

# CONTENTS

## Amperometric Sensors

<b>Voltohmmetry - An Alternative Detection Principle at Ultrathin Metal Electrodes in Solution</b>	
H. Emons, O. Glueck, and M. J. Schöning (Research Center Jülich).....	1
<b>New Voltammetric Sensors for Alkaline Cations Based on Ionophores Incorporated into a Self-assembled Thiol Monolayer</b>	
H. Aoki, Y. Umezawa (University of Tokyo), S. Rondinini, and A. Vertova (University of Milan).....	4
<b>Electrocatalytic Sensing Using Novel Interfaces of Well-Ordered Hybrid Inorganic/Organic Monolayers</b>	
D. Martel, A. Kuhn (Ecole Nationale Supérieure de Chimie et de Physique de Bordeaux), P. J. Kulesza, M. Chojak, A. Lewera (University of Warsaw), and M. A. Malik (Technical University of Czestochowa).....	10
<b>Integration of Chemical and Electrochemical Devices with Silicon Microelectronics Enabling Microsensors and Reactors</b>	
P. Kohl (Georgia Institute of Technology).....	17
<b>Features and Conditions for Subtractive ASV Using Silver and Gold Electrodes</b>	
Y. Bonfil, M. Brand, and E. Kirowa-Eisner (Tel-Aviv University).....	27
<b>Electrochemical Immunosensors using iridium oxide immobilized antibodies</b>	
M. S. Wilson and D. Rauh (EIC).....	34
<b>Ion Sensing with Poly(pyrrole) Based Membranes - Comparison Between Amperometric and Potentiometric Operation Mode</b>	
A. Michalska, S. Walkiewicz, and K. Maksymiuk (University of Warsaw).....	42
<b>Amperometric Urea Biosensor Using Polypyrrole with Different Dopants</b>	
L.H. Dall'Antonia and S. Cordoba de Torresi (Universidade de Sao Paulo).....	49
<b>Amperometric Determination of Urea and Acetic Acid Using Electrodes Coated with Tri-enzyme/Polydimethylsiloxane-Bilayer Membranes</b>	
F. Mizutani, T. Sawaguchi, S. Yabuki, and S. Iijima (National Institute of Advanced Industrial Science and Technology).....	58

<b>Mutual Interferences of Hydrogen and Carbon Monoxide in Amperometric Gas Sensors</b>	
J. Stetter and Y.-T. Chao (Illinois Institute of Technology).....	69
<b>Amperometric Ammonia Sensor Using Polypyrrole and Substituted Polypyrrole with Different Dopants</b>	
L.H. Dall'Antonia, M. Vidotti Miyata, S. Cordoba de Torresi (Universidade de São Paulo), and R. Torresi (Instituto de Química de São Carlos-USP).....	76
<b>Determination of the Concentration of Gaseous Impurities in Air Using a System of Uncalibrated Sensors of Amperometric Type</b>	
V. Chviruk, O. Linyucheva, and O. Buket (National Technical University of Ukraine).....	**
<b>Quartz Crystal Devices</b>	
<b>Kinetics of Redox Switching of Electroactive Polymers Using the Electrochemical Quartz Crystal Microbalance. II. Identifying the Rate Limiting Step for the Redox Switch of Poly(vinylferrocene) in Aqueous Sodium Hexafluorophosphate Solutions</b>	
I. Jureviciute (Institute of Chemistry,), S. Bruckenstein (University at Buffalo/SUNY), and A. R. Hillman (University of Leicester).....	82
<b>Combined QCM and Electrochemical Impedance Measurements for Biosensor Applications</b>	
A. Sabot, C. Sumner, and S. Krause (University of Sheffield).....	98
<b>A Novel Tool Based on Ac-QCM Transducers for Improving Antigens/Antibodies Interactions</b>	
S. Al-Sana, C. Gabrielli, and H. Perrot (Université P. et M. Curie).....	109
<b>The Application of a Bulk Acoustic Wave Sensor for Pesticide Detection in Liquids</b>	
G. Chen, C. Zhang, D. Frankel, R. Bushway, and J. Vetelino (University of Maine).....	116
<b>An Acoustic Wave Sensor for Monitoring Ammonium in Water</b>	
C. Zhang, C. Kim, P. Millard, and J. Vetelino (University of Maine).....	121
<b>Liquid Dielectric Constant Measurement Based on Thickness Shear Mode Quartz Resonators</b>	
C. Zhang and J. Vetelino (University of Maine).....	125

