

NIKOLAS A. CHANIOTAKIS

*Professor of Chemistry
Director of the Laboratory of Analytical Chemistry*



Personal Information

Date of Birth: 08 August 1960
Place of Birth: Anatoli Ierapetra Crete
Citizenship: Greek
Marital Status: Married, 3 children

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EDUCATION

Post Doctorate Research Experience (1989 -1990): Laboratorium für Organische Chemie, Eidgenössische Technische Hochschule (ETH) Zentrum. Zurich, Switzerland under the supervision of Prof. W. Simon.

Doctor of Philosophy: (May, 1989) Department of Chemistry, The University of Michigan, Ann Arbor, MI, under the supervision of Prof. M. Meyerhoff.

Master of Science: (Spring, 1987) Department of Chemistry, The University of Michigan, Ann Arbor, MI. USA.

Bachelor of Science: (Spring, 1984) Department of Chemistry, Institute of Technology, The University of Minnesota, Minneapolis, MN. USA. Diploma work with Prof. Reynolds (inorganic electrochemistry) and Prof. Leete (natural product synthesis).

RESEARCH AND TEACHING EXPERIENCE

Associate professor: (1997-2002). Have completed 3 Ph. D. Theses, 3 MS Theses. Currently supervising 6 graduate students, 1 undergraduate, and 1 visitor. Teaching Instrumental Analytical Chemistry one semester per year to third year undergraduate students. Responsible for the Laboratory of Instrumental Analytical Chemistry I. Teaching one graduate course per in the area of Analytical Chemistry, Electrochemistry and biosensors. Teaching part-time in two graduate programs of the Department of Chemistry, that of “Environmental Science and Engineering” and “Isolation and Synthesis of Natural Products”. Teaching general chemistry for the department of material sciences.

Assistant Professor: (1991-1997) Research coordinator to graduate and undergraduate students. Teaching graduate courses centered on biosensors (2 semesters), Analytical Chemistry I (4 semesters) and II (3 semesters), and General Chemistry II (one semester). Responsible for the Analytical Chemistry laboratory I (5 semesters) and II (5 semesters) including, setting up the experiments and coordination.

Specialized Scientist. (1990-1991). The Greek Army. Worked with developing a database to be used as information bank for information exchange between the training base and the central army offices.

Post Doctorate Fellow, (1989 - 1990) Laboratorium fur Organische Chemie, ETH, Zurich, Switzerland (with Prof. Dr. W. Simon). Development of optical reversible oxygen sensor (oxygen optode). Design of novel ionophores and chromophores. Design and use of optical sensors (optodes) for the determination of different ions. Design of novel pH carriers for potentiometric monitoring of pH in biological fluids (stomach pH catheters).

Research Assistant. (1986 - 1989) Department of Chemistry, The University of Michigan, Ann Arbor, MI. Thesis project was the development and application of metalloporphyrins as novel selective carriers for anion sensing. Thesis title: *Metalloporphyrins as Anion Carriers in Membrane Electrodes*. Research advisor, Prof. Dr. M. E. Meyerhoff.

Lecturer, (1985 - 1986) Medical School, The University of Michigan, Ann Arbor, MI. Responsible for 80 chemistry and biochemistry lectures in the AIMED program (a post baccalaureate pre-matriculation program designed to prepare medical school students for the medical school curriculum)

Lecturer - Teaching Assistant, (1985 - 1986) Department of Chemistry, The University of Michigan, Ann Arbor, MI. Served as coordinator and presented all lecture material for chemistry 347 "Quantitative Analysis", a combined lecture and laboratory course.

Teaching Assistant, (1984 - 1985) Department of Chemistry, The University of Michigan, Ann Arbor, MI. Chemistry 225 "Organic Chemistry". Led the discussion section and coordinated laboratory sections.

Research Assistant, (1983 - 1984) Department of Chemistry, University of Minnesota, Minneapolis, MN. Project: Elucidation of synthetic pathways of ethylene production during fruit ripening in plants (research advisor, Prof. Dr. E. Leete).

Research Assistant, (1982 - 1983) Department of Chemistry, University of Minnesota, Minneapolis, MN. Project: The oxidation/reduction of different sulfur containing compounds utilizing electrochemical and colorimetric techniques (research advisor, Prof. Dr. Reynolds).

Teaching Assistant, (1983 - 1984) Department of Physics, University of Minnesota, Minneapolis, MN. Responsibilities: Grade the quizzes tests and finals of the 3rd year physics class (150 - 200 students).

Research Interests

A. Development and application of biosensors in environmental, clinical and research environments.

In the area of Biosensors we are interested in the development of novel matrices and methodologies for the enzyme stabilization. Our studies have concentrated in the use of a novel carbon matrix that have also been used with great success in the development of chemical sensors. This matrix has a high hydrophilicity, controlled pore size and high conductivity.

