



Volume 110, 1 November 2013

ISSN 0013-4686

Journal of the International Society of Electrochemistry

Electrochimica Acta

Special Volume:

ELECTROCHEMISTRY FOR ADVANCED MATERIALS, TECHNOLOGIES AND INSTRUMENTATION

**Selection of papers from the 63rd Annual Meeting
of the International Society of Electrochemistry
19–24 August 2012, Prague, Czech Republic**

GUEST EDITORS:

N. Birbilis, K. Bouzek, Y. Bultel, A. Cuesta, E. Ferapontova, F. Hartl, K. Hebert, D.J. Jones,
S. Komaba, S. Komaba, A. Kuhn, P. Mussini, Z. Samec, V. Tsakova and G. Wittstock

EDITORIAL CO-ORDINATION:

S. Trasatti

Available online at www.sciencedirect.com

ScienceDirect



Special Issue

ELECTROCHEMISTRY FOR ADVANCED MATERIALS, TECHNOLOGIES AND INSTRUMENTATION

ZDENĚK SAMEC and PETR KRTIL

1 Foreword

Recent Advances in Electrochemical Instrumentation and ElectrodesPALANIAPPAN SUBRAMANIAN, YANNICK COFFINIER,
DORIS STEINMÜLLER-NETHL, JOHN FOORD,
RABAH BOUKHERROUB and SABINE SZUNERITSANNA T. VALOTA, PETER S. TOTH, YONG-J. KIM,
BYUNG H. HONG, IAN A. KINLOCH, KOSTYA S. NOVOSELOV,
ERNIE W. HILL and ROBERT A.W. DRYFEMATHIEU ETIENNE, JEAN-PAUL MOULIN and
SÉBASTIEN GOURHANDFERNANDO CORTÉS-SALAZAR, HAIQIANG DENG,
PEKKA PELJO, CARLOS M. PEREIRA, KYÖSTI KONTTURI
and HUBERT H. GIRAUTANDREAS LESCH, DMITRY MOMOTENKO, FERNANDO
CORTÉS-SALAZAR, FOLKERT ROELFS, HUBERT H. GIRAUT
and GUNTHER WITTSTOCKSABINE KUSS, CHRISTIAN KUSS, DAO TRINH,
STEEN BRIAN SCHOUGAARD and JANINE MAUZEROLL

SOMA VESZTERGOM, MÁRIA UJVÁRI, and Győző G. LÁNG

F. MIOMANDRE, J.F. AUDIBERT, Q. ZHOU, P. AUDEBERT,
P. MARTIN and J.C. LACROIX

- 4 Diamond nanowires decorated with metallic nanoparticles: A novel electrical interface for the immobilization of histidinylated biomolecules

- 9 Electrochemical investigation of chemical vapour deposition monolayer and bilayer graphene on the microscale

- 16 Accurate control of the electrode shape for high resolution shearforce regulated SECM

- 22 Parylene C coated microelectrodes for scanning electrochemical microscopy

- 30 High-throughput scanning electrochemical microscopy brushing of strongly tilted and curved surfaces

- 42 Forced convection during scanning electrochemical microscopy imaging over living cells: Effect of topographies and kinetics on the microelectrode current

- 49 Dual cyclic voltammetry with rotating ring-disk electrodes

- 56 Electrochemically monitored fluorescence on plasmonic gratings: A first step toward smart displays with multiple inputs