## **Sensor Systems**

### **Electrochemical Time-of-Flight Investigations of the Diffusion Processes in Complex 2D and 3D Molecular Systems**

- K. Slowinska, M. Johnson, M. Wittek, G. Moeller,  
and M. Majda (University of California at Berkeley).....130

### **Correction of Sensor Inaccuracy Arising from Drift Based on a Signal Processing Technique**

- S. Jamasb (Conexant Systems and University of California Irvine),  
S. D. Collins, and R. L. Smith (University of California Davis).....138

### **"High Order" Hybrid Sensor Module Based on an Identical Transducer Principle**

- A. Poghossian (Research Centre Jülich), L. Berndsen (University of Applied Sciences Aachen), J. Schultze (Institute of Physical Chemistry and Electrochemistry,), H. Lüth (Research Centre Jülich),  
and M. Schöning (University of Applied Sciences Aachen).....143

### **Flexible, Flat-form, Microfabricated Sensors for Substrate Concentrations and Enzyme Activities**

- R. P. Buck (University of North Carolina), S. Ufer (Duke University), E. Lindner, R. Gyursanyi (University of Memphis), G. Nagy, and L. Nagy (University of Pecs).....153

## **Biological Sensors**

### **Renewable Surface Biosensors with Optical Detection**

- C. Bruckner-Lea, E. Ackerman, B. Dockendorff, D. Holman,  
and J. Grate (Pacific Northwest NationalLaboratory).....157

### **Microscaled Living Bioelectronic Systems-Coupling Beetles to Silicon Transducers**

- M. Schöning (University of Applied Sciences Aachen),  
P. Schroth (Research Centre Jülich GmbH), H. Hummel  
(University Giessen), B. Weißbecker (University Ulm),  
H. Lüth (Research Centre Jülich GmbH),  
and S. Schütz (University Ulm).....165

### **Spectroscopic and Electrochemical Studies of Bilayer Lipid Membranes Tethered to the Surface of Gold**

- P. Krysinski, B. Palys, A. Zebrowska (University of Warsaw),  
and Z. Lotowski (University of Bialystok).....174

<b>Chiral Analysis of Amino Acids Using Composite Bienzyme Biosensors</b> R. Domínguez, B. Serra, A.J. Reviejo, and J.M. Pingarrón (Universidad Complutense de Madrid).....	187
<b>Biosensors Based on Protein Adsorption on Nanoporous TiO<sub>2</sub> Films</b> E. Topoglidis, C. J. Campbell, A. E. G. Cass, and J. R. Durrant (Imperial College of Science, Technology and Medicine).....	196
<b>Detection Mechanism Of Carbon-Epoxy Enzyme Based Sensors</b> M. Khurana (Imperial College of Science, Technology and Medicine), C. P. Winlove (University of Exeter), and D. O'Hare (University of Brighton).....	203
<b>Biosensors From Conductive Polymer Transducers and Sol-Gel Encapsulated Bioindicator Molecules</b> F. Yamagishi, T. Stanford, and C. van Ast (HRL Laboratories).....	213
<b>Simultaneous Voltammetric Determination of Aluminum and Iron in High Salt Content Matrices: Application to Dialysis Fluids</b> C. Locatelli and G. Torsi (University of Bologna).....	224
<b>Environmental Sensors</b>	
<b>Soybean as an Environmental Biosensor: Action Potentials and Excitation Waves</b> A. Volkov, J. Mwesigwa, and T. Shvetsova (Oakwood College).....	229
<b>Solid Phase Microextraction of Anions of Environmental Interest: Applications of Conducting Polymer Microfiber Electrodes for Injection System for HPLC and FIA</b> H. B. Mark, Jr., O. Ceylan, T. Gbatu, A. Galal, J. F. Robinson, and J.A. Caruso (University of Cincinnati).....	239
<b>Glucose Sensors</b>	
<b>Electropolymerised Architecture Entrapping a Trilcunary Keggin-Type Polyoxometalate for Assembling a Glucose Biosensor</b> G. L. Turdean ("Babes Bolyai" University), A. Curulli (Centro Studio CNR per l'Elettrochimica e la Chimica Fisica delle Interfasi (CNR- CECFI)), I. C. Popescu, C. Rosu ("Babes Bolyai" University), and G. Palleschi (Università di Roma Tor Vergata).....	245