Recent results indicate that the porous carbon can actually be used as an alternative to carbon paste matrix. The immobilization of the enzyme can be achieved either by direct adsorption to the surface of the electrode, or by covalent bonding, while both organic and inorganic solvents can be utilized. Additionally, the stabilization of the enzymes with different amounts and types of polyelectrolytes is examined.

B. The development of chemical sensors and microsensors for ions, gases and other redox species as stand alone devices, or sensing elements in analytical instrumentation.

In order to develop novel selective and sensitive sensors for the in-situ or in-vivo measurements, it is mandatory to have the appropriate chemical compound that will perform the recognition of the analyte without interference from other similar species present in the solution.

The major section of our activity in this area is devoted to the design and synthesis of novel organic and organometallic compounds, the so-called carriers, since they are the basis for the development of novel sensors. The main transduction mechanisms used for measuring the signal are the electrochemical and the optical ones. Sensors for the measurement of salicylate, thiocyanate, nitrite, fluoride, phosphate, and ammonia, have been developed and applied with success.

C. The development of analytical methodologies for direct and indirect chemical analysis

A variety of applied research projects relating the development of new analytical instrumentation as well as method optimization and application in a range of analytical disciplines are under way. Various sensors are employed to perform sample analysis using Flow Injection Analysis (F.I.A.) manifolds. The developments of FA systems for the monitoring of ammonia in sea and wastewater, and for the determination of magnesium in drinking water have been accomplished. Moreover research projects for the development of Post Column Derivatization HPLC methodologies and their application in a variety of samples are under way.

Funding Achievements

1 European grants

1. KA 1464 Biotechnology: **“Sensor Arrays for Environmental Generic and Routine Detection of Pesticides”** 200 000 ECU
2. Human Capital and mobility **“Multifunctional Organotin Compounds and Polymers as Precursors to Novel Materials and Applications”** 180 000 ECU
3. ACTIVE **Bioanalytical Methods and Sensors** 30 000 ECU
4. BRITE/EURAM-programme Consorted Action **“Stability of Biosensors”** 15 000 ECU
There are currently 3 proposals under evaluation.

2 General Secretary of Research and Technology and other National Grants

(According to Special Research Account code number)

1. KA 671 **Design of Analytical Instrumentation.**
2. KA 680 **“Selective Potentiometric Sensors for on-line measurements”** GSRT 39100 ECU.
3. KA 694 **“Selective Gas Sensors”** GSRT 23500 ECU.
4. KA 950 **“Development of methodology for HPLC-PCD”**. GSRT 13500 ECU.
5. KA 1110 **“Development of a method for the direct measurement of water in raisins”**
EU-Ministry of Agriculture. 60 000 EU
6. KA 1271 **“Design and development of biosensors for ethanol and glucose”** GSRT 52 000 ECU.
7. KA 1276 (Prof. E. Stefanou) **“Development of direct detection systems based on Test-Strips”** GSRT 52 000 ECU.
8. EPET IMBC. **“Development of an FA System for the Monitoring of Ammonia in Sea Water”**

Professional Affiliations

- Scientific committee member of the European program ACTIVE (Analytical Chemistry Tunable to Industry via Visits and Education)
- Greek representative to the European Consortium entitled ‘Biosensor Stability’
- * American Chemical Society

- * Greek Chemical Society

Graduate Students Completed their Degrees at the Laboratory

1. L. Moschou Ph.D. 2000 (currently Post Doc Silvia Daurnet Lexington USA)
2. V. Gavalas Ph.D. 2000 (currently Post Doc. L. Bachas Lexington USA)
3. I. Tsagkatakis Ph.D. 1999 (currently Post Doc with E. Backer USA)
4. Hassan Dalil Ph.D. 2002
5. Vaso Davari Ms 2002
6. I. Tsagkatakis Ms 1996
7. G. Andreadakis Ms 1997
8. M. Geniatakis Ms 2000

Diploma Thesis Performed in the Laboratory

- 1 Maria Vamvakaki: “Molecular transport via Organic Membranes”
- 2 George Melidoneas “Anion selective organometallic carriers”
- 3 Vasilis Gavalas “Amperometric biosensors for glucose”
- 4 Lisa Moschou “Measurement of Mg^{2+} and NO_3^- using ISEs”
- 5 George Andreadakis “Optical measurement of anions based on Metal –Dithiazone complexes.
- 6 Anastasios Solthatos “Development of methodologies for the monitoring of detergents”
- 7 Vasiliki. Vamvakaki: Studies on the optimization of biosensors based on the enzyme of Tyrocinase and Glucose oxidase”
- 8 Katerina Matheou: “Water treatment in power generating plants, and treatment of its waste waters”
- 9 Vagelis Dimakis “Study of the effect of polyelectrolyte PEI on the operational characteristics of biosensors”
- 10 Eleni Gouliaditi: “Study of organotin compounds in ISEs”
- 11 M. Koci Diploma work

