



Volume 107, 30 September 2013

ISSN 0013-4686

Journal of the International Society of Electrochemistry

Electrochimica Acta

Available online at www.sciencedirect.com

SciVerse ScienceDirect



HIROKI NARA, TOKIHIKO YOKOSHIMA, MITSUTOSHI OTAKI, TOSHIYUKI MOMMA and TETSUYA OSAKA	1	Structural analysis of highly-durable Si—O—C composite anode prepared by electrodeposition for lithium secondary batteries
MIAOMIAO LIU, JIE CHANG, JING SUN and LIAN GAO	9	Synthesis of porous NiO using NaBH ₄ dissolved in ethylene glycol as precipitant for high-performance supercapacitor
PINLIANG JIANG, LONGXIANG LIN, FAN ZHANG, XIANG DONG, LEI REN and CHANGJIAN LIN	16	Electrochemical construction of micro–nano sponglike structure on titanium substrate for enhancing corrosion resistance and bioactivity
T. SCHEDLBAUER, U.C. RODEHORST, C. SCHREINER, H.J. GORES and M. WINTER	26	Blends of lithium bis(oxalato)borate and lithium tetrafluoroborate: Useful substitutes for lithium difluoro(oxalato)borate in electrolytes for lithium metal based secondary batteries?
ALEXANDER V. RUDNEV, ULMAS ZHUMAEV, TORU UTSUNOMIYA, CHUNJIE FAN, YASUYUKI YOKOTA, KEN-ICHI FUKUI and THOMAS WANDLOWSKI	33	Ferrocene-terminated alkanethiol self-assembled monolayers: An electrochemical and <i>in situ</i> surface-enhanced infra-red absorption spectroscopy study
HANNA ELLIS, NICK VLACHOPOULOS, LEIF HAGGMAN, CHRISTIAN PERRUCHOT, MOHAMED JOUINI, GERRIT BOSCHLOO and ANDERS HAGFELDT	45	PEDOT counter electrodes for dye-sensitized solar cells prepared by aqueous micellar electrodeposition
YANHONG ZHAO, CONGYAN LI, WEN ZHAO, QIANGQIANG DU, BO CHI, JINJING SUN, ZHANLI CHAI and XIAOJING WANG	52	Electrocatalytic oxidation of ascorbic acid on a lithium-doped tantalum oxide film coated electrode
JIANBO JIANG, GONGRONG TAN, SANJUN PENG, DONG QIAN, JINLONG LIU, DONGMING LUO and YOUCAI LIU	59	Electrochemical performance of carbon-coated Li ₃ V ₂ (PO ₄) ₃ as a cathode material for asymmetric hybrid capacitors
SHENG-YEN TAI, CHIA-FENG CHANG, WEI-CHEN LIU, JEN-HUNG LIAO and JENG-YU LIN	66	Optically transparent counter electrode for dye-sensitized solar cells based on cobalt sulfide nanosheet arrays
LINGPU JIA, HUANHUAN KOU, YIMING JIANG, SHENGJIAO YU, JIAJIA LI and CHUNMING WANG	71	Electrochemical deposition semiconductor ZnSe on a new substrate CNTs/PVA and its photoelectrical properties
BING DING, LAIFA SHEN, GUIYIN XU, PING NIE and XIAOGANG ZHANG	78	Encapsulating sulfur into mesoporous TiO ₂ host as a high performance cathode for lithium–sulfur battery
F. NOBILI, I. MESCHINI, M. MANCINI, R. TOSSICI, R. MARASSI and F. CROCE	85	High-performance Sn@carbon nanocomposite anode for lithium-ion batteries: Lithium storage processes characterization and low-temperature behavior
A. BOBROWSKI, A. KRÓLICKA, M. PUTEK, J. ZARĘBSKI, N. ČELEBIĆ and V. GUZSVÁNY	93	Catalytic adsorptive stripping voltammetry of Co(II)-dioxime-bromate systems at renewable amalgam film electrode
EWA RUDNIK and JAROSŁAW KOZŁOWSKI	103	Electrochemical studies on the codeposition of copper and tellurium from acidic nitrate solution
S.J. GREEN, L.S.A. MAHE, D.R. ROSSEINSKY and C.P. WINLOVE	111	Potential and pH dependence of photocurrent transients for boron-doped diamond electrodes in aqueous electrolyte
MARGARITA DERGACHEVA and KAZHMUKAN URAZOV	120	Electrodeposition of CuIn _x Ga _{1-x} Se ₂ thin films from sulfosalicylic acid
BELABES MERZOUGUI, ABDOUELILAH HACHIMI, AKEEM AKINPELU, SAHEED BUKOLA and MINHUA SHAO	126	A Pt-free catalyst for oxygen reduction reaction based on Fe–N multiwalled carbon nanotube composites
QINGLAI JIANG, KE DU and YUEHUI HE	133	A novel method for preparation of LiNi _{1/3} Mn _{1/3} Co _{1/3} O ₂ cathode material for Li-ion batteries
QIANYU ZHANG, CHENGLI ZHANG, BO LI, DONGDONG JIANG, SHIFEI KANG, XI LI and YANGANG WANG	139	Preparation and characterization of W-doped Li ₄ Ti ₅ O ₁₂ anode material for enhancing the high rate performance
YANHU WANG, DEJIN ZANG, SHENGUANG GE, LEI GE, JINGHUA YU and MEI YAN	147	A novel microfluidic origami photoelectrochemical sensor based on CdTe quantum dots modified molecularly imprinted polymer and its highly selective detection of S-fenvalerate
SEYYED MOHSEN MOUSAVI EHTESHAMI, QINGYING JIA, A. HALDER, S.H. CHAN and S. MUKERJEE	155	The role of electronic properties of Pt and Pt alloys for enhanced reformat electro-oxidation in polymer electrolyte membrane fuel cells
XUECHOU ZHOU, XINYU ZHENG, RIXIN LV, DEXIAN KONG and QINGLU LI	164	Electrodeposition of platinum on poly(glutamic acid) modified glassy carbon electrode for non-enzymatic amperometric glucose detection
CHIEN-HSIN YANG, PEI-YU CHEN, WEN-JANQ CHEN, TZONG-LIU WANG and YEONG-TARNQ SHIEH	170	Spectroscopic evidences of synergistic co-sensitization in dye-sensitized solar cells via experimentation of mixture design