Electrochemistry Meets Biology: Fundamental Aspects of Electrochemistry with Biological SystemsAYŞU YARMAN, ULLA WOLLENBERGER and
FRIEDER W. SCHELLERROSE-MARIE A.S. DOYLE, DAVID J. RICHARDSON,
THOMAS A. CLARKE and JULEA N. BUTTDUNCAN G.G. McMILLAN, SOPHIE J. MARRITT,
GEMMA L. KEMP, PIERS GORDON-BROWN,
JULEA N. BUTT and LARS J.C. JEUKENESTHER FERNANDEZ, JONAS T. LARSSON,
KIRSTY J. MCLEAN, ANDREW W. MUNRO, LO GORTON,
CLAES VON WACHENFELDT and ELENA E. FERAPONTOVAT. VIDAKOVIĆ-KOCH, V.K. MITTAL, T.Q.N. Do,
M. VARNIČĀ and K. SUNDMACHERPIOTR OLEJNIK, ALEKSANDRA PAWŁOWSKA and
BARBARA PAŁYSFABIEN GIROUD, TERA A. NICOLO, SARA J. KOEPKE and
SHELLEY D. MÍNTEERMANSOOR VEZVAIE, CHRISTA L. BROSSEAU and
JACEK LIKPOWSKIANNA M. NOWICKA, MIKOŁAJ DONTEN and
ZBIGNIEW STOJEKFEN MA, CASSIE HO, ALAN K.H. CHENG and
HUA-ZHONG YUSHO HIDESHIMA, SHIGEKI KUROIWA, MARIIKA KIMURA,
SHANSHAN CHENG and TETSUYA OSAKA

- 63 Sensors based on cytochrome P450 and CYP mimicking systems

- 73 Freely diffusing versus adsorbed protein: Which better mimics the cellular state of a redox protein?

- 79 The impact of enzyme orientation and electrode topology on the catalytic activity of adsorbed redox enzymes

- 86 Electron transfer reactions, cyanide and O₂ binding of truncated hemoglobin from *Bacillus subtilis*

- 94 Application of electrochemical impedance spectroscopy for studying of enzyme kinetics

- 105 Application of Polarization Modulated Infrared Reflection Absorption Spectroscopy for electrocatalytic activity studies of laccase adsorbed on modified gold electrodes

- 112 Understanding the mechanism of direct electrochemistry of mitochondria-modified electrodes from yeast, potato and bovine sources at carbon paper electrodes

- 120 Electrochemical SERS study of a biomimetic membrane supported at a nanocavity patterned Ag electrode

- 133 Repeated rearrangements of oligonucleotides immobilized on gold surface caused by UV irradiation in presence of dissolved oxygen

- 139 Immobilization of redox-labeled hairpin DNA aptamers on gold: Electrochemical quantitation of epithelial tumor marker mucin 1

- 146 Effect of the size of receptor in allergy detection using field effect transistor biosensor

Advanced Materials Design for Bioelectrochemical Applications: from Biosensors to Biofuel Cells

| | | |
|---|-----|--|
| SASCHA PÖLLER, MINLING SHAO, CHRISTOPH SYGMUND, ROLAND LUDWIG and WOLFGANG SCHUHMANN | 152 | Low potential biofuel cell anodes based on redox polymers with covalently bound phenothiazine derivatives for wiring flavin adenine dinucleotide-dependent enzymes |
| HONG-LI GAO, HUI ZHANG, CHENG-YONG LI and XING-HUA XIA | 159 | Confinement effect of protonation/deprotonation of carboxylic group modified in nanochannel |
| DONGHOON HAN, KWANG BOK KIM, YANG-RAE KIM, SOLJI KIM, HEE CHAN KIM, JUNGHWA LEE, JOOHOON KIM and TAEK DONG CHUNG | 164 | Electrokinetic concentration on a microfluidic chip using polyelectrolytic gel plugs for small molecule immunoassay |
| STEFANO FRASCA, ANABEL MOLERO MILAN, AMANDINE GUIET, CAREN GOEBEL, FERNANDO PÉREZ-CABALLERO, KONSTANZE STIBA, SILKE LEIMKÜHLER, ANNA FISCHER and ULLA WOLLENBERGER | 172 | Bioelectrocatalysis at mesoporous antimony doped tin oxide electrodes— Electrochemical characterization and direct enzyme communication |

