielsen, and M. Ozsoz. 2003. Label-free bioelectronic detection of point mutation by using peptide nucleic acid probes. *Electroanalysis* 15:667–670.
3092. Kerman, K., Y. Matsubara, Y. Morita, Y. Takamura, and E. Tamiya. 2004. Peptide nucleic acid modified magnetic beads for intercalator based electrochemical detection of DNA hybridization. *Sci. Technol. Adv. Mater*. 5:351–357.
3093. Wang, J., X. Cai, G. Rivas, H. Shiraishi, P.A.M. Farias, and N. Dontha. 1996. DNA electrochemical biosensor for the detection of short DNA sequences related to the human immunodeficiency virus. *Anal. Chem*. 68:2629–2634.
3094. Wang, J., G. Rivas, X. Cai, N. Dontha, H. Shiraishi, D. Luo, and F.S. Valera. 1997. Sequence-specific electrochemical biosensing of M. tuberculosis DNA. *Anal. Chim. Acta* 337:41–48.
3095. Erdem, A., K. Kerman, B. Meric, D. Ozkan, P. Kara, and M. Ozsoz. 2002. DNA biosensor for Microcystis spp. sequence detection by using methylene blue and ruthenium complex as electrochemical hybridization labels. *Turk. J. Chem*. 26:851–862.
3096. Wang, J., G.-U. Flechsig, A. Erdem, O. Korbut, and P. Gruendler. 2004. Label-free DNA hybridization based on coupling of a heated carbon paste electrode with magnetic separations. *Electroanalysis* 16:928–931.
3097. Masarik, M., R. Kizek, K.J. Kramer, S. Billova, M. Brazdova, J. Vacek, M. Bailey, F. Jelen, and J.A. Howard. 2003. Application of avidin-biotin technology and adsorptive transfer stripping square-wave voltammetry for detection of DNA hybridization and avidin in transgenic avidin maize. *Anal. Chem*. 75:2663–2669.
3098. Ligaj, M., T. Oczkowski, J. Jasnowska, W.G. Musial, and M. Filipiak. 2003. Electrochemical genosensors for detection of L. monocytogenes and genetically-modified components in food. *Pol. J. Food Nutr. Sci*. 12:61–63.
3099. Yang, T., C. Jiang, W. Zhang, and K. Jiao. 2010. Improved electrochemical performances of polyaniline nanotubes-poly-L-lysine composite for label-free impedance detection of DNA hybridization. *Sci. China Ser. B Chem*. 53:1371–1377.
3100. Qi, H., X. Li, P. Chen, and C. Zhang. 2007. Electrochemical detection of DNA hybridization based on polypyrrole/ss-DNA/multi-wall carbon nanotubes paste electrode. *Talanta* 72:1030–1035.
3101. Zhou, N., T. Yang, K. Jiao, and C.-X. Song. 2010. Electrochemical deoxyribonucleic acid biosensor based on multi-walled carbon nanotubes/Ag-TiO_2 composite film for label-free phosphinothricin acetyltransferase gene detection by electrochemical impedance spectroscopy. *Fenxi Huaxue* 38:301–306.
3102. Yin, C., H. Liu, K. Jiao, and X. Fu. 2009. Sensitive detection for DNA-specific sequences using Bi_2S_3-nanoparticle-labeled DNA probes. *Qingdao Keji Daxue Xuebao, Ziran Kexueban* 30:471–476.
3103. Erdem, A., K. Kerman, B. Meric, U.S. Akarca, and M. Ozsoz. 1999. DNA electrochemical biosensor for the detection of short DNA sequences related to the hepatitis B virus. *Electroanalysis* 11:586–588.
3104. Meric, B., K. Kerman, D. Ozkan, P. Kara, S. Erensoy, U.S. Akarca, M. Mascini, and M. Ozsoz. 2002. Electrochemical DNA biosensor for the detection of TT and Hepatitis B virus from PCR amplified real samples by using methylene blue. *Talanta* 56:837–846.
3105. Guo, M., Y. Li, H. Guo, X. Wu, and L. Fan. 2007. Electrochemical detection of short sequences related to the hepatitis B virus using MB on chitosan-modified CPE. *Bioelectrochemistry* 70:245–249.
3106. Cheng, L., Y. Li, Z. Liu, and F. Liu. 2003. Fast detection of human immunodeficiency virus gene with carbon paste electrode. *Fenxi Ceshi Xuebao* 22:75–77.
3107. Ligaj, M., M. Tichoniuk, and M. Filipiak. 2008. Detection of bar gene encoding phosphinothricin herbicide resistance in plants by electrochemical biosensor. *Bioelectrochemistry* 74:32–37.

3108. Jiang, C., T. Yang, K. Jiao, and H. Gao. 2008. A DNA electrochemical sensor with poly-L-lysine/single-walled carbon nanotubes films and its application for the highly sensitive EIS detection of PAT gene fragment and PCR amplification of NOS gene. *Electrochim. Acta* 53:2917–2924.
3109. Jiao, K., X.-Z. Zhang, G.-Y. Xu, and W. Sun. 2005. Fabrication and voltammetric characteristics of carbon paste electrode modified by ssDNA/stearic acid. *Huaxue Xuebao* 63:1100–1104.
3110. Ligaj, M., J. Jasnowska, W.G. Musial, and M. Filipiak. 2006. Covalent attachment of single-stranded DNA to carbon paste electrode modified by activated carboxyl groups. *Electrochim. Acta* 51:5193–5198.
3111. Zhang, Z.-Q., J.-P. Xie, J.-F. Xiong, M.-F. Zhou, and Z.-S. Zhang. 2005. Voltammetric biosensor for cucumber DNA. *Fenxi Kexue Xuebao* 21:5–8.