Current Laboratory Students

1. K. Perdikaki Ph. D Candidate
2. M. Fouskaki Ms Candidate
3. Sofia Sotiropoulou Ph. D. Candidate
4. V. Vamvakaki Ph.D Candidate

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| 5. K. Karametsi | Ms Candidate |
| 6. V. Dimakis | Ms Candidate |
| 7. Zaharis Sfakiotakis | Ms Candidate |
| 8. I. Monemvasios | Ms Candidate |
| 9. A. Volosyrakis | Diploma work |

Publications

1. Recent Advances in the Design of Anion and Gas Selective Potentiometric Membrane Electrodes. M. E. Meyerhoff*; D. M. Pranis; N. A. Chaniotakis. Instrument Society of American Transactions, 1987, paper # 87-1084, pp. 467-477.
2. Influence of Porphyrin Structure on Anion Selectivities of Mn(III) Porphyrin-Based Membrane Electrodes. N. A. Chaniotakis; A. M. Chasser; M. E. Meyerhoff*; J. T. Groves. Analytical Chemistry, Vol. 60, (1988) pp. 185-188.
3. Response properties of Ion-Selective Polymeric Electrodes Prepared with Aminated and Carboxylated Poly(Vinyl Chloride). S-C. Ma; N. A. Chaniotakis; M. E. Meyerhoff. Analytical Chemistry, Vol. 60, (1989), pp. 2293-2299.
4. Salicylate-Selective Membrane Electrode Based on Tin(IV)-Tetraphenylporphyrin. N. A. Chaniotakis; S. B. Park; M. E. Meyerhoff*. Analytical Chemistry, Vol. 61, (1989), pp. 566-570.
5. Mn(III)-Porphyrin-Based Thiocyanate-Selective Membrane Electrode: Characterization and Application in Flow Injection Determination of Thiocyanate in Saliva. D. V. Brown; N. A. Chaniotakis; I. H. Lee, S. C. Ma; S. B. Park; M. E. Meyerhoff*, R. J. Nick, J. T. Groves. Electroanalysis, Vol. 1, pp. 477-484 1989.
6. New Anion- and Gas-Selective Potentiometric Sensors. Chemical Sensors and Microinstrumentation Editors: Murray et al. M. E. Meyerhoff*; D. M. Pranis, H. S. Yim, N. A. Chaniotakis, S. B. Park. ACS Symposium Series No. 403 Chapter 2, pp. 26-45. 1989. invited chapter in BOOK
7. Anion Selective Optical Sensors Based on a Coextraction of Anion-Proton Pairs into a Solvent-Polymeric Membrane. S. S. S. Tan, P. C. Hauser, N. A. Chaniotakis, G. Suter and W. Simon*. Chimia, Vol. 43, (1989), pp. 257-261.
8. Life Time of Neutral Carrier-Based Liquid-Membranes in Aqueous Samples and Blood. O. Dinten, U. Spichiger, N. A. Chaniotakis, P. Gehrig, B. Rusterholz, W. E. Morf, W. Simon*. Analytical Chemistry, Vol. 63, (1991), pp. 596-603.
9. Potentiometric Phosphate Selective Electrode Based on Organometallic Multi-Tin(IV) Carrier. N. A. Chaniotakis, K. Jurkschat and A. Ruthemann. Analytica Chimica Acta, 282, 245, 1993.
10. Ion and Gas Selective Electrodes -Research and Applications. N. A. Chaniotakis*. Sensors 1993. 28 May, 1993. Proceedings Special issue.
11. Multiorganotin Compounds. Designing a Novel Phosphate-Selective Carrier. J. K. Tsagatakis, N. A. Chaniotakis*, K. Jurkschat. Helvetica Chimica Acta 77, 2191-2196, (1994)
12. From Molecular Recognition to Analytical Information by Chemical Sensors. U. Spichiger*, X. Aiping, D. Citterio, H. Buhler, N. Chaniotakis, W. Simon. Electroanalysis (1995), 7 No 9, 859-863.