CRISTINA DUMITRIU, ZEKRA MOUSAVI, ROSE-MARIE LATONEN, JOHAN BOBACKA and IOANA DEMETRESCU	178	Electrochemical synthesis and characterization of poly(3,4-ethylenedioxythiophene) doped with sulfonated calixarenes and sulfonated calixarene–fullerene complexes
TIAN R. SUN, LISBETH M. OTTOSEN, PERNILLE E. JENSEN and GUNVOR M. KIRKELUND	187	Effect of pulse current on acidification and removal of Cu, Cd, and As during suspended electrodialytic soil remediation
FAN YANG, KUI CHENG, XIAO XUE, JINLING YIN, GUILING WANG and DIANXUE CAO	194	Three-dimensional porous Ni film electrodeposited on Ni foam: High performance and low-cost catalytic electrode for H ₂ O ₂ electrooxidation in KOH solution
XIAOYAN WANG, LIDONG SUN, SAM ZHANG and DONGLIANG ZHAO	200	On seeding of the second layer in growth of double-layered TiO ₂ nanotube arrays
HAO TANG, YONG-DE YAN, MI-LIN ZHANG, XING LI, WEI HAN, YUN XUE, ZHI-JIAN ZHANG and HUI HE	209	Fabrication of Mg–Pr and Mg–Li–Pr alloys by electrochemical co-reduction from their molten chlorides
ESRA TELLİ, ALİ DÖNER and GÜLFEZA KARDAŞ	216	Electrocatalytic oxidation of methanol on Ru deposited NiZn catalyst at graphite in alkaline medium
REZA B. MOGHADDAM and PETER G. PICKUP	225	Influences of aniline, carbazole, indole, and pyrrole monomers and polymers on formic acid oxidation at Pt electrodes
JUNNIAN CHEN, TIANYOU PENG, WENYE SHI, RENJIE LI and JIANGBIN XIA	231	An efficient binary ionic liquid based quasi solid-state electrolyte for dye-sensitized solar cells
M. BLANCO, J.T.C. BARRAGAN, N. BARELLI, R.D. NOCE, C.S. FUGIVARA, J. FERNÁNDEZ and A.V. BENEDETTI	238	On the electrochemical behavior of Cu–16%Zn–6.5%Al alloy containing the β'-phase (martensite) in borate buffer
MAURICIO D. ARCE, HORACIO L. BONAZZA and JOSÉ L. FERNÁNDEZ	248	Kinetic analysis of the hydrogen electrode reaction in unbuffered media. Theory and studies on Pt microelectrodes
HAIPING GAO, XIANBO JIN, SIWEI ZOU, FENGZI LING, JUNJUN PENG, ZHIYONG WANG and GEORGE Z. CHEN	261	Liquid diffusion of the instantaneously released oxygen ion in the electrolytic porous Fe from solid Fe ₂ O ₃ in molten CaCl ₂
U. KOSS, K. HUBKOWSKA, M. ŁUKASZEWSKI and A. CZERWIŃSKI	269	Influence of temperature on hydrogen electrosorption into palladium-noble metal alloys. Part 3: Palladium–rhodium alloys
FAN ZHANG, TORE BRINCK, BIRGIT D. BRANDNER, PER M. CLAESSON, ANDRA DEDINAITE and JINSHAN PAN	276	<i>In situ</i> confocal Raman micro-spectroscopy and electrochemical studies of mussel adhesive protein and ceria composite film on carbon steel in salt solutions
RUIRUI YUE, QIANG ZHANG, CAIQIN WANG, YUKOU DU, PING YANG and JINGKUN XU	292	Graphene–poly(5-aminoindole) composite film as Pt catalyst support for methanol electrooxidation in alkaline medium
YIN TING TENG, STEVIN S. PRAMANA, JUNFENG DING, TOM WU and RACHID YAZAMI	301	Investigation of the conversion mechanism of nanosized CoF ₂
YONGKUN LI, HONGMEI YU, CHANGKUN ZHANG, WEI SONG, GUANGFU LI, ZHIGANG SHAO and BAOLIAN YI	313	Effect of water and annealing temperature of anodized TiO ₂ nanotubes on hydrogen production in photoelectrochemical cell
BAO-LI CHEN, YAN XIAO, XIAO-MING XU, HENG-PAN YANG, HUAN WANG and JIA-XING LU	320	Alkaloid induced enantioselective electroreduction of acetophenone
ANTHONY D. SANTAMARIA, JOHN BACHMAN and JAE WAN PARK	327	Cold-start of parallel and interdigitated flow-field polymer electrolyte membrane fuel cell
BINGLING HU, XIAOYUN QIN, ABDULLAH M. ASIRI, KHALID A. ALAMRY, ABDULRAHMAN O. AL-YOUBI and XUPING SUN	339	Fabrication of Ni(OH) ₂ nanoflakes array on Ni foam as a binder-free electrode material for high performance supercapacitors
YU LI, YIYU FENG and WEI FENG	343	Deeply fluorinated multi-wall carbon nanotubes for high energy and power densities lithium/carbon fluorides battery
FRANCISCO WILLIAN DE SOUZA LUCAS, JEFFERSON MELO DO NASCIMENTO, VALDER NOGUEIRA FREIRE, ANDRÉ LUIZ MELO CAMELO, ELISANE LONGHINOTTI, PEDRO DE LIMA-NETO and ADRIANA NUNES CORREIA	350	Dimethomorph electrooxidation: Analytical determination in grape-derived samples and mechanistic aspects
YING-LIANG CHENG, ZHI-GANG XUE, QUN WANG, XIANG-QUAN WU, E. MATYKINA, P. SKELDON and G.E. THOMPSON	358	New findings on properties of plasma electrolytic oxidation coatings from study of an Al–Cu–Li alloy