3112. Jiao, K., Y. Ren, G. Xu, and X. Zhang. 2005. Voltammetric study on deoxyribonucleic acid immobilization and hybridization on stearic acid/aluminum ion films and the detection of specific gene related to phosphinothricin acethyltransferase gene from Bacillus amyloliquefaciens gene. *Fenxi Huaxue* 33:1381–1384.
3113. Ren, Y., K. Jiao, G. Xu, W. Sun, and H. Gao. 2005. An electrochemical DNA sensor based on electrodepositing aluminum ion films on stearic acid-modified carbon paste electrode and its application for the detection of specific sequences related to bar gene and CP4 Epsps gene. *Electroanalysis* 17:2182–2189.
3114. Zhou, N., T. Yang, Y. Zhang, C. Jiang, and K. Jiao. 2009. Electrochemical characterization of deoxyribonucleic acid on aluminum(III)/poly(-glutamic acid) film and its application for the detection of phosphinothricin acetyltransferase gene-specific sequence. *Thin Solid Films* 518:338–342.
3115. Ikebukuro, K., Y. Kohiki, and K. Sode. 2002. Amperometric DNA sensor using the pyrroquinoline quinone glucose dehydrogenase-avidin conjugate. *Biosens. Bioelectron*. 17:1075–1080.
3116. Zhou, N., T. Yang, C. Jiang, M. Du, and K. Jiao. 2009. Highly sensitive electrochemical impedance spectroscopic detection of DNA hybridization based on Aunano-CNT/PAN-nano films. *Talanta* 77:1021–1026.
3117. Yang, T., N. Zhou, Y. Zhang, W. Zhang, K. Jiao, and G. Li. 2009. Synergistically improved sensitivity for the detection of specific DNA sequences using polyaniline nanofibers and multi-walled carbon nanotubes composites. *Biosens. Bioelectron*. 24:2165–2170.
3118. Wu, J., Y. Zou, X. Li, H. Liu, G. Shen, and R. Yu. 2005. A biosensor monitoring DNA hybridization based on polyaniline intercalated graphite oxide nanocomposite. *Sens. Actuators B* B104:43–49.
3119. Kerman, K., Y. Morita, Y. Takamura, M. Ozsoz, and E. Tamiya. 2004. DNA-directed attachment of carbon nanotubes for enhanced label-free electrochemical detection of DNA hybridization. *Electroanalysis* 16:1667–1672.
3120. Masarik, M., K. Cahova, R. Kizek, E. Palecek, and M. Fojta. 2007. Label-free voltammetric detection of single-nucleotide mismatches recognized by the protein MutS. *Anal. Bioanal. Chem*. 388:259–270.
3121. Ly, S.Y., Y.S. Jung, M.H. Kim, I.k. Han, W.W. Jung, and H.S. Kim. 2004. Determination of caffeine using a simple graphite pencil electrode with square-wave anodic stripping voltammetry. *Microchim. Acta* 146:207–213.
3122. Ly, S.Y., C.H. Lee, Y.S. Jung, O.M. Kwon, J.E. Lee, S.M. Baek, and K.J. Kwak. 2008. Simultaneous diagnostic assay of catechol and caffeine using an in vivo implanted neuro sensor. *Bull. Korean Chem. Soc*. 29:1742–1746.
3123. Sanghavi, B.J. and A.K. Srivastava. 2010. Simultaneous voltammetric determination of acetaminophen, aspirin and caffeine using an in situ surfactant-modified multiwalled carbon nanotube paste electrode. *Electrochim. Acta* 55:8638–8648.
3124. Stulik, K. and V. Pacakova. 1983. High-performance liquid chromatography of biologically important pyrimidine derivatives with ultraviolet—voltammetric—polarographic detection. *J. Chromatogr*. 273:77–86.
3125. Munson, J.W. and H. Abdine. 1978. Determination of theophylline in plasma by oxidation at the stationary carbon-paste electrode. *Talanta* 25:221–222.
3126. Inada, K., K. Nishiyama, and I. Taniguchi. 2009. Selective detection of uric acid in the presence of ascorbic acid and acetaminophen at a glassy carbon paste electrode in an alkaline solution. *Chem. Lett*. 38:814–815.
3127. Liao, H.-C., T.-P. Sun, C.-Y. Chen, J.-C. Chou, and S.-K. Hsiung. 2004. A multi-parameter biochemical sensor with a linear readout circuit. *Chem. Sensors* 20(Suppl. B):638–639.
3128. Xiao, F., C. Ruan, J. Li, L. Liu, F. Zhao, and B. Zeng. 2008. Voltammetric determination of xanthine with a single-walled carbon nanotube-ionic liquid paste modified glassy carbon electrode. *Electroanalysis* 20:361–366.
3129. Zhang, X.-L., Y.-F. Peng, and C.-G. Hu. 2008. Direct detection of uric acid in human urine at CTAB modified carbon paste electrodes by linear sweeping voltammetry. *Fenxi Kexue Xuebao* 24:641–644.

3130. Akbari, R., M. Noroozifar, M. Khorasani-Motlagh, and A. Taheri. 2010. Simultaneous determination of ascorbic acid and uric acid by a new modified carbon nanotube-paste electrode using chloromercuriferrocene. *Anal. Sci*. 26:425–430.
3131. Lima, P.R., P.R. Barbosa de Miranda, A. Bof de Oliveira, M.O.F. Goulart, and L. Tatsuo Kubota. 2009. Modified carbon paste electrode for kinetic investigation and simultaneous determination of ascorbic and uric acids. *Electroanalysis* 21:2311–2320.
