

FM
J80/p59

Volume 242, 15 November 2013

ISSN 0378-7753



ELSEVIER

JOURNAL OF POWER SOURCES

The International Journal on the Science and
Technology of Electrochemical Energy Systems

Regional Editors

C.K. Dyer (N&S America)

Z. Ogumi (Japan & P.R. China)

S. Passerini (Europe, Middle East
and Africa)

D.A.J. Rand (Asia-Pacific)

**Regional and Special
Issues Co-ordinating
Editor**

P.T. Moseley

**Founding
Editor**

D.H. Collins

Available online at www.sciencedirect.com

SciVerse ScienceDirect



Contents

Review

- Aluminosilicate-based sealants for SOFCs and other electrochemical applications – A brief review 486
D.U. Tulyaganov, A.A. Reddy, V.V. Kharton, J.M.F. Ferreira

Fuel Cells: Science and Technology

- Single-walled carbon nanotube buckypapers as electrocatalyst supports for methanol oxidation 7
J.M. Sieben, A. Ansón-Casaos, M.T. Martínez, E. Morallón
- The characterization of graphite felt electrode with surface modification for H₂/Br₂ fuel cell..... 15
L. Zhang, Z.-G. Shao, X. Wang, H. Yu, S. Liu, B. Yi
- Electro-casting of proton exchange membranes from a heterogeneous solution..... 23
S. Zhao, J. Zhang, Y. Wang
- Synthesis, physical–chemical characterization and electrochemical performance of GdBaCo_{2-x}Ni_xO_{5+δ} (x = 0–0.8) as cathode materials for IT-SOFC application..... 50
Y. Hu, C. Bogicevic, Y. Bouffanais, M. Giot, O. Hernandez, G. Dezanneau
- Carbon–CeO₂ composite nanofibers as a promising support for a PtRu anode catalyst in a direct methanol fuel cell 57
C. Feng, T. Takeuchi, M.A. Abdelkareem, T. Tsujiguchi, N. Nakagawa
- A study of the effect of water management and electrode flooding on the dimensional change of polymer electrolyte fuel cells 70
T.J. Mason, J. Millichamp, T.P. Neville, P.R. Shearing, S. Simons, D.J.L. Brett
- Dynamic response performance of proton exchange membrane fuel cell stack with Pt/C–RuO₂·xH₂O electrode..... 99
L. Lu, H. Xu, H. Zhao, X. Sun, Y. Dong, R. Ren
- Indirect fuel cell based on a redox-flow battery with a new design to avoid crossover 106
Z. Siroma, S.-i. Yamazaki, N. Fujiwara, M. Asahi, T. Nagai, T. Ioroi
- Pd doped three-dimensional porous Ni film supported on Ni foam and its high performance toward NaBH₄ electrooxidation 141
K. Cheng, D. Cao, F. Yang, D. Zhang, P. Yan, J. Yin, G. Wang
- Non-precious cathode electrocatalyst for magnesium air fuel cells: Activity and durability of iron-polyphthalocyanine absorbed on carbon black..... 157
Z. Li, J. Yang, G. Xu, S. Wang
- Redox cycling of Ni–YSZ anodes for solid oxide fuel cells: Influence of tortuosity, constriction and percolation factors on the effective transport properties 179
L. Holzer, B. Iwanschitz, Th. Hocker, L. Keller, O. Pecho, G. Sartoris, Ph. Gasser, B. Muench
- Copper phthalocyanine functionalization of graphene nanosheets as support for platinum nanoparticles and their enhanced performance toward methanol oxidation 208
J.-P. Zhong, Y.-J. Fan, H. Wang, R.-X. Wang, L.-L. Fan, X.-C. Shen, Z.-J. Shi
- In situ measurement of active catalyst surface area in fuel cell stacks 244
E. Brightman, G. Hinds, R. O'Malley
- The high performance of tungsten carbides/porous bamboo charcoals supported Pt catalysts for methanol electrooxidation..... 273
C.-a. Ma, C. Xu, M. Shi, G. Song, X. Lang
- Ultrahigh methanol electro-oxidation activity of PtRu nanoparticles prepared on TiO₂-embedded carbon nanofiber support..... 280
Y. Ito, T. Takeuchi, T. Tsujiguchi, M.A. Abdelkareem, N. Nakagawa
- PtCu substrates subjected to AC and DC electric fields in a solution of benzene sulfonic acid–phenol as novel batteries and their use in glucose biofuel cells..... 341
M. Ammam, J. Fransaer

SciVerse ScienceDirect

Full text of this journal is available, on-line from SciVerse ScienceDirect. Visit www.sciencedirect.com for more information.