KE-JING HUANG, LAN WANG, YU-JIE LIU, TIAN GAN, YAN-MING LIU, LING-LING WANG and YI FAN	379	Synthesis and electrochemical performances of layered tungsten sulfide-graphene nanocomposite as a sensing platform for catechol, resorcinol and hydroquinone
GRACE POON, AISHWARYA PARASURAMAN, TUTI MARIANA LIM and MARIA SKYLLAS-KAZACOS	388	Evaluation of N-ethyl-N-methyl-morpholinium bromide and N-ethyl-N-methyl-pyrrolidinium bromide as bromine complexing agents in vanadium bromide redox flow batteries
WEIJANG SI, JIN ZHOU, SHUMEI ZHANG, SHIJIAO LI, WEI XING and SHUPING ZHUO	397	Tunable N-doped or dual N, S-doped activated hydrothermal carbons derived from human hair and glucose for supercapacitor applications
S. ZHANG, C. DENG, H. GAO, F.L. MENG and M. ZHANG	406	$\text{Li}_{2+x}\text{Mn}_{1-x}\text{P}_x\text{Si}_{1-x}\text{O}_4/\text{C}$ as novel cathode materials for lithium ion batteries
YU LEI, ZHENG-HONG HUANG, WANJI SHEN, FEIYU KANG and YONGPING ZHENG	413	Bi-material anode based on porous graphitic carbon for $\text{Li}_4\text{Ti}_5\text{O}_{12}$ -PGC/ LiFePO_4 hybrid battery capacitor
HAN MAO, RUOSHI LI, KUN JIANG, TAO HUANG and AISHUI YU	419	Facile preparation of Cu@Pt/rGO hybrids and their electrocatalytic activities for methanol oxidation
M.H. CHAKRABARTI, C.T.J. LOW, N.P. BRANDON, V. YUFIT, M.A. HASHIM, M.F. IRFAN, J. AKHTAR, E. RUIZ-TREJO and M.A. HUSSAIN	425	Progress in the electrochemical modification of graphene-based materials and their applications
ANNA MASEK, EWA CHŁEZSCIJAŃSKA and MARIAN ZABORSKI	441	Characteristics of curcumin using cyclic voltammetry, UV-vis, fluorescence and thermogravimetric analysis
SOLOM P. ECONOMOPOULOS, PANAYIOTIS A. KOUTENTIS, HERAKLIDIA A. IOANNIDOU and STELIOS A. CHOULIS	448	Identifying potential candidates for donor-acceptor copolymers on a series of 4H-1,2,6-thiadiazines: An electrochemical approach
TAEJUN YIM, MIN-SIK PARK, JI-SANG YU, KI JAE KIM, KEUN YUNG IM, JAE-HUN KIM, GOOJIN JEONG, YONG NAM JO, SANG-GIL WOO, KYOUNG SEOK KANG, INGURL LEE and YOUNG-JUN KIM	454	Effect of chemical reactivity of polysulfide toward carbonate-based electrolyte on the electrochemical performance of Li-S batteries
DAN WANG, YAN HUANG, ZHENQING HUO and LI CHEN	461	Synthesize and electrochemical characterization of Mg-doped Li-rich layered $\text{Li}[\text{Li}_{0.2}\text{Ni}_{0.2}\text{Mn}_{0.6}]\text{O}_2$ cathode material
JUNGHWAN PARK, SUNG SOO PARK and YONG SON WON	467	In situ XRD study of the structural changes of graphite anodes mixed with SiO_x during lithium insertion and extraction in lithium ion batteries