3132. Fu, Z.-Q., M.-Y. Wan, and Y.-F. Tu. 2009. A uric acid biosensor based on screen printed carbon electrode modified by MnO_2 nano-particles and ferrocene. *Fenxi Kexue Xuebao* 25:79–82.
3133. Wu, X.-P., W.-C. Zhou, H. Dai, and S.-C. Sun. 2007. A new type of graphite/poly(methyl methacrylate) composite electrode for electrochemiluminescence. *Guangpu Shiyanshi* 24:1176–1180.
3134. Lorenzo, E., E. Gonzalez, F. Pariente, and L. Hernandez. 1991. Immobilized enzyme carbon paste electrodes as amperometric sensors. *Electroanalysis* 3:319–323.
3135. Sternson, L.A. 1976. Electrochemical determination of xanthine oxidase-catalyzed oxidation of xanthine. *Anal. Lett*. 9:641–652.
3136. Gonzalez, E., F. Pariente, E. Lorenzo, and L. Hernandez. 1991. Amperometric sensor for hypoxanthine and xanthine based on the detection of uric acid. *Anal. Chim. Acta* 242:267–273.
3137. Doblhoff-Dier, O. and G.A. Rechnitz. 1989. Amperometric enzyme based biosensor for the detection of xanthine via superoxide. *Anal. Lett*. 22:1047–1055.
3138. Anik, U. and S. Cevik. 2009. Double-walled carbon nanotube based carbon paste electrode as xanthine biosensor. *Microchim. Acta* 166:209–213.
3139. Kirgoez, U.A., S. Timur, J. Wang, and A. Telefoncu. 2004. Xanthine oxidase modified glassy carbon paste electrode. *Electrochem. Comm*. 6:913–916.
3140. Lindquist, J. 1975. Voltammetric determination of ascorbic acid using a carbon paste electrode. *Analyst* 100:339–348.
3141. Deakin, M.R., P.M. Kovach, K.J. Stutts, and R.M. Wightman. 1986. Heterogeneous mechanisms of the oxidation of catechols and ascorbic acid at carbon electrodes. *Anal. Chem*. 58:1474–1480.
3142. Wang, Q., A. Geiger, R. Frias, and T.D. Golden. 2000. An introduction to electrochemistry for undergraduates: Detection of vitamin C (ascorbic acid) by inexpensive electrode sensors. *Chem. Educ*. 5:58–60.
3143. Wang, C., J. Yang, B. Hua, X. Zhai, and H. Zhang. 1998. Development and application of polypyrrole carbon paste electrode. *Fenxi Huaxue* 26:847–849.
3144. Hu, X. and Z. Leng. 1995. Determination of L-ascorbic acid by adsorption potentiometry with carbon paste electrode. *Anal. Lett*. 28:2263–2274.
3145. Sandulescu, R., R. Oprean, and L. Roman. 1997. Carbon-paste electrodes in the quantitative determination of ascorbic acid in pharmaceutical forms. *Farmacia (Bucharest)* 45:23–35.
3146. Marian, I.O., R. Sandulescu, and N. Bonciocat. 2000. Diffusion coefficient (or concentration) determination of ascorbic acid using carbon paste electrodes in Fredholm alternative. *J. Pharm. Biomed. Anal*. 23:227–230.
3147. Yang, M., Q. Jiang, Y. Li, W. Sun, and K. Jiao. 2009. Direct electrochemistry of ascorbic acid on the [BMIM]PF6 modified carbon paste electrode. *Qingdao Keji Daxue Xuebao, Ziran Kexueban* 30:6–8.
3148. Sandulescu, R., S. Lotrean, and V. Mirel. 2003. Electrochemical and spectrophotometric study of interactions of β-cyclodextrin with some pharmaceuticals. *Farmacia (Bucharest)* 51:31–41.
3149. Xiang, B. 2009. Optimal condition for determination of ascorbic acid adsorptive stripping voltammetry. *Huagong Shikan* 23:41–43.
3150. Xiang, B. 2009. The determination of ascorbic acid by adsorptive stripping voltammetry using mesoporous SiO_2 modified carbon paste electrode. *Huagong Shikan* 23:20–22.
3151. Teixeira, M.F.S., L.A. Ramos, O. Fatibello-Filho, and E.T.G. Cavalheiro. 2003. Carbon paste electrode modified with copper(II) phosphate immobilized in a polyester resin for voltammetric determination of L-ascorbic acid in pharmaceutical formulations. *Anal. Bioanal. Chem*. 376:214–219.
3152. Fujiwara, S.T., C.A. Pessoa, and Y. Gushikem. 2002. Copper (II) tetrasulfophthalocyanine entrapped in a propylpyridiniumsilsesquioxane polymer immobilized on a SiO_2/Al_2O_3 surface: Use for electrochemical oxidation of ascorbic acid. *Anal. Lett*. 35:1117–1134.
3153. Nezamzadeh, A., M.K. Amini, and H. Faghihian. 2007. Square-wave voltammetric determination of ascorbic acid based on its electrocatalytic oxidation at zeolite-modified carbon-paste electrodes. *Int. J. Electrochem. Sci*. 2:583–594.
3154. Liu, S., G. Dai, Y. Zhao, and X. Hu. 2009. Voltammetric behavior and electrochemical determination of ascorbic acid at ferrous pentacyanonitrosylferrate film modified carbon paste electrode. *Anal. Lett*. 42:2914–2927.
3155. do Carmo, D.R., R.M. da Silva, and N.R. Stradiotto. 2004. Electrocatalysis and determination of ascorbic acid through graphite paste electrode modified with iron nitroprusside. *Portugaliae Electrochim. Acta* 22:71–79.

3156. Raoof, J.B., R. Ojani, and A. Kiani. 2003. Ferrocene spiked carbon paste electrode and its application to electrocatalytic determination of ascorbic acid. *Bull. Electrochem*. 19:17–22.