13. Solid-Contact Ion-Selective Electrodes with Stable Internal Electrode. M. Vamvakaki and N. A. Chaniotakis*. *Analytica Chimica Acta*.320 (1996) 53-61)
14. Anion Partitioning Into Highly Lipophilic Organic Phases. G. Andreadakis, J. Tsagatakis, N. A. Chaniotakis*. *Electroanalysis*, 9, 1997, pp. 869-872.
15. Chemical Sensors for Anions Based on Sn(IV) Lewis Acidic Carriers. J. K. Tsagatakis, N. A. Chaniotakis*, J. Jurkschat. *Quimica Analytica*, (1997) 16 [Suppl. 1]:S105-S109.
16. Organometallic Complexing Agents as Carriers in Polymer-Based Electrodes. N. A. Chaniotakis*, J. K. Tsagatakis, R. Willem, and K. Jurkschat. *Reactive & Functional Polymers* 34, (1997) 183-188.
17. Magnesium Ion-Selective Electrode. Optimization and FIA Applications. N. A. Chaniotakis*, J. K. Tsagatakis, E. Moshou, Steven J. West and Xiaowen Wen. *Analytica Chimica Acta*, 356 (1997) 105-111
18. Automated Portable Ammonia Monitor for Sea Water. E. A. Moschou, N. A. Chaniotakis*. *American Laboratory*, 10, #7, (1998), p.10.
19. Highly Selective Two-Ion-Carrier Chemically Modified FET's. N. A. Chaniotakis*, E. Moschou, G. Kostantinidis. *MicroElectronic Engineering*, 41/42 (1998) 481-484.
20. Improved operational stability of biosensors based on enzyme-polyelectrolyte complex adsorbed into a porous carbon electrode. Gavalas, V.G.; Chaniotakis*, N.A.; Gibson, T.D. *Biosens. & Bioelectr.* 1998, 13, 1157-1163.
21. Organometallic complexing agents as carriers in polymer-based electrodes (vol 34, pg 183, 1997) Chaniotakis* NA, Tsagatakis JK, Jurkschat K, Willem R *Reactive & Functional Polymers* 38 (2-3): 289-289 1998.
22. Tributyl- and Triphenyltin Benzoates, Phenylacetates, and Cinnamates as Anion Carriers: an Electrochemical Assessment Coupled to Structural NMR Studies and AM1 Calculations. Tsagatakis, J. K.; Chaniotakis*, N. A.; Jurkschat, K.; Damoun, S.; Geerlings, P.; Bouhdid, A.; Gielen, M.; Verbruggen, I.; Biesemans, M.; Martins, J. C.; Willem, R. *Helvetica Chimica Acta* 82 (1999) pp 531-542.
23. Polyelectrolyte Stabilized Biosensors. Vasilis G. Gavalas, Nikolas A. Chaniotakis*. *Instrumental Methods of Analysis. Modern Trends and Applications. IMA' 99 International Conference Proceedings. Volume I* p.280-284 1999
24. Organotin Anion Carriers and their Applications in Ion-Selective Electrodes. K Perdikaki, J. K Tsagatakis, N. A. Chaniotakis*. *Modern Trends and Applications. IMA' 99 International Conference Proceedings Volume I.* p.91-95, 1999

25. Microsensors Based on CHEMFETs Covered with Ion-Partitioning Membranes. E. A. Moschou, N. A. Chaniotakis*. Modern Trends and Applications. IMA' 99 International Conference Proceedings. Volume I p.285-289, 1999
26. Post Column Derivatization System for High Performance Liquid Chromatography, Characteristics and Applications in Carbohydrates. Maria G. Fouskaki, Nikolas A. Chaniotakis* Pantelis G. Rigas. Modern Trends and Applications. IMA' 99 International Conference Proceedings. Volume II p.604-608, 1999
27. Polyelectrolyte Stabilized Oxidase based Biosensors: Effect of Diethylaminoethyl-dextran on the Stabilization of Glucose and Lactate Oxidases into Porous Conductive Carbon. V. G. Gavalas, N. A. Chaniotakis*, Analytical Chimica Acta, 404/1 (2000) pp 67-73.
28. Ion-Partitioning Membrane-Based Electrochemical Sensors. E. A. Moshou, N. A. Chaniotakis*, Analytical Chemistry, 72 n 8 (2000) 1835.
29. Direct Electrochemical Flow Analysis System for Simultaneous Monitoring of Total Ammonia and Nitrite in Seawater E.A. Moschou , U. Azpiroz Lasarte , M. Fouskaki , N.A. Chaniotakis* Papandroulakis, P. Divanach. Aquaculture engineering, 22 (2000) 255-268.
30. Novel pre-oxidizing cell for elimination of electroactive interferents during biosensor analysis. Application to glucose determination in real samples. Vasilis G. Gavalas, Maria G. Fouskaki, Nikolas A. Chaniotakis*. Analytical Letters 33, 12 2391-2405 (2000)
31. [60]Fullerene-Mediated Amperometric Biosensors. Vasilis G. Gavalas, Nikolas A. Chaniotakis*. Analytica Chimica Acta, 404 (2000) 67-73.
32. A new Chloride-Selective Carrier and its Evaluation in Ion-Selective Electrodes. K Perdikaki, J. K Tsagatakis, N. A. Chaniotakis*, Microchimica Acta, 136, 217-221, 2001.
33. CHEMFETs Based Microsensors Covered with Ion-Partitioning Polymeric Membranes. E. A. Moschou, N. A. Chaniotakis*. Microchimica Acta 136, 205-209 2001
34. Lactate biosensor based on the adsorption of polyelectrolyte stabilized lactate oxidase into porous conductive carbon Gavalas VG, Chaniotakis* NA Microchimica Acta 136 (3-4): 211-215 2001
35. Phosphate Biosensor Based on Polyelectrolyte-stabilized pyruvate oxidase. V. Gavalas, N. Chaniotakis* Anal. Chim. Acta 427 (2001) 271-277.
36. Theoretical and Experimental Studies of Metallated Phenanthroline Derivatives. Optimization of the Nitrate Sensor. George E. Andredakis, Elizabeth A. Moschou,

