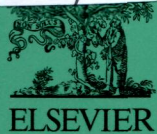


ПН
J80/e



Volume 688

1 January 2013

ISSN 1572-6657

Journal of Electroanalytical Chemistry

An International Journal
also devoted to
All Physicochemical Aspects of
Fundamental and Applied Electrochemistry

Editors:
J.M. Feliu
T. Kakiuchi
P. Unwin
X.H. Xia

Special Issue in Honor of Professors Chuansin Cha and Zhaowu Tian

Guest Editors: J. Lu, S.-G. Sun and L. -J. Wan

Handling Editor: J.M. Feliu

Available online at www.sciencedirect.com

SciVerse ScienceDirect

In collaboration with
the International Society
of Electrochemistry





Contents

Abstracts and/or contents lists of this journal are published in: Analytical Abstracts, Metals Abstracts, World Aluminum Abstracts, Chemical Abstracts, Current Contents (Physical, Chemical & Earth Sciences), Engineering Index, INSPEC. Also covered in the abstract and citation database SciVerse Scopus®. Full text available on SciVerse ScienceDirect®.

Preface

- Special issue in honor of Professors Chuansin Cha and Zhaowu Tian
J.M. Feliu, J. Lu and S.-G. Sun 1

Reviews

- Shell-isolated nanoparticle-enhanced Raman spectroscopy: Nanoparticle synthesis, characterization and applications in electro-chemistry
X.-D. Lin, J.-F. Li, Y.-F. Huang, X.-D. Tian, V. Uzayisenga, S.-B. Li, B. Ren and Z.-Q. Tian 5
- Development of cavity microelectrode devices and their uses in various research fields
C. Cachet-Vivier, M. Keddad, V. Vivier and L.T. Yu 12
- Electroanalysis in micro- and nano-scales
C.M. Li and W. Hu 20
- Application of electrode methods in studies of nitric oxide metabolism and diffusion kinetics
X. Liu and J.L. Zweier 32

Research Papers**Analytical Electrochemistry**

- Selective detection by depleting interferent in diffusion layer based on a combination of pre-depletion pulse and differential pulse voltammetry
J. Yan, F. Zhu, Y. Wang, Z. Zhu and B. Mao 40
- Electrogenerated chemiluminescence of $\text{Ru}(\text{phen})_3^{2+}$ /2-(dibutylamino)ethanol system
S. Parveen, W. Zhang, Y. Yuan, L. Hu, M.R.H. Shah Gilani, A. ur Rehman and G. Xu 45
- Developing and performance measurements for a novel miniaturized electrochemical methanol sensor
L. Yan, J. Liao, L. Feng, X. Zhao, L. Liang, W. Xing and C. Liu 49
- Ultrasensitive analysis of binding affinity of HIV receptor and neutralizing antibodies using solution-phase electrochemiluminescence assay
X.-H.N. Xu, Z. Wen and W.J. Brownlow 53

(Contents continued on inside back cover)



(Contents continued from outside back cover)

Bioelectrochemistry

- Characterization of Ag⁺ toxicity on living fibroblast cells by the ferrocenemethanol and oxygen response with the scanning electrochemical microscope
D. Zhan, X. Li, A.B. Nepomnyashchii, M.A. Alpuche-Aviles, F.-R.F. Fan and A.J. Bard 61
- A simple method for amino-functionalization of carbon nanotubes and electrodeposition to modify neural microelectrodes
H. Zhou, T. Wang and Y.Y. Duan 69
- Electrochemical and PM-IRRAS studies of floating lipid bilayers assembled at the Au(111) electrode pre-modified with a hydrophilic monolayer
Z. Su, Y. Jiang, M. Velázquez-Manzanares, J. Jay Leitch, A. Kycia and J. Lipkowski 76