3157. Bai, L., Z. Zheng, and Z. Gao. 2007. Electrocatalytic oxidation of ascorbic acid at ferrocene modified carbon paste electrode and its practical analytical application. *Huaxue Chuanganqi* 27:53–57.
3158. Wang, X., G. Zhang, Y. Li, and T. Sun. 1999. Electrocatalytic oxidation of ascorbic acid on ferrocene modified carbon paste electrode. *Huaxue Chuanganqi* 19:39–43.
3159. Sun, W., D.-Q. Lu, Y.-J. Li, and X.-W. He. 2003. Preparation and application of modified PVC carbon paste electrodes. *Fenxi Shiyanshi* 22:40–43.
3160. Wang, X.-L., G.-R. Zhang, X.-W. Shi, and T.-L. Sun. 2000. Studies on electrocatalytic oxidation of ascorbic acid at β-cyclodextrin-ferrocene inclusion complex-modified carbon paste electrode. *Gaodeng Xuexiao Huaxue Xuebao* 21:1383–1385.
3161. Liu, C.-Y., M.-Q. Huang, and G.-H. Lu. 2005. Voltammetric determination of ascorbic acid at a carbon paste electrode modified with iron(I) phthalocyanine and dioctyl phthalate. *Wuhan Huagong Xueyuan Xuebao* 27:3–6.
3162. Liu, C.-Y., J.-F. Hu, X.-M. Li, and G.-H. Lu. 2005. Voltammetric determination of ascorbic acid at a carbon paste electrode modified with Iron(II) phthalocyanine and dioctyl phthalate. *Xinan Shifan Daxue Xuebao, Ziran Kexueban* 30:289–292.
3163. Ijeri, V.S., P.V. Jaiswal, and A.K. Srivastava. 2001. Chemically modified electrodes based on macrocyclic compounds for determination of Vitamin C by electrocatalytic oxidation. *Anal. Chim. Acta* 439:291–297.
3164. Goreti, M., F. Sales, M.S.A. Castanheira, R.M.S. Ferreira, M. Carmo, V.G. Vaz, and C. Delerue-Matos. 2008. Chemically modified carbon paste electrodes for ascorbic acid determination in soft drinks by flow injection amperometric analysis. *Portugaliae Electrochim. Acta* 26:147–157.
3165. Qi, Y.-J., X.-D. Yuan, and L. Tian. 2009. Synthesis, structure and electrochemical properties of three-dimensional complex [C4H11N2]3[PMo12O40]. *Wuji Huaxue Xuebao* 25:1110–1114.
3166. Ojani, R., J.-B. Raoof, and S. Zamani. 2005. Electrochemical behavior of chloranil chemically modified carbon paste electrode. Application to the electrocatalytic determination of ascorbic acid. *Electroanalysis* 17:1740–1745.
3167. Liu, B., L. Chen, H. Liu, and J. Deng. 1995. Tetracyanoquinodimethane modified carbon paste electrodes for oxidation of ascorbic acid. *Fenxi Huaxue* 23:206–210.
3168. Faguy, P.W., W. Ma, J.A. Lowe, W.P. Pan, and T. Brown. 1994. Conducting polymer-clay composites for electrochemical applications. *J. Mater. Sci*. 4:771–772.
3169. Wang, Z.-H., A.-P. Huang, H.-Y. Qiao, T.-W. Chen, and D. Wang. 2009. Fabrication of inlaid super-thin microcrystalline cellulose modified carbon paste film electrode and its application. *Yingyong Huaxue* 26:840–844.
3170. Dilgin, Y. and G. Nisli. 2006. Flow injection photoamperometric investigation of ascorbic acid using methylene blue immobilized on titanium phosphate. *Anal. Lett*. 39:451–465.
3171. Hoffmann, A.A., S.L.P. Dias, J.R. Rodrigues, F.A. Pavan, E.V. Benvenutti, and E.C. Lima. 2008. Methylene blue immobilized on cellulose acetate with titanium dioxide: An application as sensor for ascorbic acid. *J. Braz. Chem. Soc*. 19:943–949.
3172. Varodi, C., D. Gligor, and L.M. Muresan. 2007. Carbon paste electrodes incorporating synthetic zeolites and methylene blue for amperometric detection of ascorbic acid. *Stud. Univ. Babes-Bolyai Chem*. 52:109–117.
3173. Canevari, T.d.C., R. Ferrari de Castilho, R.V.d.S. Alfaya, and A.A.d.S. Alfaya. 2006. Development of a new ascorbic acid sensor. *Semina Cienc. Exat. Tecnol*. 27:129–138.
3174. Pavan, F.A., E.S. Ribeiro, and Y. Gushikem. 2005. Congo red immobilized on a silica/aniline xerogel: Preparation and application as an amperometric sensor for ascorbic acid. *Electroanalysis* 17:625–629.
3175. Ying, T., Y. Qiao, S. Hu, and D. Qi. 1994. Development and application of green pepper seed tissue-carbon paste bioelectrode. *Fenxi Huaxue* 22:492–494.
3176. Wang, Q. 2007. Gooseberry modified carbon paste electrode for the determination of ascorbic acid. *Jinan Daxue Xuebao, Ziran Kexueban* 21:151–153.
3177. Dai, H., X. Wu, Y. Wang, W. Zhou, and G. Chen. 2008. An electrochemiluminescent biosensor for vitamin C based on inhibition of luminol electrochemiluminescence on graphite/poly(methyl methacrylate) composite electrode. *Electrochim. Acta* 53:5113–5117.