- Katherine Matthaiou, George E. Froudakis, Nikolas A. Chaniotakis*. *Analytica Chimica Acta*, 439, (2001) 273-280.
37. Phosphate Binding Characteristics and Selectivity of Bifunctional Organotin Carriers. I. Tsagkatakis, K. Jurclschat, R. Willem, N. A. Chaniotakis*. *Helvetica Chimica Acta* Vol. 84 1952-61, 2001
 38. Potassium Selective CHEMFET Based on an Ion-Partitioning Membrane. E. A. Moshou, N. A. Chaniotakis*. *Analytica Chimica Acta* 445, 183-190 2001.
 39. Picolinamide Residues as Neutral Hydrogen-Selective Carriers for the Potentiometric Measurement of Subzero pH Values Maria Fouskaki, Thanasis Gimisis and Nikolas A. Chaniotakis*, *Electroanalysis*, 14, No. 9 1-6 2002
 40. Synthesis and Characterization of Polymeric Derivatives Containing Grafted Triorganotin Cinnamates with Electrochemical Chloride Response. Luigi Angiolini*, Elisabetta Salatelli Daniele Caretti, Monique Biesemans, Hassan Dalil and Rudolph Willem, Nikolas A. Chaniotakis, Eleni Gouliaditi and Katerina Perdikaki, *Macromolecular Chemistry and Physics*. 2002, 203, 219-229
 41. Soluble Polystyrenes Functionalized By Triorganotin Carboxylates. Synthesis, Structure and Electrochemical Anion Response. Hasan Dalil, Monique Biesemans, Rudolph Willem*, Luigi Angioni, Elisabetta Saletelli, Daniele Caretti, Nikolas A. Chaniotakis, Katerina Perdikaki. *Helvetica Chimica Acta*, Vol. 85 (2002) pp. 852-866.
 42. Direct Potentiometric Measurement of Nitrate in Plants and Soils. M. Geniatakis, M. Fouskaki, N. A. Chaniotakis*. *Communications in Soil Science and Plant Analysis*, In press.
 43. Highly Sensitive Calcium CHEMFETs Based on Ion-Partitioning Bulk Membranes: Mechanism Elizabeth A. Moschou, and Nikolas A. Chaniotakis*, *Analytical Chemistry*, Submitted
 44. Polyelectrolyte-stabilized biosensors based on macroporous carbon electrode, Vaggelis T. Dimakis, Vasilis G. Gavalas and Nikolas A. Chaniotakis *Analytica Chimica Acta*, Volume 467, Issues 1-2, 3 September 2002, Pages 217-223
 45. Selective fluoride recognition and potentiometric properties of ion-selective electrodes based on bis(halodiphenylstannyl)alkanes, Katerina Perdikaki, Ioannis Tsagkatakis, Nikolas A. Chaniotakis, Reiner Altmann, Klaus Jurkschat and Gregor Reeske *Analytica Chimica Acta*, Volume 467, Issues 1-2, 3 September 2002, Pages 197-204