Advanced Batteries and Electrochemical Capacitors

| | | |
|--|-----|--|
| MASAKI YAMAGATA, NOBUHIDE NISHIGAKI, SATOSHI NISHISHITA, YUKIKO MATSUI, TOSHINORI SUGIMOTO, MANABU KIKUTA, TETSUYA HIGASHIZAKI, MICHIYUKI KONO and MASASHI ISHIKAWA | 181 | Charge-discharge behavior of graphite negative electrodes in bis(fluorosulfonyl)imide-based ionic liquid and structural aspects of their electrode/electrolyte interfaces |
| YE ZHU, YAN LI, MARTIN BETTGE and DANIEL P. ABRAHAM | 191 | Electrolyte additive combinations that enhance performance of high-capacity $\text{Li}_{1.2}\text{Ni}_{0.15}\text{Mn}_{0.55}\text{Co}_{0.1}\text{O}_2$ -graphite cells |
| J.F. VÉLEZ, R.A. PROCACCINI, M. APARICIO and J. MOSA | 200 | Epoxy-silica hybrid organic-inorganic electrolytes with a high Li-ion conductivity |
| DANIEL BUCHHOLZ, LUCIANA GOMES CHAGAS, MARTIN WINTER and STEFANO PASSERINI | 208 | P2-type layered $\text{Na}_{0.45}\text{Ni}_{0.22}\text{Co}_{0.11}\text{Mn}_{0.66}\text{O}_2$ as intercalation host material for lithium and sodium batteries |
| NIKOLAY DIMOV, AKIHIRO NISHIMURA, KUNIKO CHIHARA, AYUKO KITAJOU, IRINA D. GOCHEVA and SHIGETO OKADA | 214 | Transition metal NaMF_3 compounds as model systems for studying the feasibility of ternary Li-M-F and Na-M-F single phases as cathodes for lithium-ion and sodium-ion batteries |
| S. POHLMANN and A. BALDUCCI | 221 | A new conducting salt for high voltage propylene carbonate-based electrochemical double layer capacitors |
| CHARL J. JAFTA, FUNEKA NKOSI, LUKAS LE ROUX, MKHULU K. MATHE, MESFIN KEBEDE, KATLEGO MAKGOPA, YANG SONG, DENNIS TONG, MUNETAKA OYAMA, NCHOLU MANYALA, SHAOWEI CHEN and KENNETH I. OZOEMENA | 228 | Manganese oxide/graphene oxide composites for high-energy aqueous asymmetric electrochemical capacitors |
| M.M. HANTEL, A. PTATEK, T. KASPAR, R. NESPER, A. WOKAUN and R. KÖTZ | 234 | Investigation of diluted ionic liquid 1-ethyl-3-methyl-imidazolium tetrafluoroborate electrolytes for intercalation-like electrodes used in supercapacitors |
| KUNIKO CHIHARA, NOBUHITO CHUJO, AYUKO KITAJOU and SHIGETO OKADA | 240 | Cathode properties of $\text{Na}_2\text{C}_6\text{O}_6$ for sodium-ion batteries |
| SHAHID RASUL, SHINYA SUZUKI, SHU YAMAGUCHI and MASARU MIYAYAMA | 247 | Manganese oxide octahedral molecular sieves as insertion electrodes for rechargeable Mg batteries |

Fuel Cells: Materials, Properties, Performance and Durability

| | | |
|--|-----|--|
| ANIS ALLAGUI, SAAD SARFRAZ and ELENA A. BARANOVA | 253 | $\text{Ni}_x\text{Pd}_{1-x}$ ($x = 0.98, 0.93$, and 0.58) nanostructured catalysts for ammonia electrooxidation in alkaline media |
| ASHLEY M. MAES, TARA P. PANDEY, MELISSA A. VANDIVER, LAUREN K. LUNDQUIST, YUAN YANG, JAMES L. HORAN, ANASTASIA KROSOVSKY, MATTHEW W. LIBERATORE, SÖNKE SEIFERT and ANDREW M. HERRING | 260 | Preparation and characterization of an alkaline anion exchange membrane from chlorinated poly(propylene) aminated with branched poly(ethyleneimine) |
| KURIAN A. KUTTIYIEL, KOTARO SASAKI, DONG SU, MIOMIR B. VUKMIROVIC, NEBOJSA S. MARINKOVIC and RADOSLAV R. ADZIC | 267 | Pt monolayer on Au-stabilized PdNi core–shell nanoparticles for oxygen reduction reaction |
| L. DUBAU, L. CASTANHEIRA, G. BERTHOMÉ and F. MAILLARD | 273 | An identical-location transmission electron microscopy study on the degradation of Pt/C nanoparticles under oxidizing, reducing and neutral atmosphere |
| MAGALI FERRANDON, XIAOPING WANG, A. JEREMY KROPF, DEBORAH J. MYERS, GANG WU, CHRISTINA M. JOHNSTON and PIOTR ZELENAY | 282 | Stability of iron species in heat-treated polyaniline–iron–carbon polymer electrolyte fuel cell cathode catalysts |