3178. Zeng, G.-M., Z.-G. Cjhen, F.-Y. Zhou, and Z.-Q. Zhangm. 1994. Preparation of voltammetric sensors for drug analysis and its application. IV. Carbon paste electrode for the determination of nicotinic acid. *Huaxue Chuanganqi* 14:66–68, 62.
3179. Hart, J.P., S.A. Wring, and I.C. Morgan. 1989. Preconcentration of vitamin K1 (phylloquinone) at carbon paste electrodes and its determination in plasma by adsorptive stripping voltammetry. *Analyst (U.K.)* 114:933–937.

3180. Soderhjelm, P. and J. Lindquist. 1975. Voltammetric determination of pyridoxine using a carbon paste electrode. *Analyst (U.K.)* 100:349–354.
3181. Liu, Y., Y. Bai, T. Cheng, W. Zheng, and Y. Zhou. 2004. Electrochemical behavior of riboflavin (VB2) on the liquid paraffin carbon paste electrode and determination of VB2 by differential pulse voltammetry. *Guangzhou Huagong* 32:46–49, 22.
3182. Percira, A.C. and L.T. Kubota. 2004. Optimization of the carbon paste electrode preparation containing riboflavin immobilized on an inorganic support. *Quim. Nova (Barcelona)* 27:725–729.
3183. Jaiswal, P.V., V.S. Ijeri, and A.K. Srivastava. 2001. Voltammetric behavior of a-tocopherol and its determination using surfactant+ethanol+water and surfactant+acetonitrile+water mixed solvent systems. *Anal. Chim. Acta* 441:201–206.
3184. Kim, O.S., S. Shiragami, and K. Kusuda. 1994. Increase of the redox current in cyclic voltammetry of a compound dissolved in Nujol by contacting with a surface active compound in an aqueous solution. *J. Electroanal. Chem*. 367:271–273.
3185. Kim, O.-S. and K. Kusuda. 1994. Electrochemical behavior of a-tocopherol in a thin film of Nujol, a model of adipose tissue. *Bioelectrochem. Bioenerg*. 33:61–65.
3186. Atuma, S.S., K. Lundstrom, and J. Lindquist. 1975. Electrochemical determination of vitamin A. II. Further voltammetric determination of vitamin A and initial work on determination of vitamin D in the presence of vitamin A. *Analyst* 100:827–834.
3187. Atuma, S.S., J. Lindquist, and K. Lundstroem. 1974. Electrochemical determination of vitamin A. I. Voltammetric determination of vitamin A in pharmaceutical preparations. *Analyst* 99:683–689.
3188. Lesunova, R.P., O.A. Fursik, and N.A. Khodyreva. 1974. Use of carbon paste electrodes in vitamin analysis. *Dostizh. Razvit. Nov. Metodov Khim. Anal. (Ukr.)* 1974:27–28.
3189. Shaikh, A.A., M. Begum, A.H. Khan, and M.Q. Ehsan. 2006. Cyclic voltammetric studies of the redox behavior of iron(III)-vitamin B6 complex at carbon paste electrode. *Russ. J. Electrochem*. 42:620–625.
3190. Xu, H., C. Wang, J. Zhai, G. Ke, and H. Li. 2004. Extractive stripping voltammetric behavior of vitamin E at carbon paste electrode and its electrochemical determination. *Lihua Jianyan, Huaxue Fence* 40:284–287.
3191. Zhai, J., H. Xu, and C. Liu. 2000. Voltammetric method for determination of vitamin E with paste electrode extraction. *J. Gansu Univ. Technol*. (Engl. Edn.) E-4:123–126.
3192. Gu, L., J. Wang, and H.-L. Zhuang. 2009. Electrochemical determination of vitamin E in vitamin E capsules at carbon paste electrode with cationic surfactant as sensitizing agent. *Lihua Jianyan, Huaxue Fence* 45:885–888.
3193. Hu, R.-Z., D.-P. Wei, G. Wei, and Y.-Y. Liu. 2001. Simultaneous determination of gold(III) and copper(II) with two-way stripping voltammetry. *Dian Huaxue* 7:339–344.
3194. Hu, R., Y. Ruan, H. Xu, J. Fu, W. Zhang, and W. Hu. 1999. Preparation and application of gold film on the surface of bacterial-modified carbon paste electrode. *Dian Huaxue* 5:231–235.
3195. Wang, J., T. Martinez, and D. Darnall. 1989. Electrocatalysis at algae modified electrodes. *J. Electroanal. Chem*. 259:295–300.
3196. Yuece, M., H. Nazir, and G. Doenmez. 2010. An advanced investigation on a new algal sensor determining Pb(II) ions from aqueous media. *Biosens. Bioelectron*. 26:321–326.
3197. Kato, K., N. Taniguchi, Y. Yamamoto, K. Kano, and T. Ikeda. 1996. A whole cell electrode for ethanol based on the respiratory reaction in cytoplasmic membrane of *Acetobacter aceti. Denki Kagaku Oyobi Kogyo Butsuri Kagaku* 64:1259–1260.
3198. Yeni, F., D. Odaci, and S. Timur. 2008. Use of eggshell membrane as an immobilization platform in microbial sensing. *Anal. Lett*. 41:2743–2758.
3199. Yao, H. and G.J. Ramelow. 1998. Biomass-modified carbon paste electrodes for monitoring dissolved metal ions. *Talanta* 45:1139–1146.
3200. Fatibello-Filho, O., K.O. Lupetti, O.D. Leite, and I.C. Vieira. 2007. Electrochemical biosensors based on vegetable tissues and crude extracts for environmental, food and pharmaceutical analysis. *Compr. Anal. Chem*. 49:357–377.
3201. Wang, J., L.H. Wu, S. Martinez, and J. Sanchez. 1991. Tissue bioelectrode for eliminating protein interferences. *Anal. Chem*. 63:398–400.