Electrode Materials for Advanced Batteries and Supercapacitors

- Electrochemical profile of lithium titanate/hard carbon composite as anode material for Li-ion batteries
G.-n. Zhu, Y.-j. Du, Y.-g. Wang, A.-s. Yu and Y.-y. Xia 86
- Reversible Li and Na storage behaviors of perylenetetracarboxylates as organic anodes for Li- and Na-ion batteries
R.R. Zhao, Y.L. Cao, X.P. Ai and H.X. Yang 93
- Synthesis and electrochemical properties of polyhedron-shaped Li₃V_{2-x}Sn_x(PO₄)₃ as cathode material for lithium-ion batteries
G. Bai, Y. Yang and H. Shao 98
- Lithiation of amorphous carbon negative electrode for Li ion capacitor
G. Gourdin, P.H. Smith, T. Jiang, T.N. Tran and D. Qu 103
- Ordered spinel LiNi_{0.5}Mn_{1.5}O₄ nanorods for high-rate lithium-ion batteries
J. Yang, X. Zhang, Z. Zhu, F. Cheng and J. Chen 113
- n-Dopable polythiophenes as high capacity anode materials for all-organic Li-ion batteries
L.M. Zhu, W. Shi, R.R. Zhao, Y.L. Cao, X.P. Ai, A.W. Lei and H.X. Yang 118
- Fast sol-gel synthesis of mesoporous Li₂MnSiO₄/C nanocomposite with improved electrochemical performance for lithium-ion batteries
F. Wang, J. Chen, C. Wang and B. Yi 123

Fuel Cells and Electrocatalysis

- Understanding the effects of backpressure on PEM fuel cell reactions and performance
J. Zhang, C. Song, J. Zhang, R. Baker and L. Zhang 130
- High durability of Pt/graphitized carbon catalysts for polymer electrolyte fuel cells prepared by the nanocapsule method
H. Yano, T. Akiyama, M. Watanabe and H. Uchida 137
- Platinum nanoparticles functionalized with acetylene derivatives: Electronic conductivity and electrocatalytic activity in oxygen reduction
K. Liu, X. Kang, Z.-Y. Zhou, Y. Song, L.J. Lee, D. Tian and S. Chen 143
- Synthesis and electrochemical study of PtPd nanodendrites
R. Matthew Asmussen, B.D. Adams, S. Chen, B. Shah and A. Chen 151
- A DFT calculation study on the temperature-dependent hydrogen electrocatalysis on Pt(111) surface
Q. Zhang, Y. Liu and S. Chen 158
- In situ FTIR spectroscopic studies of ethylene glycol electrooxidation on Pd electrode in alkaline solution: The effects of concentration
J.-L. Lin, J. Ren, N. Tian, Z.-Y. Zhou and S.-G. Sun 165
- Comparative study of methanol adsorption and electro-oxidation on carbon-supported platinum in acidic and alkaline electrolytes
M. Jing, L. Jiang, B. Yi and G. Sun 172
- Electroreduction of O₂ on uniform arrays of Pt nanoparticles
H. Yang, S. Kumar and S. Zou 180

(Contents continued on facing page)

(Contents continued from inside back cover)

Pt/Ti catalyst prepared by simultaneous etching-displacement method and the electrocatalysis toward oxygen reduction reaction Y. Sun, J. Lu and L. Zhuang	189
Design and electrochemical characterization of ternary alloy electrocatalysts for oxygen reduction reaction J. Luo, J. Yin, R. Loukrakpam, B.N. Wanjala, B. Fang, S. Shan, L. Yang, M. Nie, M.S. Ng, J. Kinzler, Y.-S. Kim, K.K. Luo and C.-J. Zhong	196
Electrode reaction induced pH change at the Pt electrode/electrolyte interface and its impact on electrode processes L.W. Liao, M.F. Li, J. Kang, D. Chen, Y.-X. Chen and S. Ye	207
Combined studies of DFT atomistic modelling and <i>in situ</i> FTIR spectroscopy on surface oxidants and CO oxidation at Ru electrodes B.Y. Liu, J.M. Jin, C. Hardacre, P. Hu and W.F. Lin	216
Photoelectrochemistry	
Pre-treating sputtered TiO ₂ film by photoelectrocatalysis to increase the performance of photo-activity and photoinduced hydrophilicity L. Wen, B. Liu, X. Zhao, K. Nakata and A. Fujishima	224
Electrodeposition of Ni oxide on TiO ₂ nanotube arrays for enhancing visible light photoelectrochemical water splitting Y. Li, H. Yu, C. Zhang, L. Fu, G. Li, Z. Shao and B. Yi	228
Nano-electrochemistry	
The deposition of mesoporous Ni/Co alloy using cetyltrimethylammonium bromide as the surfactant in the lyotropic liquid crystalline phase bath P.N. Bartlett, D. Pletcher, T.F. Esterle and C.T. John Low	232
The structural details and substituent effects on biphenyls adlayers with halogen/pseudohalogen substituents on Au(111): An STM investigation B. Cui, H.-J. Yan, D. Wang and L.-J. Wan	237
Clean and efficient transfer of CVD-grown graphene by electrochemical etching of metal substrate X. Yang, H. Peng, Q. Xie, Y. Zhou and Z. Liu	243
Citrate adsorption on Pt(<i>hkl</i>) electrodes and its role in the formation of shaped Pt nanoparticles G.A. Attard, J.-Y. Ye, P. Jenkins, F.J. Vidal-Iglesias, E. Herrero and S.-G. Sun	249
Correlating conductance and structure of silver nano-contacts created by jump-to-contact STM break junction J. Liang, L. Liu, Y. Gao, Y. Wei, Z. Chen, X. Zhou, J. Zhao and B. Mao	257
IrO ₂ coated TiO ₂ nanopore arrays electrode for SPE HBr electrolysis L. Zhang, Z.-G. Shao, H. Yu, X. Wang and B. Yi	262
Electrochemical controlled synthesis and characterization of well-aligned IrO ₂ nanotube arrays with enhanced electrocatalytic activity toward oxygen evolution reaction C. Zhao, H. Yu, Y. Li, X. Li, L. Ding and L. Fan	269
Corrosion	
EIS analysis on chloride-induced corrosion behavior of reinforcement steel in simulated carbonated concrete pore solutions C.-Q. Ye, R.-G. Hu, S.-G. Dong, X.-J. Zhang, R.-Q. Hou, R.-G. Du, C.-J. Lin and J.-S. Pan	275
Polyphenazine films as inhibitors of copper corrosion A. Romeiro, C. Gouveia-Caridade and C.M.A. Brett	282
Effect of polypyrrole conformational rearrangement on Al alloys corrosion protection E. Volpi, M. Trueba, S.P. Trasatti and S. Trasatti	289