Effect of CO and oxygen on anode degradation in polymer electrolyte fuel cell.....	421
Y. Nakamori, N. Suzuki, K. Tanaka, T. Aoki, T. Nohira, R. Hagiwara	
Dynamic electrochemical impedance spectroscopy of Pt/C-based membrane-electrode assemblies subjected to cycling protocols. . . .	447
M. Darab, P.K. Dahlström, M.S. Thomassen, F. Seland, S. Sunde	
Vertically aligned nanocomposite electrolytes with superior out-of-plane ionic conductivity for solid oxide fuel cells	455
Q. Su, D. Yoon, A. Chen, F. Khatkhatay, A. Manthiram, H. Wang	
Adsorption and oxidation of acetaldehyde on carbon supported Pt, PtSn and PtSn-based trimetallic catalysts by in situ Fourier transform infrared spectroscopy	503
S. Beyhan, J.-M. Léger, F. Kadırgan	
Enhanced performance of polybenzimidazole-based high temperature proton exchange membrane fuel cell with gas diffusion electrodes prepared by automatic catalyst spraying under irradiation technique.....	510
H. Su, S. Pasupathi, B.J. Bladergroen, V. Linkov, B.G. Pollet	
Tailoring electrode hydrophobicity to improve anode performance in alkaline media	581
M.S. Naughton, G.H. Gu, A.A. Moradia, P.J.A. Kenis	
High activity of carbon nanotubes supported binary and ternary Pd-based catalysts for methanol, ethanol and formic acid electro-oxidation	610
F. Zhu, G. Ma, Z. Bai, R. Hang, B. Tang, Z. Zhang, X. Wang	
A novel electroless method to prepare a platinum electrocatalyst on diamond for fuel cell applications	631
X. Lyu, J. Hu, J.S. Foord, Q. Wang	
Microbial fuel cell with an algae-assisted cathode: A preliminary assessment	638
A. González del Campo, P. Cañizares, M.A. Rodrigo, F.J. Fernández, J. Lobato	
Degradation mechanisms and mitigation strategies of metal cations in recycled fuel for direct methanol fuel cell membrane electrode assembly.....	646
M.-J. Yang, K.-Y. Park, K.-B. Kim, H. Cho, H. Choi, J.-Y. Park	
Low cost synthesis of LiFePO ₄ /C cathode materials with Fe ₂ O ₃	656
L. Cheng, G. Liang, S. El Khakani, D.D. MacNeil	
Hybrid polyelectrolytes based on stable sulfonated polynorbornene with higher proton conductivity and lower methanol permeability	725
X. He, M. Hu, Y. Chen, D. Chen	
Improvement of activated carbons as oxygen reduction catalysts in neutral solutions by ammonia gas treatment and their performance in microbial fuel cells	756
V.J. Watson, C. Nieto Delgado, B.E. Logan	
First-principles study on the mechanism of coking inhibition by the Ni(111) surface doped with IB-group metals at the anode of solid oxide fuel cells	762
P. Zuo, Z. Fu, Z. Yang	
Investigation of oxygen exchange kinetics in proton-conducting ceramic fuel cells: Effect of electronic leakage current using symmetric cells	784
D. Poetzsch, R. Merkle, J. Maier	
Influence of (La,Sr)MnO _{3+δ} cathode composition on cathode/electrolyte interfacial structure during long-term operation of solid oxide fuel cells	790
T. Matsui, Y. Mikami, H. Muroyama, K. Eguchi	
In situ reduction and evaluation of anode supported single chamber solid oxide fuel cells.....	811
D. Rembelski, M. Rieu, L. Combemale, J.P. Viricelle	
Formation of tungsten carbide nanoparticles on graphitized carbon to facilitate the oxygen reduction reaction	817
Z. Yan, G. He, M. Cai, H. Meng, P.K. Shen	
Enhanced electro-oxidation of alcohols at electrochemically treated polycrystalline palladium surface.....	872
L. Wang, M. Bevilacqua, Y.-X. Chen, J. Filippi, M. Innocenti, A. Lavacchi, A. Marchionni, H. Miller, F. Vizza	
Fuel Cells: Engineering	
Fabrication and characterization of a micro-fuel cell made of metallized PMMA	1
J.A. Alanís-Navarro, C. Reyes-Betanzo, J. Moreira, P.J. Sebastian	
Experimental investigation on a polymer electrolyte membrane fuel cell (PEMFC) parallel flow field design with external two-valve regulation on cathode channels.....	195
S. Tong, J.C. Bachman, A. Santamaria, J.W. Park	
Fabrication of highly porous platinum electrodes for micro-scale applications by pulsed electrodeposition and dealloying	255
C. Köhler, A. Kloke, A. Drzyzga, R. Zengerle, S. Kerzenmacher	
Comprehensive study of an air bleeding technique on the performance of a proton-exchange membrane fuel cell subjected to CO poisoning.....	264
L.-Y. Sung, B.-J. Hwang, K.-L. Hsueh, W.-N. Su, C.-C. Yang	
Simulation of thermal stress within diffusion couple of composite seals with Crofer 22APU for solid oxide fuel cells applications	305
G. Kaur, D. Homa, K. Singh, O.P. Pandey, B. Scott, G. Pickrell	
Statistical investigations of basis weight and thickness distribution of continuously produced fuel cell electrodes.....	425
M. Stähler, I. Friedrich	
Nanofluidic fuel cell.....	472
J.W. Lee, E. Kjeang	
Durability evaluation of reversible solid oxide cells.....	566
X. Zhang, J.E. O'Brien, R.C. O'Brien, G.K. Housley	
Fabrication and performance evaluation of an in-membrane micro-fuel cell.....	672
A. Omosebi, R.S. Besser	