3202. Wang, J. and M.S. Lin. 1989. Horseradish-root-modified carbon paste bioelectrode. *Electroanalysis* 1:43–48.
3203. Wang, J., A. Ciszewski, and N. Naser. 1992. Stripping measurements of hydrogen peroxide based on biocatalytic accumulation at mediatorless peroxidase/carbon paste electrodes. *Electroanalysis* 4:777–782.
3204. Lee, B.-G., K.-J. Yoon, and H.-S. Kwon. 2000. Spinach root-tissue based amperometric biosensor for the determination of hydrogen peroxide. *Anal. Sci. Technol*. 13:315–322.

3205. Kwon, H.-S., K.-K. Kim, and C.-G. Lee. 1996. Cabbage root tissue-based amperometric biosensor for determination of hydrogen peroxide. *J. Korean Chem. Soc*. 40:278–282.
3206. Lee, B.-G., K.-B. Rhyu, and K.-J. Yoon. 2009. Electrochemical investigation of carbon paste biosensor bound with natural rubber solution. *Bull. Korean Chem. Soc*. 30:2457–2460.
3207. Yoon, K.-J., K.-J. Kim, and H.-S. Know. 1999. Electrochemical properties of the chicken small intestinal tissue based enzyme electrode for the determination of hydrogen peroxide. *J. Korean Chem. Soc*. 43:271–279.
3208. Wang, J., B. Freiha, N. Naser, E.G. Romero, U. Wollenberger, M. Ozsoz, and O. Evans. 1991. Amperometric biosensing of organic peroxides with peroxidase-modified electrodes. *Anal. Chim. Acta* 254:81–88.
3209. Erdem, A., D. Ozkan, B. Meric, K. Kerman, and M. Ozsoz. 2001. Incorporation of EDTA for the elimination of metal inhibitory effects in an amperometric biosensor based on mushroom tissue polyphenol oxidase. *Turkey J. Chem*. 25:231–239.
3210. Liu, J. and J. Wang. 2001. Plant tissue bioelectrode for environmental monitoring of tyrosinase inhibitor. *Huanjing Huaxue* 20:398–404.
3211. Wang, J., S.A. Kane, J. Liu, M.R. Smyth, and K. Rogers. 1996. Mushroom tissue-based biosensor for inhibitor monitoring. *Food Technol. Biotechnol*. 34:51–55.
3212. Morisaki, H., M. Sugimoto, and H. Shiraishi. 2000. Attachment of bacterial cells to carbon electrodes. *Bioelectrochem*. 51:21–25.
3213. Obuchowska, A. 2008. Quantitation of bacteria through adsorption of intracellular biomolecules on carbon paste and screen-printed carbon electrodes and voltammetry of redox-active probes. *Anal. Bioanal. Chem*. 390:1361–1371.
3214. Che, Y.H., Y. Li, M. Slavik, and D. Paul. 2000. Rapid detection of Salmonella typhimurium in chicken carcass wash water using an immunoelectrochemical method. *J. Food. Prot*. 63:1043–1048.
3215. Yang, Z., Y. Li, C. Balagtas, M. Slavik, and D. Paul. 1998. Immunoelectrochemical assay in combination with homogeneous enzyme-labeled antibody conjugation for rapid detection of Salmonella. *Electroanalysis* 10:913–916.
3216. O'Neill R.D. 1986. The effects of intracerebral and systemic administration of drugs on transmitter release in the unrestrained rat measured using microcomputer-controlled voltammetry. *Anal. Chem. Symp. Ser*. 25 (*Electrochem. Sens. Anal*.) pp. 215–220. Amsterdam: Elsevier.
3217. Bolger, F.B. and J.P. Lowry. 2005. Brain tissue oxygen: In vivo monitoring with carbon paste electrodes. *Sensors* 5:473–487.
3218. Boutelle, M.G., L. Svensson, and M. Fillenz. 1989. Rapid changes in striatal ascorbate in response to tail-pinch monitored by constant potential voltammetry. *Neuroscience* 30:11–17.
3219. Justice, J.B. Jr., S.A. Wages, A.C. Michael, R.D. Blakely, and D.B. Neill. 1983. Interpretations of voltammetry in the striatum based on chromatography of striatal dialyzate. *J. Liq. Chromatogr*. 6:1873–1896.
3220. Fillenz, M. and R.D. O'Neill. 1986. Effects of light reversal on the circadian pattern of motor activity and voltammetric signals recorded in rat forebrain. *J. Physiol*. 374:91–101.
3221. Joseph, M.H., H. Hodges, and J. Gray. 1989. Lever pressing for food reward and in vivo voltammetry: Evidence for increases in extracellular homovanillic acid, the dopamine metabolite, and uric acid in the rat caudate nucleus. *Neuroscience* 32:195–201.
3222. Mason, P.A., J.A. Durr, D. Bhaskaran, and C. Freed. 1988. Plasma osmolality predicts extracellular fluid catechol concentrations in the lateral hypothalamus. *J. Neurochem*. 51:552–560.
3223. Haskett, C. and K. Mueller. 1987. The effects of serotonin depletion on the voltammetric response to amphetamine. *Pharmacol. Biochem. Behav*. 28:381–384.
3224. O'Neill, R.D. 1986. Adenosine modulation of striatal neurotransmitter release monitored in vivo using voltammetry. *Neurosci. Lett*. 63:11–16.
3225. O'Neill, R.D. and M. Fillenz. 1985. Circadian changes in extracellular ascorbate in rat cortex, accumbens, striatum and hippocampus: Correlations with motor activity. *Neurosci. Lett*. 60:331–336.