YANDONG DUAN, NIANQING FU, QIAN ZHANG, YANYAN FANG, XIAOWEN ZHOU and YUAN LIN	473	Influence of Sn source on the performance of dye-sensitized solar cells based on Sn-doped TiO_2 photoanodes: A strategy for choosing an appropriate doping source
FELISMINA T.C. MOREIRA, ROSA A.F. DUTRA, JOÃO P.C. NORONHA and M. GORETI F. SALES	481	Electrochemical biosensor based on biomimetic material for myoglobin detection
CHUN-PEI CHO, HSIN-YUN WU and CHUN-CHU LIN	488	Impacts of sputter-deposited platinum thickness on the performance of dye-sensitized solar cells
RUI DING, LI QI, MINGJUN JIA and HONGYU WANG	494	Facile and large-scale chemical synthesis of highly porous secondary submicron/micron-sized NiCo_2O_4 materials for high-performance aqueous hybrid AC- NiCo_2O_4 electrochemical capacitors
TE-KANG CHEN, XIAODING QI, CHUH-YUNG CHEN, CHIA-CHIN CHANG and WEI-CHE CHANG	503	Maleic-anhydride-grafted ketjen black as the alternative carbon additive for LiFePO_4 cathode
KRISTINA TIIDO, NADEZDA ALEXEYEV, MARTIN COUILLARD, CHRISTINA BOCK, BARRY R. MACDOUGALL and KAIDO TAMMEVESKI	509	Graphene- TiO_2 composite supported Pt electrocatalyst for oxygen reduction reaction
ABDEL SALAM HAMDY, F. ALFOSAIL and Z. GASEM	518	Effect of changing the silica coating pH on the corrosion characteristics of A6092/ $\text{SiC}/17.5\text{p}$ aluminum metal matrix composite in chloride media
O.G. OLVERA, D.G. DIXON and E. ASSELIN	525	Electrochemical study of the dissolution of enargite (Cu_3AsS_4) in contact with activated carbon
SHILI XU, HEFANG ZHANG, FULI HUANG, PENGSHU WANG, YUE XIA, ZELIN LI and WEI HUANG	537	Electrochemical fabrication of a cauliflower-like nanostructured Pd film from pure Pd and its applications in electrocatalysis and electroanalysis
CAMILA ALVES DE LIMA and ALMIR SPINELLI	542	Electrochemical behavior of progesterone at an <i>ex situ</i> bismuth film electrode
XIN WEI, SHICHAO ZHANG, ZHIJIA DU, PUHENG YANG, JING WANG and YANBIAO REN	549	Electrochemical performance of high-capacity nanostructured $\text{Li}[\text{Li}_{0.2}\text{Mn}_{0.54}\text{Ni}_{0.13}\text{Co}_{0.13}]\text{O}_2$ cathode material for lithium ion battery by hydrothermal method
LI-ZHONG BAI, DONG-LIN ZHAO, TAI-MING ZHANG, WEI-GANG XIE, JI-MING ZHANG and ZENG-MIN SHEN	555	A comparative study of electrochemical performance of graphene sheets, expanded graphite and natural graphite as anode materials for lithium-ion batteries