<b>Online Measurement of Glucose in a Rotating Wall Perfused Vessel Bioreactor using an Amperometric Glucose Sensor</b>	Y. Xu, A. Jeevarajan, J. Fay, T. Taylor (Wyle Life Sciences), and M. Anderson (NASA).....	251
<b>Detection of Glucose by Electroreduction at a Semiconductor Electrode: An Implantable Non-Enzymatic Glucose Sensor</b>	S. Khan and S. Shah (Duquesne University).....	259
<b>Fabrication and Properties of Needle Type Glucose Sensors Using Electropolymerization Procedure</b>	M. Yasuzawa, T. Yamada, H. Takaoka, S. Inoue, A. Kunugi (University of Tokushima), and S. Imai (Toyo Precision Parts MFG).....	272
<b>Potentiometric Sensors</b>		
<b>Recent Applications of Carbon Paste Electrodes in Potentiometry and Stripping Analysis</b>	K. Vytras, I. Svancara (University of Pardubice), E. Khaled (National Research Centre), J. Jezkova (University of Pardubice), K. Kalcher (Karl-Franzens University), J. Konvalina, and R. Metelka (University of Pardubice).....	277
<b>Comparing Different Approaches for Assembling Selective Electrodes for Heavy Metals</b>	I. Turyan, M. Atiya, G. Shustak, and D. Mandler (Hebrew University of Jerusalem).....	284
<b>Polyaniline as A Non-enzymatic Sugar Sensor: Potentiometric Sensors Based on the Inductive Effect on the pK<sub>a</sub></b>	E. Shoji and M. S. Freund (California Institute of Technology).....	293
<b>Sensors Systems</b>		
<b>Visualization of Micro-Structured Enzyme Patterns Using Scanning Electrochemical Microscopy (SECM)</b>	M. Mosbach, S. Gaspar, C. Kurzawa, E. Bonsen, E. Csoeregi, and W. Schuhmann (Ruhr-Universität Bochum - Anal. Chem. - Elektroanalytik und Sensorik).....	304
<b>Imaging of Patterned Mammalian Cells By Scanning Electrochemical Microscopy</b>	M. Nishizawa, T. Kaya, K. Takoh, K. Nishimura, Y. Takii, and T. Matsue (Tohoku University).....	315

<b>Anomalous Responses of Gold Sensor Electrodes Due to the Presence of Metastable Surface States</b>	
D. Burke and A. O'Mullane (University College Cork).....	320
<b>Interpretation of Variable Diffusivity Observed at the Prussian Blue Electrode during the Insertion/Extraction Processes</b>	
L.-C. Chen and K.-C. Ho (National Taiwan University).....	329
 <b>Biological Sensors</b>	
<b>Prussian Blue and its Analogues for Design of Chemical and Biological Sensors</b>	
A. Karyakin, L. Lukachova, and E. Karyakina (M.V. Lomonosov Moscow State University).....	**
<b>Wiring Efficiency in Layer-by-Layer (PAA-Os)<sub>n</sub>(GOx)<sub>n</sub> Self-assembled Glucose Biosensors</b>	
E. Calvo, C. Danilowicz, A. Wolosiuk, M. Otero (Universidad de Buenos Aires), E. Forzani, and M. Lopez Teijelo (Universidad Nacional de Córdoba).....	339
<b>Particle-based Electrochemical Detection of DNA Hybridization</b>	
J. Wang (NMSU).....	**
 <b>Sensors Systems</b>	
<b>Bio/Nano Sensors</b>	
C. Martin, S.B. Lee, B. Raines, D. Mitchell, M. Wirtz, and E. Steinle (University of Florida).....	**
<b>Chemical Sensing with an Integrated Preconcentrator/Chemiresistor Array</b>	
R. Hughes, R. Manginell, and R. Kottenstette (Sandia National Labs).....	348
<b>Progress in use of Carbon Black-Polymer Composite Arrays for Vapor Detection</b>	
S. Briglin, M. Burl, M. Freund, P. Tokumaru, T. Vaid, and N. Lewis (California Institute of Technology).....	355
<b>Development of Polymer Coatings with High Surface-to-volume Ratio for Chemical sensor Application</b>	
N. Levit, D. Pestov, and G. Tepper (Virginia Commonwealth University).....	369