46. Evaluation of a Highly Selective Class of Ammonium Ionophores Based on Pyrazol Rings
Elizabeth A. Moschou, Xiaowen Wen, Steve West*, Sjong Lee, Jik Chin, Maria Fouskaki,
Nikolas A. Chaniotakis, Analytical Chemistry, Submitted.
47. Novel Carbon Materials in Biosensor Systems , S. Sotiropoulou, V. Gavalas¹, V.
Vamvakaki, N. A. Chaniotakis*. Biosensors and Bioelectronics, in press
48. Ion-Partitioning Membranes as Electroactive Elements for the Development of a Novel
Cation-Selective CHEMFET Sensor System. In "New Insights into Membrane Science
and Technology: Polymeric, Inorganic, and Bifunctional Membranes". E. Moschou, N. A.
Chaniotakis* is press BOOK.
49. Method for the Determination of Water Content in Sultana Raisins using a Water Activity
Probe M. Fouskaki, K. Karametsi, and N. A. Chaniotakis. In press
50. A Morpholinoethanesulfonic Acid Buffer System for Improved Detection Limit and
Stability of the Lanthanum Fluoride Crystal-Based Sensor. M. Fouskaki, S. Sotiropoulou,
M. Koci, N. A. Chaniotakis. Submitted
51. Carbon Nanotube Array-Based Biosensor. S. Sotiropoulou, N. A. Chaniotakis. Analytical
and Bioanalytical Chemistry. In press.
52. Direct Potentiometric Measurement of Nitrate in Seeds and Produce, E. Geniatakis, M.
Fouskaki, N.A Chaniotakis, Communications in Soil Science and Plant Analysis, In Press.

Other Publications

53. Αναλυτική Χημεία I και II. Ασκήσεις Εργαστηρίων. Ν. Χανιωτάκης, Ι. Σαριδάκης.
Πανεπιστήμιο Κρήτης.
54. Ποσοτική Χημική Ανάλυση I. Σημειώσεις μαθήματος Αναλυτικής Χημείας I.
55. Principles of Instrumental Analysis. Μετάφραση στα Ελληνικά σε συνεργασία με τα
πανεπιστήμια Ιωαννίνων και Αθηνών. Σε εκτύπωση
56. Μινωικό αλάτι από το σπήλαιο «της Ουρανιάς το Φρούδι» Ζάκρου. Κ. Κόπακα, Ν.
Χανιωτάκης. Πολιτιστικό Τεχνολογικό Ίδρυμα ΕΤΒΑ σελ. 27-38, 1998
57. Κεφάλαιο «Το Αλάτι» Κ. Κόπακα, Ν. Χανιωτάκης, στο Βιβλίο, Το Σπηλαίο και οι
Φυσικές Κόχες. Ζακρος” 1, Αθήνα Εκδόσεις Αρχαιολογικής Εταιρείας.
58. Just taste additive? Bronze age salt from Zakros, Crete. K. Kopaka, N. A. Chaniotakis.
Oxford, Journal of Archeology, in press.

Presentation –Invited Lectures

1. N. A. Chaniotakis, M. E. Meyerhoff, Metalloporphyrins as Ion-Selective Carriers. Presented during the 18th Central Regional Meeting of the American Chemical Society, June 1-5, 1986.
2. N. A. Chaniotakis, The Determination of Oxygen and Carbon Dioxide in Sediments. Analytical Chemistry Seminar, The University of Michigan, Ann Arbor MI, 1986.
3. N. A. Chaniotakis; M. E. Meyerhoff, Potentiometric Anion Response of Polymeric Membranes doped with Metalloporphyrins. Presented during the 14th. meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, (FACS), October 4, 1987.
4. N. A. Chaniotakis; S. B. Park; M. E. Meyerhoff, Potentiometric Determination of Salicylate Using Sn(TPP)Cl₂ Doped Solvent Polymeric Membranes. Presented during the 15th. meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, (FACSS), November 3, 1988.
5. S-C Ma; N. A. Chaniotakis; M. E. Meyerhoff. Response Properties of Ion-Selective Polymeric Electrodes Prepared with Amminated and Carboxylated Poly(Vinyl Chloride). Presented during the 15th meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, (FACSS), November, 1988.
6. I. H. Lee, S. C. Ma; S. B. Park; M. E. Meyerhoff D. V. Brown; N. A. Chaniotakis Mn(III)-Porphyrin-Based Thiocyanate-Selective Membrane Electrode: Characterization and Application in Flow Injection Determination of Thiocyanate in Saliva. Presented during the 16th . meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, (FACSS), October 1-6, 1989.
7. N. A. Chaniotakis Metalloporphyrins as Anion Carriers in Membrane Electrodes. Analytical Chemistry Seminar. The University of Michigan, Ann Arbor MI., 1988.
8. J. Kollman, M. Lã'Her, W. Simon, N. A. Chaniotakis, Mixed Valence Dicofacial Porphyrins as Dioxygen Optical Transducers.. Analytical Seminar, ETH Zurich, 1989.
9. N. A. Chaniotakis, Ion and Gas Selective Electrodes -Research and Applications. Sensors 1993. 28 May, 1993.
10. N. A. Chaniotakis, J. Tsagatakis, K. Jurckschat, Multidentate Compounds as Anion Carriers in Membrane Electrodes. Presented during the 10th FECHEM Conference on Organometallic Chemistry, 5-10 Sept. 1993.
11. N. A. Chaniotakis, J. K. Tsagatakis, and M. Vamvakaki., Novel Tin(IV)-Based Potentiometric Phosphate Carriers Presented during the 1994 Pittsburgh Conference, February 28, Chicago, USA.