Effect of binder burnout on the sealing performance of glass ceramics for solid oxide fuel cells	775
T.Y. Ertugrul, S. Celik, M.D. Mat	
The importance of water transport on short-side chain perfluorosulfonic acid membrane fuel cells operating under low relative humidity	877
N. Zhao, D. Edwards, C. Lei, K. Wang, J. Li, Y. Zhang, S. Holdcroft, Z. Shi	
Fuel Cells: Applications	
Configuring a fuel cell based residential combined heat and power system	884
S. Ahmed, D.D. Papadias, R.K. Ahluwalia	
Fuel Cells: Fuel Processing	
Effect of halides ions on H ₂ production during aluminum corrosion in formic acid and using some inorganic inhibitors to control hydrogen evolution	86
M.A. Deyab	
A high performance Ru–ZrO ₂ /carbon nanotubes–Ni foam composite catalyst for selective CO methanation	132
J. Xiong, X. Dong, Y. Song, Y. Dong	
Study of nickel catalysts for hydrogen production in sorption enhanced reforming process	371
A.L. García-Lario, M. Aznar, G.S. Grasa, T. García, R. Murillo	
Direct reforming of biogas on Ni-based SOFC anodes: Modelling of heterogeneous reactions and validation with experiments	405
M. Santarelli, F. Quesito, V. Novaresio, C. Guerra, A. Lanzini, D. Beretta	
Combined production and purification of hydrogen from methanol using steam iron process in fixed bed reactor	520
R. Campo, P. Durán, J. Plou, J. Herguido, J.A. Peña	
Hydrogen generation from borohydride hydrolysis on surface-alloyed Ni foam	621
Z.P. Li, S.L. Ma, G.R. Li, B.H. Liu	
Effect of tar fractions from coal gasification on nickel–yttria stabilized zirconia and nickel–gadolinium doped ceria solid oxide fuel cell anode materials	824
E. Lorente, C. Berruoco, M. Millan, N.P. Brandon	
Lithium Batteries: Science and Technology	
A polyacetylene derivative with pendant TEMPO group as cathode material for rechargeable batteries	33
S. Bahceci, B. Esat	
Reduced graphene oxide film as a shuttle-inhibiting interlayer in a lithium–sulfur battery	65
X. Wang, Z. Wang, L. Chen	
Influence of germanium oxide addition on the electrical properties of Li ₂ O–B ₂ O ₃ –P ₂ O ₅ glasses	91
A. Mogaš-Milanković, K. Sklepić, H. Blažanović, P. Mošner, M. Vorokhta, L. Koudelka	
Sn@SnO _x /C nanocomposites prepared by oxygen plasma-assisted milling as cyclic durable anodes for lithium ion batteries	114
H. Liu, R. Hu, W. Sun, M. Zeng, J. Liu, L. Yang, M. Zhu	
Thin and flexible silicon anode based on integrated macroporous silicon film onto electrodeposited copper current collector	166