| | | |
|---|-----|---|
| RENATE HIESGEN, STEFAN HELMLY, TOBIAS MORAWIETZ, XIAO-ZI YUAN, HAIJIANG WANG and K. ANDREAS FRIEDRICH | 292 | Atomic force microscopy studies of conductive nanostructures in solid polymer electrolytes |
| RUICHUN JIANG, TIMOTHY FULLER, SHELLY BRAWN and CRAIG GITTLEMAN | 306 | Perfluorocyclobutane and poly(vinylidene fluoride) blend membranes for fuel cells |
| KATSUYOSHI KAKINUMA, YUJI CHINO, YUICHI SENOO, MAKOTO UCHIDA, TAKEO KAMINO, HIROYUKI UCHIDA, SHIGEHITO DEKI and MASAHIRO WATANABE | 316 | Characterization of Pt catalysts on Nb-doped and Sb-doped $\text{SnO}_{2-\delta}$ support materials with aggregated structure by rotating disk electrode and fuel cell measurements |
| Physical Modeling and Numerical Simulation of Electrochemical Power Generators | | |
| DIETER FRONING, JAN BRINKMANN, UWE REIMER, VOLKER SCHMIDT, WERNER LEHNERT and DETLEF STOLTEN | 325 | 3D analysis, modeling and simulation of transport processes in compressed fibrous microstructures, using the Lattice Boltzmann method |
| TOMMY GEORGIOS ZAVALIS, MATILDA KLETT, MARIA H. KJELL, MÄRTEN BEHM, RAKEL WRELAND LINDSTRÖM and GÖRAN LINDBERGH | 335 | Aging in lithium-ion batteries: Model and experimental investigation of harvested LiFePO_4 and mesocarbon microbead graphite electrodes |
| ABHISHEK NANJUNDAPPA, ALIREZA SADEGI ALAVIJEH, MOHAMED EL HANNACH, DAVID HARVEY and ERIK KJEANG | 349 | A customized framework for 3-D morphological characterization of microporous layers |
| ARNULF LATZ and JOCHEN ZAUSCH | 358 | Thermodynamic derivation of a Butler–Volmer model for intercalation in Li-ion batteries |
| LUIZ FERNANDO L. OLIVEIRA, CHRISTIAN JALLUT and ALEJANDRO A. FRANCO | 363 | A multiscale physical model of a polymer electrolyte membrane water electrolyzer |
| Cathodic and Anodic Routes to Electrochemical Fabrication | | |
| CYRIL CHAPPAZ-GILLOT, RAUL SALAZAR, SOLENN BERSON and VALENTINA IVANOVA | 375 | Insights into CuSCN nanowire electrodeposition on flexible substrates |
| CONSTANCE MAGNE, MATHIEU URIEN and THIERRY PAUPORTÉ | 382 | Growth of porous light scattering sub-micrometer particle films by occlusion electrolysis for dye-sensitized solar cells |