3226. Clemens, J.A. and L. Phebus. 1984. Brain dialysis in conscious rats confirms in vivo electrochemical evidence that dopaminergic stimulation releases ascorbate. *Life Sci*. 35:671–677.
3227. Kovach, P.M., A.G. Ewing, R.L. Wilson, and R. Wightman. 1984. In vitro comparison of the selectivity of electrodes for in vivo electrochemistry. *J. Neurosci. Methods* 10:215–227.
3228. Echizen, H. and C. Freed. 1983. In vivo electrochemical detection of extraneuronal 5-hydroxyindole acetic acid and norepinephrine in the dorsal raphe nucleus of urethane-anesthetized rats. *Brain Res*. 277:55–62.
3229. O'Neill, R.D., M. Fillenz, and W. Albery. 1982. Circadian changes in homovanillic acid and ascorbate levels in the rat striatum using microprocessor-controlled voltammetry. *Neurosci. Lett*. 34:189–193.

3230. Saponjic, R.M., K. Mueller, D. Krug, and P.M. Kunko. 1994. The effects of haloperidol, scopolamine, and MK-801 on amphetamine-induced increased in ascorbic and uric acid as determined by voltammetry in vivo. *Pharmacol. Biochem. Behav*. 48:161–168.
3231. Miele, M. and M. Fillenz. 1996. In vivo determination of extracellular brain ascorbate. *J. Neurosci. Methods* 70:15–19.
3232. Fillenz, M., M.G. Boutelle, L. Fellows, A. Fray, and M. Miele. 1994. The use of quantitative microdialysis to study the dynamics of glucose, lactate and ascorbate in rat brain. In *Monitoring Molecules in Neuroscience, Proceedings of the 6th International Conference on In-Vivo Methods*, Ed. A. Louilot, pp. 79–80. London, U.K.
3233. Boutelle, M.G., L. Svensson, and M. Fillenz. 1990. Effect of diazepam on behavior and associated changes in ascorbate concentration in rat brain areas: Striatum, n. accumbens and hippocampus. *Psychopharmacology* 100:230–236.
3234. Bhaskaran, D. and C.R. Freed. 1989. Catechol and indole metabolism in rostral ventrolateral medulla change synchronously with changing blood pressure. *J. Pharmacol. Exper. Ther*. 249:660–666.
3235. Brose, N., R.D. O'Neill, M.G. Boutelle, and M. Fillenz. 1988. Dopamine in the basal ganglia and benzodiazepine-induced sedation. *Neuropharmacology* 27:589–595.
3236. Brose, N., R.D. O'Neill, M.G. Boutelle, S.M. Anderson, and M. Fillenz. 1987. Effects of an anxiogenic benzodiazepine receptor ligand on motor activity and dopamine release in nucleus accumbens and striatum in the rat. *J. Neurosci*. 7:2917–2926.
3237. Bhaskaran, D. and C. Freed. 1987. Nucleus tractus solitarius: An evaluation by in vivo voltammetry. *Life Sci*. 41:323–331.
3238. Mulchahey, J.J. and J. Neill. 1986. Dopamine levels in the anterior pituitary gland monitored by in vivo electrochemistry. *Brain Res*. 386:332–340.
3239. O'Neill, R.D. 1986. Effects of intranigral injection of taurine and GABA on striatal dopamine release monitored voltammetrically in the unanaesthetized rat. *Brain Res*. 382:28–32.
3240. Michael, A.C., J.B. Justice Jr., and O'Neill. 1985. In vivo voltammetric determination of the kinetics of dopamine metabolism in the rat. *Neurosci. Lett*. 56:365–369.
3241. O'Neill, R.D. and M. Fillenz. 1985. Detection of homovanillic acid in vivo using microcomputer-controlled voltammetry: Simultaneous monitoring of rat motor activity and striatal dopamine release. *Neuroscience* 14:753–763.
3242. Trulson, M. 1985. Simultaneous recording of dorsal raphe unit activity and serotonin release in the striatum using voltammetry in awake, behaving cats. *Life Sci*. 37:2199–2204.
3243. Echizen, H. and C. Freed. 1984. Altered serotonin and norepinephrine metabolism in rat dorsal raphe nucleus after drug-induced hypertension. *Life Sci*. 34:1581–1589.
3244. O'Neill, R.D. and M. Fillenz. 1986. Microcomputer-controlled voltammetry in the analysis of transmitter release in rat brain. *Ann. N. Y. Acad. Sci*. 473:337–348.
3245. Miller, A.D. and C.D. Blaha. 2004. Nigrostriatal dopamine release modulated by mesopontine muscarinic receptors. *Neuroreport* 15:1805–1808.
3246. Di Ciano, P., C.D. Blaha, and A. Phillips. 1996. Changes in dopamine oxidation currents in the nucleus accumbens during unlimited-access self-administration of d-amphetamine by rats. *Behav. Pharmacol*. 7:714–729.
3247. Coury, A., C.D. Blaha, L.J. Atkinson, and A.G. Phillips. 1992. Cocaine-induced changes in extracellular levels of striatal dopamine measured concurrently by microdialysis with HPLC-EC and chronoamperometry. *Ann. N. Y. Acad. Sci*. 654:424–427.
3248. Lowry, J.P., M.G. Boutelle, and M. Fillenz. 1997. Measurement of brain tissue oxygen at a carbon paste electrode can serve as an index of increases in regional cerebral blood flow. *J. Neurosci. Methods* 71:177–182.
3249. Lowry, J.P., Demestre M, and Fillenz. 1998. Relation between cerebral blood flow and extracellular glucose in rat striatum during mild hypoxia and hyperoxia. *Dev. Neurosci*. 20:52–58.