<b>Multiwell Microfluidic Plates for Evaporation-controlled Sub-microliter Assays : Design and Results</b>	
P. Vanysek, T. Boone, T. Dang, H. Geiger, M. Zhao, C. Klapperich, H. Lee, D. Nicewarner, R. Kurnik, S. Singh, and V. Xiao (ACLARA Biosciences).....	376
<b>Simulation of Transient Isotachophoresis (Stacking) for Concentration of Samples in a Microfluidic Device</b>	
R. Kurnik, T. Boone, I. Gibbons, J. Wei, and S. Williams (ACLARA BioSciences).....	384
<b>Electrodes Integrated Microfluidic Plastic Chips</b>	
M. Zhao (ACLARA BioSciences Inc.), R.M. Crooks (Texas A&M University), U. Nguyen, and A.J. Ricco (ACLARA BioSciences).....	388
<b>A New Micro-fluidic Device for Protein Separation Fabricated on a Silicon Substrate</b>	
H. Ho Lee and Y. Kuo (Texas A&M University).....	395
<b>Ni(salen) Polymer Modified Electrodes as Sensors for Metal Ions</b>	
C. Freire, C. Sousa, M. Martins (Faculdade de Ciencias do Porto), R. Hillman, and R. Hillman (University of Leicester).....	399
<b>Chemiresistor Vapor Sensor Array Employing Monolayer-Encapsulated Metal (MenM) Nanoclusters</b>	
E. Zellers and Q.-Y. Cai (University of Michigan).....	408
<b>NO<sub>2</sub> Sensing Properties of FET Device Attached with NaNO<sub>2</sub>-based Binary Auxiliary Phase</b>	
S. Nakata, K. Shimanoe, N. Miura, and N. Yamazoe (Kyushu University).....	414
<b>Identification of Critical Mass Transport Processes in Solid State Sensors</b>	
A. Shapurko (Russian Academy of Sciences), K. Nietering, and R. Soltis (Ford Research Laboratory).....	424
<b>The Effect of Tin in Pt Electrode for CO Electrochemical Sensors</b>	
K.-I. Tsceng and M.-C. Yang (National Cheng Kung University).....	433
<b>On-Line Electrochemical Sensors for Monitoring Time-Dependent Water-polymer Interactions in Industrial Lubricants</b>	
V. Lvovich (Lubrizol) and M. Smiechowski (Case Western Reserve University).....	442

<b>RF Sputtered and Sol-gel Prepared Comparison of MoO<sub>3</sub>-TiO<sub>2</sub> Microstructure and Gas Sensing Properties</b>	
E. Comini (Istituto Nazionale di Fisica Nucleare), K. Galatsis, W. Wlodarski (RMIT University), P. Siciliano, A. Taurino (Istituto per lo Studio di Nuovi Materiali per l'Elettronica), and G. Sberveglieri (Istituto Nazionale di Fisica Nucleare).....	**
<b>Electrodeposition of Poly(1,8-diaminonaphthalene) Films for Toxic Chromate Extraction from Bathing Solution</b>	
A. Nasalska and M. Skompska (Warsaw University).....	454
<b>Potentiometric Sensors</b>	
<b>Mixed Potential Sensors for CO Monitoring</b>	
R. Mukundan, E. Brosha, and F. Garzon (Los Alamos National Laboratory).....	464
<b>Semiconductor Sensors</b>	
<b>Mixed Vanadium/Aluminum Oxide Films for Sensing of Organic Compounds</b>	
C. Baratto, G. Sberveglieri, I. Ricco (University of Brescia), G. Bernhardt, R. Lad, and J. Vetelino (University of Maine).....	470
<b>SnO<sub>2</sub> Thin Films Doped or Catalyzed with Mo: Structural and Gas Sensing Properties</b>	
E. Zampiceni, E. Bontempi, G. Sberveglieri, and L. E. Depero (Istituto Nazionale di Fisica Nucleare and University of Brescia).....	475
<b>Detection of Dilute Chlorine Gas Using Indium Oxide Thin Film Sensors</b>	
J. Tamaki, E. Nishimura, C. Naruo, Y. Yamamoto, and M. Matsuoka (Ritsumeikan University).....	480
<b>Optical Sensors</b>	
<b>Simulation of Microdisc Problem in Spherical Co-ordinates: Application to Electrogenerated Chemiluminescence</b>	
I. Svir, A. Oleinick, and V. Golovenko (Kharkov State Technical University of Radioelectronics).....	488
<b>Spectroelectrochemical Sensing Based on Multimode Selectivity Simultaneously Achievable in a Single Device. 12. Characterization of a Channel Waveguide</b>	
S. Ross, C. Seliskar, W. Heineman, S. Aryol, and J. Nevin (University of Cincinnati).....	499