| J. ELIAS, I. UTKE, S. YOON, M. BECHELANY, A. WEIDENKAFF, J. MICHLER and L. PHILIPPE | 387 | Electrochemical growth of ZnO nanowires on atomic layer deposition coated polystyrene sphere templates |
| SACHIKO ONO, SHUNSUKE KOTAKA and HIDETAKA ASOH | 393 | Fabrication and structure modulation of high-aspect-ratio porous GaAs through anisotropic chemical etching, anodic etching, and anodic oxidation |
| 402 Publisher's Note | | |
| HIROKI NARA, TOKIHIKO YOKOSHIMA, MITSUTOSHI OTAKI, TOSHIYUKI MOMMA and TETSUYA OSAKA | 403 | Structural analysis of highly-durable Si–O–C composite anode prepared by electrodeposition for lithium secondary batteries |
| JINNIE GEORGE, SHEREEN ELHALAWATY, A. JOHN MARDINLY, R.W. CARPENTER, DMITRI LITVINOV and STANKO R. BRANKOVIC | 411 | Oxide/hydroxide incorporation into electrodeposited CoFe alloys—Consequences for magnetic softness |
| Electroactive Polymeric and Inorganic Materials | | |
| A. ROBERT HILLMAN, KARL S. RYDER, VIRGINIA C. FERREIRA, CHRISTOPHER J. ZALESKI and ERIC VIEIL | 418 | Ion transfer dynamics of poly(3,4-ethylenedioxythiophene) films in deep eutectic solvents |
| TOM LINDFORS, ANNA ÖSTERHOLM, JUSSI KAUPPILA and MARKUS PESONEN | 428 | Electrochemical reduction of graphene oxide in electrically conducting poly(3,4-ethylenedioxythiophene) composite films |
| LIAN C.T. SHOUTE, YILIANG WU and RICHARD L. MCCREERY | 437 | Direct spectroscopic monitoring of conductance switching in polythiophene memory devices |
| PÉTER S. TÓTH, GERGELY F. SAMU and, BALÁZS ENDRÖDI and CSABA VISY | 446 | Hyphenated <i>in situ</i> conductance and spectroelectrochemical studies of polyaniline films in strongly acidic solutions |
| Mikhail A. Vorotynsev, Dmitry V. Konev, Ulrich Lange, Yuriy V. Tolmachev and Magdalena Skompska | 452 | Atomic force microscopy study of conducting polymer films near electrode's edge or grown on microband electrode |
| DÉNIS G.B. LIMACHI, VINICIUS R. GONÇALES, ELAINE P. CINTRA and SUSANA I. CÓRDOBA DE TORRESI | 459 | Controlling hydrophilicity and electrocatalytic properties of metallic hexacyanoferrates/conducting polymers hybrids for the detection of H_2O_2 |
| JUAN FRANCISCO RIVERA, ISABELLE PIGNOT-PAINTRAND, EDUARDO PEREIRA, BERNABÉ L. RIVAS and JEAN-CLAUDE MOUTET | 465 | Electrosynthesized iridium oxide-polymer nanocomposite thin films for electrocatalytic oxidation of arsenic(III) |