AKSHAY S. BAUSKAR and CYNTHIA A. RICE	562	Spontaneously Bi decorated carbon supported Pd nanoparticles for formic acid electro-oxidation
SHENG-HENG CHUNG and ARUMUGAM MANTHIRAM	569	Lithium-sulfur batteries with superior cycle stability by employing porous current collectors
B. ŠLJUKIĆ, J. MILIKIĆ, D.M.F. SANTOS and C.A.C. SEQUEIRA	577	Carbon-supported $\text{Pt}_{0.75}\text{M}_{0.25}$ (M = Ni or Co) electrocatalysts for borohydride oxidation
J.S. RIVA, R. IGLESIAS and L.M. YUDI	584	Electrochemical adsorption of a cationic cellulosic polymer by ion pair formation at the interface between two immiscible electrolyte solutions
ASHOK KUMAR DAS and C. RETNA RAJ	592	Shape and surface structure-dependent electrocatalytic activity of Au nanoparticles
PIERRE VIALAT, FABRICE LEROUX, CHRISTINE TAVIOT-GUEHO, GILLES VILLEMURE and CHRISTINE MOUSTY	599	Insights into the electrochemistry of $(\text{Co}_x\text{Ni}_{(1-x)})_2\text{Al-NO}_3$ Layered Double Hydroxides
WEI JIN, RASHA TOLBA, JIALI WEN, KECHENG LI and AICHENG CHEN	611	Efficient extraction of lignin from black liquor via a novel membrane-assisted electrochemical approach
DONG-WON PARK, YONKIL JEONG, T. PREM KUMAR, JAEYOUNG LEE and YONG-KOOK CHOI	619	Influence of acid/base co-catalyst on the photoelectrochemical properties of TiO_2 thin films in dye-sensitized solar cells
C. ROUSSE, S. BEAUFILS and P. FRICOTEAUX	624	Electrodeposition of Cu-Zn thin films from room temperature ionic liquid
JUSTIN M. ROLLER, M. JOSEFINA ARELLANO-JIMÉNEZ, HAORAN YU, RISHABH JAIN, C. BARRY CARTER and RADENKA MARIC	632	Catalyst nanoscale assembly from the vapor phase on corrosion resistant supports
DI ZHANG, YUXIN FANG, ZHIYING MIAO, MIN MA, XIN DU, SHIGEHIRO TAKAHASHI, JUN-ICHI ANZAI and QIANG CHEN	656	Direct electrodeposition of reduced graphene oxide and dendritic copper nanoclusters on glassy carbon electrode for electrochemical detection of nitrite
YAN JI and CHAO YANG WANG	664	Heating strategies for Li-ion batteries operated from subzero temperatures
SOONHO LEE, YOUNGTAE JEON, YOUNGDON LIM, MD. AWLAD HOSSAIN, SANGYOUNG LEE, YOUNGGIL CHO, HYUNCHUL JU and WHANGI KIM	675	A new siloxane containing imidazolium iodide as electrolyte for dye-sensitized solar cell
SUNG HOON LIM, DO HYUNG KIM, JI YOUNG BYUN, BOK KI KIM and WOO YOUNG YOON	681	Electrochemical and catalytic properties of $\text{V}_2\text{O}_5/\text{Al}_2\text{O}_3$ in rechargeable Li-O_2 batteries