- Photonic Lattices as Diffraction Based Chemical Sensors**  
R. Bailey, B.-C. Tzeng, X. Dang, G. Mines, K. Walters,  
and J. Hupp (Northwestern University).....511

- The Micro-Optical Ring Electrode: Development of a Novel Electrode for Photo electrochemistry**  
F. Andrieux, S. Xiao, C. Boxall (University of Central Lancashire),  
and D. O'Hare (University of Brighton).....521

- Chemical Sensing for Liquid-Property by Using A Hetero-Core Optic Fiber**  
K. Hirama, M. Iga, A. Seki, Y. Kubota,  
and K. Watanabe (Soka University).....534

### Semiconductor Sensors

- Molybdenum Stabilization of Nanostructured Titania Films and Ethanol Sensing Properties**  
E. Comini, M. Ferroni, V. Guidi, G. Sberveglieri, A. Vomiero,  
and G. Roncarati (Istituto Nazionale di Fisica Nucleare).....538

### Sensor Systems

- Electrochemiluminescence (ECL) of Ru(bpy)<sub>3</sub><sup>2+</sup> in the Presence of Tripropylamine: Effects of Additives on the ECL Reaction**  
O. Hatozaki, K. Komori, and N. Oyama (Tokyo University  
of Agriculture and Technology).....\*\*

- Nanoporous Platinum for Biomedical Sensors**  
D. Pugh and S. Corcoran (Virginia Technology).....\*\*

### Optical Sensors

- Electrochromic Sensor for Hydrogen-Phosphate Ion with Spinel-Type Oxide-Based Thin-Film Electrode**  
Y. Shimizu, M. Shiotsuka, and S. Takase (Kyushu  
Institute of Technology).....543

- A Porous Silicon Microcavity as an Optical and Electrical Multiparametric Chemical Sensor**  
C. Baratto (University of Brescia), Z. Gaburro (University  
of Trento), G. Faglia, G. Sberveglieri (University of Brescia),  
and L. Pavesi (University of Trento).....550

- ATR Bioanalytical Sensor with 3D Spatial Resolution**  
Y. Cheng, J.-H. Tu (Synchrotron Radiation Research Center),  
and C.-C. Chieng (Tsing-Hua University).....555

## Poster Session

<b>Electrochemical Determination of Interaction Between an Alkylating Anticancer Drug and DNA in Solution and at the Electrode Surface</b>	
A. Erdem and M. Ozsoz (New Mexico State University).....	563
<b>Characterization, Modeling, and Correction of Drift in Complementary pH ISFET's</b>	
S. Jamasb (Conextant Systems and University of California, Irvine), S.D. Collins, and R.L. Smith (University of California, Davis).....	576
<b>Mass Transport in Swollen Thermoresponsive Hydrogels: Theoretical Model and Electroanalytical Studies</b>	
M. Ciszkowska and W. Zhang (Brooklyn College, CUNY).....	582
<b>Alkali Metal Ion Coordination of Novel Poly(thiophene)s 3,4-functionalized with Crown-Ether Moieties</b>	
G. Zotti, S. Zecchin, G. Schiavon (Istituto CNR di Polarografia ed Elettrochimica Preparativa), and A. Berlin (Centro CNR Sintesi e Stereochemica Speciali Sistemi Organici).....	589
<b>Voltammetric Determination of Chloramphenicol at Electrochemically Activated Carbon Fiber Microelectrodes</b>	
L. Agüí, P. Yáñez-Sedeño, and J.M. Pingarrón (Universidad Complutense de Madrid).....	596
<b>Preparation, Characterization and Application of Alkanethiol Self-Assembled Monolayers Modified With Tetrathiafulvalene and Glucose Oxidase at a Gold Disk Electrode</b>	
S. Campuzano, R. Gálvez, M. Pedrero, F.J. Manuel de Villena, and J.M. Pingarrón (Universidad Complutense de Madrid).....	602
<b>Theoretical Model of an Acoustic Wave Liquid Conductivity Sensor</b>	
C. Zhang and J. Vetelino (University of Maine).....	609
<b>Detection of Ammonia Using a Zirconia-Based Potentiometric Sensor with a Tungsten-Oxide Electrode</b>	
D. Kubinski, R. Soltis, J. Visser, and M. Parsons (Ford Research Laboratory).....	615
<b>Tantalum Capacitive Microelectrode Array for a Neural Prosthesis</b>	
D. Zhou and B. Greenberg (Second Sight).....	622