12. N. A. Chaniotakis, J. Tsagatakis, G. Andredakis, S. West, Partitioning of Anions in Lipophilic Organic Phases Measured by Direct Conductometric Methods.. Presented during the 1995 Pittsburgh Conference, March 4-11, New Orleans, USA.
13. N. A. Chaniotakis, J. Tsagatakis, S. West, Magnesium Measurements in Food Stuffs. Presented during the 1995 Pittsburgh Conference, March 4-11, New Orleans, USA.
14. J. Tsagatakis, N. A. Chaniotakis, K. Jurckschat . Organometallic Compounds as Ion Carriers in Chemical Sensors. 16th National Chemistry Conference, 1995.
15. G. Andredakis, N. A. Chaniotakis. Ion Partitioning in Organic Solvents of Polymeric Membranes. 16th National Chemistry Conference, 1995.
16. J. K. Tsagatakis, N. A. Chaniotakis, K. Jurckshat. Chemical Sensors for Anions Based on Sn(IV) Lewis Acidic Carriers. First Mediterranean Basin Conference of Analytical Chemistry, Cordoba Spain 5-10 November 1995
17. N. A. Chaniotakis Organometallic Complexing Agents as Carriers in Anion Selective Sensors. Invited Lecture. SIMEC 96 May-June 1996, Cordoba, Spain
18. J. K. Tsagatakis, N. A. Chaniotakis, J. Jurckshat. A New Highly Selective Electrode For Use in Direct Measurements of Phosphate in Aqueous Samples. Euroanalysis, September 1996 Italy.
19. E. Moschou, N. A. Chaniotakis, N. Papandoulakis, P. Divanack. Continuous Monitoring of Ammonia in Sea Water. 17th National Chemistry Conference, 1996
20. G. Andredakis, N. A. Chaniotakis. Design and Optimization of Nitrate Selective Carriers. 17th National Chemistry Conference, 1996.
21. V. Gavalas, N. A. Chaniotakis, The effects of the Organic Solvent on the Biosensor Stability. 17th National Chemistry Conference, 1996
22. N. Chaniotakis, R. Hummeltenberg, K. Jurckschat, S. Kuhn, M. Schurmann, J. A. Tsagatakis, R. Willem. New Multidentate Silicon and Tin Containing Lewis Acids for Anion Complexation.
23. N. A. Chaniotakis, E. A. Moschou, N. Papandoulakis, Automated Portable Ammonia Monitor for Sea and Waste Water.. PITCON 97 16-21 March 1997.
24. N. A. Chaniotakis, E. Moschou, G. Constandinidis Highly Selective Two-Ion-Carrier Chemically Modified FET's. Micro and Nano Engineering 97. Athens September 15-18 1997.

25. K. Kopaka, N. A. Chaniotakis, Minoal Salt from Zacros. The Greek Salt. Mitilini 5-8 November, 1998.
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31. Post Column Derivatization System for High Performance Liquid Chromatography, Characteristics and Applications in Carbohydrates. Maria G. Fouskaki, Nikolas A. Chaniotakis Pantelis G. Rigas. International Conference on Modern Trends and Applications. IMA' 99
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34. Selective phosphate recognition based on multifunctional stannyl carriers. Optimization and ISE applications Nikolas Chaniotakis, Katerina Perdikaki,ioannis TsagKatakis, Yu Qin, Eric bakker, Rudolf Willem Pitcon 2001 USA.
35. Selective fluoride recognition based on Bis(halodiphenylstanyl)methanes. Optimization and ISE applications Katerina Perdikaki, Nikolas Chaniotakis. Tsagatakis, Klaus Jurkschat, Reiner Altmann Pitcon 2001 USA.
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38. Carbon nanotubes as novel electroactive materials in biosensors *S. G. Sotiropoulou, N. A. Chaniotakis*. IMA 2001
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41. Lowering the Detection Limits of Ion-Selective Electrodes. Theoretical Aspects and Initial Experimental Evidence for Anion Detection. Maria G. Fouskaki and Nikolas A. Chaniotakis, IMA 2001.
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43. Ion-partitioning membrane-based CHEMFET with super-Nernstian response to multivalent cations. Elizabeth Moschou, Nikolas Chaniotakis, North American Membrane Society, May 15-20, 2001, Lexington, Kentucky.
44. Activated Microporous Vitreous Carbon as Novel Matrix for the Development of Ion Sensors with Improved Detection Limits. Pittcon 2002 USA, March 18, New Orleans.
45. Measuring water content in raisins 2nd International Workshop on Water in Food. 26-27th March 2002 -Reims, France
46. "Novel Carbon Materials in Sensor and Biosensor Systems" Thursday, March 21, 2002 Department of Chemistry, University of Kentucky, Lexington KY (invited)
47. "Recombinant acetylcholinesterase enzyme-based activated carbon biosensor for detection of organophosphorous pesticides "Biosensors 2002. Kyoto Japan, 15-17 May 2002.
48. "Ion-Partitioning Bulk Membrane CHEMFETs as Highly Sensitive Cation Probes" 1 Matrafured 02 International Conference on Electrochemical Sensors October 13–18, 2002 Matrafured, Hungary N. A. Chaniotakis, L. Moschou