PAWEŁ J. KULESZA, IZABELA S. PIĘTA,
IWONA A. RUTKOWSKA, ANNA WADAS, DIANA MARKS,
KAROLINA KŁAK, LESZEK STOBINSKI and JAMES A. COX

CÉLINE LARIGNON, JOËL ALEXIS, ERIC ANDRIEU,
LOÏC LACROIX, GRÉGORY ODEMER and CHRISTINE BLANC

M. VAN SOESTBERGEN, S.J.F. ERICH, H.P. HUININK
and O.C.G. ADAN

PEIPEI HUANG, JULIE-ANNE LATHAM,
DOUGLAS R. MACFARLANE, PATRICK C. HOWLETT
and MARIA FORSYTH

PAULINE PEARSON, ANTHONY F. HOLLENKAMP
and ERIK MEULEMAN

F. DI QUARTO, F. DI FRANCO, C. MONARCA,
M. SANTAMARIA and H. HABAZAKI

BEKİR SALGIN, R. FAYÇAL HAMOU and
MICHAEL ROHWERDER

S. EVERE, C. SENÖZ and M. ROHWERDER

ANDREI IONUT MARDARE, ALFRED LUDWIG,
ALAN SAVAN and ACHIM WALTER HASSEL

S.N. HUSSAIN, H.M.A. ASGHAR, A.K. CAMPEN,
N.W. BROWN and E.P.L. ROBERTS

ANA STEFANOVA, SEVDA AYATA, ACHMET EREM,
SIEGFRIED ERNST and HELMUT BALTRUSCHAT

B. BENSMANN, R. HANKE-Rauschenbach,
I.K. PEÑA ARIAS and K. SUNDMACHER

LUCIA HRNČIARIKOVÁ, MIROSLAV GÁL,
KAMIL KEREKEŠ and JÁN HÍVEŠ

ANTOINE ALLANORE

KOJI NAKABAYASHI, TOSHIO FUCHIGAMI
and MAHITO ATOBE

ANA-MARIA CHIORCEA-PAQUIM, PAULINA VIEGAS SANTOS
and ANA MARIA OLIVEIRA-BRETT

JANINA JANISCH, REBEKKA KLINKHAMMER, ADRIAN RUFF,
JUDITH SCHÄFER, BERND SPEISER and CHRISTIAN WOLFF

PIOTR P. ROMAŃCZYK, KLEMENS NOGA, MARIUSZ RADÓŃ,
GRZEGORZ ROTKO and STEFAN S. KUREK

GEORGINA ARMENDÁRIZ-VIDALES,
EDUARDO MARTÍNEZ-GONZÁLEZ,
HÉCTOR JAVIER CUEVAS-FERNÁNDEZ,
DIDIER OMAR FERNÁNDEZ-CAMPOS,
RUTELY C. BURGOS-CASTILLO and CARLOS FRONTANA

FABRICIA DA ROCHA FERREIRA,
SABRINA BAPTISTA FERREIRA, ANA JÉRSIA ARAÚJO,
JOSÉ DELANO BARRETO MARINHO FILHO,
CLÁUDIA PESSOA, MANOEL O. MORAES,
LETÍCIA V. COSTA-LOTUFO,
RAQUEL CARVALHO MONTENEGRO,
FERNANDO DE C. DA SILVA, VÍTOR FRANCISCO FERREIRA,
JOÃO GOMES DA COSTA, FABIANE CAXICO DE ABREU
and MARÍLIA OLIVEIRA FONSECA GOULART

François QUENTEL and Frédéric GLOAGUEN

474 Electrocatalytic oxidation of small organic molecules in acid medium:
Enhancement of activity of noble metal nanoparticles and their alloys by
supporting or modifying them with metal oxides

Corrosion Science and Engineering

484 Combined Kelvin probe force microscopy and secondary ion mass spectrometry
for hydrogen detection in corroded 2024 aluminium alloy

491 Inhibition of pH fronts in corrosion cells due to the formation of cerium
hydroxide

501 A review of ionic liquid surface film formation on Mg and its alloys for
improved corrosion performance

511 Electrochemical investigation of corrosion in CO₂ capture plants—Influence of
amines

517 Photoelectrochemical characterization of amorphous anodic films on Ti-6at.%Si

526 Monitoring surface ion mobility on aluminum oxide: Effect of chemical
pretreatments

534 Spatially resolved high sensitive measurement of hydrogen permeation by
scanning Kelvin probe microscopy

539 Scanning droplet cell microscopy on a wide range hafnium–niobium thin film
combinatorial library

Electrochemical Process Engineering and Technology

550 Breakdown products formed due to oxidation of adsorbed phenol by
electrochemical regeneration of a graphite adsorbent

560 Mechanistic studies on boron-doped diamond: Oxidation of small organic
molecules

570 Energetic evaluation of high pressure PEM electrolyzer systems for
intermediate storage of renewable energies

581 Voltammetric and impedance study of the influence of the anode composition
on the electrochemical ferrate(VI) production in molten NaOH

587 Electrochemical engineering of anodic oxygen evolution in molten oxides

Intermediates and Mechanisms at a Molecular Level

593 Tandem acoustic emulsion, an effective tool for the electrosynthesis of highly
transparent and conductive polymer films