Discussion Section

ALAN L. ROCKWOOD	686	Comments on "The Seebeck coefficient and the Peltier effect in a polymer electrolyte membrane cell with two hydrogen electrodes" by S. Kjelstrup, P.J.S. Vie, L. Akyalcin, P. Zefaniya, J.G. Pharoah, O.S. Burnheim [Electrochim. Acta 99 (2013) 166]
ZHENG FANG	691	A note on "The Seebeck coefficient and the Peltier effect in a polymer electrolyte membrane cell with two hydrogen electrodes" by S. Kjelstrup, P.J.S. Vie, L. Akyalcin, P. Zefaniya, J.G. Pharoah, O.S. Burheim [Electrochimica Acta, vol. 99 (2013) 166]
S. KJELSTRUP	693	On the transported entropy of ions (Replies to comments by Alan L. Rockwood in Electrochimica Acta 107C (2013) 686-0, and by Zheng Fang in Electrochimica Acta 107C (2013) 691-2)
ZHENHUA YU, CHENHAO BU, ZIYAO ZHOU, YUMIN LIU, NIU HUANG, SIHANG BAI, HOUQIANG FU, SHISHANG GUO and XINGZHONG ZHAO	695	Effect of HAc treatment on an open-environment prepared organic redox couple based on hydroquinone/benzoquinone and its application in dye-sensitized solar cells
I		Recent SI
II		Future SI