**Use of the C-PVC electrode for the electrooxidation of dopamine, ascorbic acid and uric acid**

R. Aguilar, M. Dávila, M.D.L.P. Elizalde, R. Silva (Universidad Autónoma de Puebla), J. Mattusch (Center for Environmental Research, Dept. of Analytical Chemistry), and R. Wennrich (Center for Environmental Research).....\*\*

**Study on Hydrogen Detection by Schottky Diode Sensors**

H.-I. Chen, Y.-I. Chou, and C.-K. Hsiung (National Cheng Kung University).....630

**Synthesis of SnO<sub>2</sub> Nanosized Powder by Mechanochemical Method for Sensing of H<sub>2</sub>S**

U. Kersen (University of Helsinki).....\*\*

**Simultaneous Determination of Phenolic Compounds by Multicomponent Biosensors**

R. Freire, M. Ferreira, N. Duran, and L. Kubota (Institute of Chemistry - Unicamp).....\*\*

**Studies of the Permeabilities of Sol-gel Ceramic Films on Glassy Carbon Electrodes to Fe(CN)<sub>6</sub><sup>3-</sup>, Fe<sup>3+</sup> and Hydroquinone**

F. Chen (NUS).....\*\*

**Amperometric Sensors for Determination of Concentration of Hydrogen Halogenids in Environmental Air**

V. Chvituk, O. Linyucheva, and E. Zaverach E. (National Technical University of Ukraine).....\*\*

**Sensor Chip Patterning: Advantages of Micro- and Nanopatterns by Means of Porous Silicon Technology**

A. Kurowski, J.W. Schultze (Heinrich-Heine-Universitaet Düsseldorf), H. Lüth, and M.J. Schoening (Research Center Jülich).....\*\*

**Effect of Electrochemical Reduction on the Stability of Complexes of Alkali Metal Ions with Crown Ether Derivatives**

J.M.C. Costa (University of Coimbra), P.M.S. Rodrigues (Polytechnic Institute of Guarda), and M.C.C. Costa (Polytechnic Institute of Coimbra).....\*\*

**Electrochemical Reduction of Carbon Dioxide**

H.T. Mishima, S. Pettinichi, H.J. Boggetti (Universidad Nacional de Santiago del Estero), and E. Pastor (Universidad de la Laguna).....639

**A Novel pH Sensor**

Laura Galicia, Alberto Rojas-Hernandez, and María Teresa Ramirez-Silva (Universidad Autónoma Metropolitana Iztapalapa).....646

**Glucose Quantification in Commercial Serums by Means of Amperiometric Bienzimatic Biosensor Based on a Biocomposite Rigid Matrix**

R. Beatriz (Universidad Nacional Autonoma de Mexico), R.-S. María Teresa (Universidad Autonoma Metropolitana-Iztapalapa),  
and M.-P. Adriana (Universidad Nacional Autonoma de Mexico).....\*\*

**Enzyme Sensor Based on an Electrochemically Deposited Osmium Redox Polymer**

K. Maruyama, Y. Mishima, and J. Motonaka (University of Tokushima). ....\*\*

**Development of Amperometric Immunosensors Using Positively Charged Ferrocene Polymer**

M. Yasuzawa, H. Hamada, K. Oga, H. Mistui,  
and A. Kunugi (The University of Tokushima).....653

**Porous Silicon Sensors with Membrane Structure for Organic Vapor Sensing**

S. J. Kim, S. H. Lee (Kyungnam University),  
and C. J. Lee (Kunsan National University).....657

**Electropolymerized Fe-Protoporphyrin IX And Cu-Protoporphyrin IX Mimicking Cytochrome-c Oxidase Activity**

J.M. Vago, V. Campo Dall' Orto,  
and I.N. Rezzano (University of Buenos Aires).....\*\*

**Potential Relaxation of the Superionic System Sensitive to CO<sub>2</sub> Concentration**

A. Ukshe, L. Leonova (Institut of Problems of Chemical Physics),  
I. Treglazov (Moscow State University),  
and Y. Dobrovolsky (Institut of Problems of Chemical Physics).....\*\*

**Characterization of Stereolithography Fabricated Gas Chromatographic Columns**

A. Tse, L. Seals, J. Gole, D. Rosen,  
and P. Hesketh (Georgia Institute of Technology).....664

**Immunosensor for Herbicide 2,4-Dichlorophenoxyacetic Acid**

M. Hepel, J. Halamek (State University of New York at Potsdam),  
and P. Skladal (Masaryk University).....669

\*\* No proceedings manuscript was received.