599 Atomic force microscopy and voltammetric characterisation of synthetic
homo-oligodeoxynucleotides

608 Two-electron-transfer redox systems. Part 8. Proving the electron stoichiometry
for the electrochemical two-electron oxidation of *N,N'*-bis(ferrocenoyl)-1,2-
diaminoethane

619 On the role of noncovalent interactions in electrocatalysis. Two cases of
mediated reductive dehalogenation

628 The stabilizing role of intramolecular hydrogen bonding in disubstituted
hydroxy-quinones

634 Arylated α - and β -dihydrofuran naphthoquinones: Electrochemical parameters,
evaluation of antitumor activity and their correlation

641 Kinetic and thermodynamic aspects of the electrocatalysis of acid reduction in
organic solvent using molecular diiron-dithiolate compounds

| | | |
|---|-----|---|
| ŠÁRKA RAMEŠOVÁ, ROMANA SOKOLOVÁ, JÁN TARÁBEK and ILARIA DEGANO | 646 | The oxidation of luteolin, the natural flavonoid dye |
| ABDIRISAK AHMED ISSE, NICOLA BORTOLAMEI, PATRIZIA DE PAOLI and ARMANDO GENNARO | 655 | On the mechanism of activation of copper-catalyzed atom transfer radical polymerization |
| Photoelectrochemistry, Electrochromism and Electrochemiluminescence | | |
| FENGJIE XIA, MU PAN, SHICHUN MU, MATTHEW D. JONES, GABRIELE KOCIOK-KÖHN, SHIK CHI TSANG and FRANK MARKEN | 663 | Imparting pH- and small molecule selectivity to nano-Pd catalysts via hydrothermal wrapping with chitosan |
| PETER RAPTA, KINGA HAUBNER, PETER MACHATA, VLADIMÍR LUKES, MARCO ROSENKRANZ, SANDRA SCHIEMENZ, SABRINA KLOD, HENRI KIVELÄ, CARITA KVRNSTRÖM, HORST HARTMANN and LOTHAR DUNSCH | 670 | Charged states in diphenylamino endcapped thiophenes with a 1,4-phenylene core: <i>In situ</i> electron spin resonance/ultraviolet-visible-near infrared and nuclear magnetic resonance spectroelectrochemistry and quantum chemical study |
| PAUL J. LOW and SÖREN BOCK | 681 | Spectroelectrochemistry: A valuable tool for the study of organometallic-alkyne, -vinylidene, -cumulene, -alkynyl and related complexes |
| CASSANDRE QUINTON, VALÉRIE ALAIN-RIZZO, CÉCILE DUMAS-VERDES, FABIEN MIOMANDRE and PIERRE AUDEBERT | 693 | Tetrazine-triphenylamine dyads: Influence of the nature of the linker on their properties |
| QIANG ZENG, MAHDI MESSAOUDANI, ANTONÍN VLČEK JR. and FRANTIŠEK HARTL | 702 | Temperature-dependent reduction pathways of complexes <i>fac</i> -[Re(CO) ₃ (N-R-imidazole)(1,10-phenanthroline)] ⁺ (R = H, CH ₃) |
| VILIAM KOLIVOSKA, PAVEL MORENO-GARCÍA, VEERABHADRARAO KALIGINEDI, WENJING HONG, MARCEL MAYOR, NICOLAS WEIBEL and THOMAS WANDLOWSKI | 709 | Electron transport through catechol-functionalized molecular rods |
| JEANET CONRADIE | 718 | Oxidation potential of [Rh(β-diketonato)(P(OPh) ₃) ₂] complexes—Relationships with experimental, electronic and calculated parameters |
| IFTIKHAR AHMED, RANA FARHA, ZHAOHUI HUO, CLÉMENCE ALLAIN, XIAOXIA WANG, HUALONG XU, MICHEL GOLDMANN, BERNOLD HASENKNOPF and LAURENT RUHLMANN | 726 | Porphyrin–polyoxometalate hybrids connected via a Tris-alkoxo linker for the generation of photocurrent |