3250. O'Neill, R.D., J.L. Gonzalez Mora, M.G. Boutelle, D.E. Ormonde, J.P. Lowry, A. Duff, B. Fumero, M. Fillenz, and M. Mas. 1991. Anomalously high concentrations of brain extracellular uric acid detected with chronically implanted probes: Implications for in vivo sampling techniques. *J. Neurochem*. 57:22–29.
3251. Mueller, K., R. Palmour R, C.D. Andrews, and P. Knott. 1985. In vivo voltammetric evidence of production of uric acid by rat caudate. *Brain Res*. 335:231–235.
3252. Yabuki, S. 2008. Development of high-performance biosensors based on functional matrices. *Chem. Sens*. 24:84–89.
3253. Wang, J. 1991. Modified electrodes for electrochemical sensors. *Electroanalysis* 3:255–259.

3254. Ates, M. and A.S. Sarac. 2009. Conducting polymer coated carbon surfaces and biosensor applications. *Progr. Org. Coatings* 66:337–358.
3255. Zhao, W., H. Dong, W. Zhang, and G. Cui. 2008. Application of carbon nanotubes in modified oxidase biosensors. *Zhongguo Zuzhi Gongcheng Yanjiu Yu Linchuang Kangfu* 12:3793–3795.
3256. Cremer, M. 1906. On the origin of the electromotive properties of the tissues contributing to the knowledge on the formation of the polyphase electrolyte chains (in German). *Z. Biol*. 47:562–608.
3257. Haber, F. and Z. Klemensiewicz. 1909. Über elektrische Phasengrenzkräfte/About electrical interfacial forces. *Z. Phys. Chem*. 67:385–431.
3258. Palecek, E. 1958. Oscillographic polarography of nucleic acids and their building blocks. *Naturwiss* 45:186–187.
3259. Palecek, E. 1960. Oscillographic polarography of highly polymerized deoxyribonucleic acid. *Nature* 188:656–657.
3260. Janata, J. 1975. Immunoelectrode. *J. Am. Chem. Soc*. 97:2914–2916.
3261. Guilbault, G.G. and J.G. Montalvo. 1969. Urea-specific enzyme electrode. *J. Am. Chem. Soc*. 91:2164–2165.
3262. Egholm, M., O. Buchardt, P.E. Nielsen, and R.H. Berg. 1992. Peptide nucleic acids (PNA). Oligonucleotide analogs with an achiral peptide backbone. *J. Am. Chem. Soc*. 114:1895–1897.
3263. Wang, J. 1988. DNA biosensors based on peptide nucleic acid (PNA) recognition layers. A review. *Biosens. Bioelectron*. 13:757–762.
3264. Rechnitz, G.A. 1981. Bioselective membrane electrode probes. *Science* 214:287–291.
3265. Chen, Z.-P., J.-H. Jiang, X.-B. Zhang, G.-L. Shen, and R.-Q. Yu. 2007. An electrochemical amplification immunoassay using bi-electrode signal transduction system. *Talanta* 71:2029–2033.
3266. Navaratne, A., M.-S. Lin, S.-L. Meng, and G.A. Rechnitz. 1990. Eggplant-based bioamperometric sensor for the detection of catechol. *Anal. Chim. Acta* 237:107–113.
3267. Yan, Q.-P., F.-Q. Zhao, and B.-Z. Zeng. 2006. Voltammetric behavior of epinephrine on carbon nanotubes-ionic liquid paste modified glassy carbon electrodes. *Fenxi Kexue Xuebao* 22:523–526.
3268. Zari, N., H. Mohammedi, A. Amine, and M.M. Ennaji. 2007. DNA hydrolysis and voltammetric determination of guanine and adenine using different electrodes. *Anal. Lett*. 40:1698–1713.
3269. Erdem, A., B. Meric, K. Kerman, T. Dalbasti, and M. Ozsoz. 1999. Detection of interaction between metal complex indicator and DNA by using electrochemical biosensor. *Electroanalysis* 11:1372–1376.
3270. Comba, F. N., M.D. Rubianes, P. Herrasti, and G.A. Rivas. 2010. Glucose biosensing at carbon paste electrodes containing iron nanoparticles. *Sens. Actuators B* 149:306–309.
3271. Liu, X.-H., Z. Ding, Y.-H. He, Z.-H. Xue, X.-P. Zhao, and X.-Q. Lu. 2010. Electrochemical behavior of hydroquinone at multi-walled carbon nanotubes and ionic liquid composite film modified electrode. *Colloids Surf. B* 79:27–32.
3272. Amani, V., H.R.L.Z. Zhad, A. Ebadi, O. Sadeghi, E. Najafi, and N. Tavassoli. 2011. Modification of carbon paste electrodes using pyridine functionalized SBA-15 and multi-walled carbon nanotubes (MWCNTs) for determination of lead ions in real aqueous solutions. *J. New Mater. Electrochem. Syst*. 14:39–42.
3273. Apetrei, C., I. Mirela Apetrei, J. Antonio de Saja, and M.L. Rodriguez Mendez. 2011. Carbon paste electrodes made from different carbonaceous materials: Application in the study of antioxidants. *Sensors* 11:1328–1344.
3274. Du, M., T. Yang, S.-Y. Ma, C.-Z. Zhao, and K. Jiao. 2011. Ionic liquid-functionalized graphene as modifier for electrochemical and electrocatalytic improvement: Comparison of different carbon electrodes. *Anal. Chim. Acta* 690:169–174.
3275. Li, X., Q.-J. Niu, G.-J. Li, T.-R. Zhan, and W. Sun. 2011. Electropolymerization of Brilliant cresyl blue on carbon ionic liquid electrode and electrocatalytic application for the voltammetric determination of ascorbic acid. *J. Brazil. Chem. Soc*. 22:422–427.