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51. ANION RECOGNITION BASED ON ORGANOSTANNYL COMPOUNDS AND THEIR APPLICATION IN CHEMICAL SENSORS. NIKOLAS CHANIOTAKIS. MARIA FOUSKAKI, KATERINA PERDIKAKI, KLAUS JURKSCHAT *The 3rd Aegean Analytical Chemistry Days (3rd AACD) September 29th - October 3rd Polihnitos, Lesvos, Greece*
52. Pesticide Biosensor for Direct Environmental Analysis. S. Sotiropoulou, V. Vamvakaki, D. Fournier, N. A. Chaniotakis. *The 3rd Aegean Analytical Chemistry Days (3rd AACD) September 29th - October 3rd Polihnitos, Lesvos, Greece*
53. Pesticide Biosensor for Direct Environmental Analysis. S. Sotiropoulou, V. Vamvakaki, D. Fournier, N. A. Chaniotakis Regional Symposium of Water Recycling in Mediterranean Region. Iraklion 2002.

Seminars-Conferences

1. BIOANALYTICAL METHODS AND SENSORS. May 9-10-11, 1994. Organizing committee, chairman.
2. SIMEC '94. Thermodynamics of Metal Complexes and Molecular Recognition. June 7-10, 1994. Organizing Committee Member.
3. First Mediterranean Conference of Analytical Chemistry, November 1995, Scientific Committee.
4. International Conference Instrumental Analysis. Modern trends and Applications. Ioannina 5-8 Sept. 2001. Organizing Committee.

Patents

Solid Contact Ion-Selective Electrode. Nikolas A. Chaniotakis, Steven West. US patent # 5,840,168 Nov. 24, 1998.

Impact Factor and Citations of Publications (as of 1/8/2001)

Journal	Number of Publications	Impact Factor	# of Citations
Analytical Chemistry	5	4.609	416
Helvetica Chimica Acta	2	2.1	29
Biosensors & Bioelectronics	1	3.014	8
Anal. Chim. Acta	7	1.9	63
Electroanalysis	3	1.8	31
Analytical Letters	1	1	1
Microelectronic Engineering	1	0.815	0
Chimia	1	0.604	46
Reactive & Functional Pol.	2	0.6	2
Quimica Analytica	1	0.562	2
Aquacultural Engineering	1	0.46	0
Microchimica Acta	3		0
ACS Series	1		6
			604

Citations and Impact Factor

As of August 2001 there have been 604 citations of the above publications. The average impact factor is 1.6, while the I.P X # publications is 53.5.

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Nikolaos Chaniotakis's best boards. Sex and love. Nikolaos Chaniotakis 3 Pins. Lgbt love. Nikolaos Chaniotakis 1 Pin. More ideas from Nikolaos Chaniotakis. Cute Couple Quotes Couple Goals Selfies Couple Sleeping Couples Sleeping Together Letters To My Husband Body Building Tips Living In Italy The Better Man Project. Do Couples Who Don't Sleep Together Stay Together? Nikos Chaniotakis, Greek chemistry professor. Achievements include patents for Chemical Sensors and Biosensors. Chemical Sensors and Biosensors grant, Greece European Union, since 2008. Vice president Elementary School, Iraklion, 2006-2008.
Nikos Chaniotakis, Greek chemistry professor. Achievements include patents for Chemical Sensors and Biosensors. Chemical Sensors and Biosensors grant, Greece European Union, since 2008. Stavroula Psarrou. Pinelopi Gyftou. Nicolas Spyrellis. Content type: Published: 01 June 2001. Development and Application of Instrumental Methods for Strain Analysis of Semiconductor Layers and Devices. Authors. Dimitra Papadimitriou. Efthymios Liarokapis. Chaniotakis is more than just a product company. It is the style and culture of walking. A luxury shoe brand, which is exclusively designed and produced in Greece, and created entirely with refined materials and care.
Men's fall winter collection. We serve the inherent desire to find a shoe that provides a means of self-expression. Read more. Slip-on.