| FRÉDÉRIC BARRIÈRE, CYRIL PORIEL and JOËLLE RAULT-BERTHELOT | 735 | Experimental and theoretical insights into the sequential oxidations of 3π-2spiro molecules derived from oligophenlenes: A comparative study of 1,2- <i>b</i> -DiSpiroFluorene-IndenoFluorene versus 1,2- <i>b</i> -DiSpiroFluorene(<i>tert</i> -butyl) ₄ -IndenoFluorene |
| Physical Electrochemistry: From Fundamentals to Smart Materials and New Catalysts | | |
| SHAOYIN GUO, JUAN MANUEL ARTÉS and ISMAEL DÍEZ-PÉREZ | 741 | Electrochemically-gated single-molecule electrical devices |
| JIN-HUI ZHONG, JUN-YANG LIU, QIONGYU LI, MIAN-GANG LI, ZHI-CONG ZENG, SHU HU, DE-YIN WU, WEIWEI CAI and BIN REN | 754 | Interfacial capacitance of graphene: Correlated differential capacitance and <i>in situ</i> electrochemical Raman spectroscopy study |
| K. KIRCHNER, T. KIRCHNER, V. IVANIŠTĚV and M.V. FEDOROV | 762 | Electrical double layer in ionic liquids: Structural transitions from multilayer to monolayer structure at the interface |
| EDUARDO LABORDA, DANU SUWATCHARA, NEIL V. REES, MARTIN C. HENSTRIDGE, ANGELA MOLINA and RICHARD G. COMPTON | 772 | Variable temperature study of electro-reduction of 3-nitrophenolate via cyclic and square wave voltammetry: Molecular insights into electron transfer processes based on the asymmetric Marcus–Hush model |
| MING FANG LI, LING WEN LIAO, DAO FU YUAN, DONG MEI and YAN-XIA CHEN | 780 | pH effect on oxygen reduction reaction at Pt(1 1 1) electrode |
| IOANNIS KATSOUNAROS, JOSEF C. MEIER and KARL J.J. MAYRHOFER | 790 | The impact of chloride ions and the catalyst loading on the reduction of H ₂ O ₂ on high-surface-area platinum catalysts |
| A.I. YANSON, P.V. ANTONOV, Y.I. YANSON and M.T.M. KOPER | 796 | Controlling the size of platinum nanoparticles prepared by cathodic corrosion |
| Electrochemistry at Liquid-Liquid Interfaces | | |
| B.R. SILVER, K. HOLUB and V. MAREČEK | 801 | Low frequency pseudo-inductive phenomenon at novel glass microcapillaries exhibiting non-ohmic behaviour |
| YVONNE GRÜNDER, MARCEL D. FABIAN, SAMUEL G. BOOTH, DANIELA PLANA, DAVID J. FERMÍN, PATRICK J. HILL and ROBERT A.W. DRYFE | 809 | Solids at the liquid–liquid interface: Electrocatalysis with pre-formed nanoparticles |

| | | |
|--|-----|---|
| ANTONÍN TROJÁNEK, JAN LANGMAIER, STANISLAV ZÁLIŠ and ZDENĚK SAMEC | 816 | Mechanistic model of the oxygen reduction catalyzed by a metal-free porphyrin in one- and two-phase liquid systems |
| KAZUYA MINAMI and TAKASHI KAKIUCHI | 822 | Determination of single-ion activity coefficients of hydrogen and bromide ions in aqueous hydrobromic acid solutions based on an ionic liquid salt bridge |
| MARIA A. PESHOVÁ and KONSTANTIN N. MIKHelson | 829 | Solvent polymeric membrane ion-selective electrodes under galvanostatic control: Powerful tool for analysis of extremely diluted samples |
| SHIGERU AMEMIYA, JIYEON KIM, ANAHITA IZADYAR, BENJAMIN KABAGAMBE, MEI SHEN and RYOICHI ISHIMATSU | 836 | Electrochemical sensing and imaging based on ion transfer at liquid/liquid interfaces |
| | III | Recent SI |
| | IV | Future SI |