(Contents continued on last page)

(Contents continued from previous page)

Molecular Electrochemistry

- A protecting-deprotecting strategy for structuring robust functional films using aryldiazonium electroreduction
Y.R. Leroux, F. Hui and P. Hapiot 298
- Electric field driven protonation/deprotonation of 3,4,9,10-perylene tetracarboxylic acid immobilized on graphene sheets via π - π stacking
M. Wang, F.-N. Xiao, K. Wang, F.-B. Wang and X.-H. Xia 304
- Pseudo-crown functionalized copper *salen* complexes forming electroactive polymers: Rationalization of Ba²⁺ interaction using XAS and DFT
J. Tedim, K. Biernacki, J. Fonseca, S. Patrício, A. Carneiro, A.L. Magalhães, S.J. Gurman, C. Freire and A.R. Hillman 308

Physical, Fundamental and Spectroscopic Electrochemistry

- New theoretical insights into the competitive roles of electron transfers involving adsorbed and homogeneous phases
O.V. Klymenko, I. Svir and C. Amatore 320
- Anomalous solubility of oxygen in acetonitrile/water mixture containing tetra-*n*-butylammonium perchlorate supporting electrolyte: the solubility and diffusion coefficient of oxygen in anhydrous acetonitrile and aqueous mixtures
Q. Li, C. Batchelor-McAuley, N.S. Lawrence, R.S. Hartshorne and R.G. Compton 328
- Zero charge potentials and work function of rhodium
O.A. Petrii and T.Ya. Safonova 336
- Electrochemical impedance spectroscopic measurement of potential of zero charge of octanethiolate-protected Au and Pd nanoparticles
G.C. Lica and Y.J. Tong 349
- The *i*-*V* response of an electrochemical cell comprising two polarizable microelectrodes and the influence of impurities on the cell response
J. Xiong and H.S. White 354
- Sequential Pt(111) oxide formation in perchloric acid: An electrochemical study of surface species inter-conversion
A.M. Gómez-Marín, J. Clavilier and J.M. Feliu 360
- A comparative study of anodic oxidation of bromide and chloride ions on platinum electrodes in 1-butyl-3-methylimidazolium hexafluorophosphate
L. Yu, X. Jin and G.Z. Chen 371
- Self assembly of iron protoporphyrin and its binding with carbon monoxide on dithiol modified gold electrode as probed by in situ ATR-SEIRAS
Y.-Y. Yang and W.-B. Cai 379
- SERS and *in situ* SERS spectroelectrochemical investigations of serotonin monolayers at a silver electrode
P. Song, X. Guo, Y. Pan, Y. Wen, Z. Zhang and H. Yang 384
- Publisher's note 392
- Reprint of "Investigation of layered LiNi_{1/3}Co_{1/3}Mn_{1/3}O₂ cathode of lithium ion battery by electrochemical impedance spectroscopy"
X.-Y. Qiu, Q.-C. Zhuang, Q.-Q. Zhang, R. Cao, Y.-H. Qiang, P.-Z. Ying and S.-G. Sun 393