E. Luais, J. Sakai, S. Desplombain, G. Gautier, F. Tran-Van, F. Ghamouss	
Hierarchical shuttle-like Li ₂ FeSiO ₄ as a highly efficient cathode material for lithium-ion batteries	171
J. Yang, X. Kang, D. He, T. Peng, L. Hu, S. Mu	
Study of local disorder in LiMn(Cr,Ni)O ₂ compounds by extended X-ray absorption fine structure measurements	202
L. Maugeri, A. Iadecola, L. Simonelli, G. Chen, H. Wadati, T. Mizokawa, N.L. Saini	
Discharge/charge characteristic of Li-air cells using carbon-supported LaMn _{0.6} Fe _{0.4} O ₃ as an electrocatalyst	216
M. Yuasa, T. Matsuyoshi, T. Kida, K. Shimano	
Single-crystalline Li ₄ Ti ₅ O ₁₂ nanorods and their application in high rate capability Li ₄ Ti ₅ O ₁₂ /LiMn ₂ O ₄ full cells	222
L.J. Xi, H.K. Wang, S.L. Yang, R.G. Ma, Z.G. Lu, C.W. Cao, K.L. Leung, J.Q. Deng, A.L. Rogach, C.Y. Chung	
Synthesis and performance of Li _{1.5} V ₃ O ₈ nanosheets as a cathode material for high-rate lithium-ion batteries	230
Y. Wang, X. Xu, C. Cao, C. Shi, W. Mo, H. Zhu	
<i>In-situ</i> X-ray diffraction study of the phase evolution in undoped and Cr-doped Li _x Mn _{1.5} Ni _{0.5} O ₄ (0.1 ≤ x ≤ 1.0) 5-V cathode materials ..	236
W. Zhu, D. Liu, J. Trottier, C. Gagnon, A. Mauger, C.M. Julien, K. Zaghib	
Crystal modification of iron oxide scale by potassium addition and its application to lithium-ion battery anodes	357
D.-W. Jung, S.-W. Han, B.-S. Kong, E.-S. Oh	
Capacity fading mechanism in lithium sulfur cells using poly(ethylene glycol)-borate ester as plasticizer for polymer electrolytes ...	478
Z. Jin, K. Xie, X. Hong, Z. Hu	
Sn–O–C composite anode for Li secondary battery synthesized by an electrodeposition technique using organic carbonate electrolyte	527
T. Momma, M. Jeong, T. Yokoshima, H. Nara, A. Toyoda, T. Osaka	
Colloidal silica nanoparticle-assisted structural control of cellulose nanofiber paper separators for lithium-ion batteries	533
J.-H. Kim, J.-H. Kim, E.-S. Choi, H.K. Yu, J.H. Kim, Q. Wu, S.-J. Chun, S.-Y. Lee, S.-Y. Lee	
Layered Li[Ni _{0.5} Co _{0.2} Mn _{0.3}]O ₂ –Li ₂ MnO ₃ core–shell structured cathode material with excellent stability	589
X. Yang, X. Wang, L. Hu, G. Zou, S. Su, Y. Bai, H. Shu, Q. Wei, B. Hu, L. Ge, D. Wang, L. Liu	
A general polymer-assisted solution approach to grow transition metal oxide nanostructures directly on nickel foam as anodes for Li-ion batteries	604
Y. Xu, L. Fei, E. Fu, B. Yuan, J. Hill, Y. Chen, S. Deng, P. Andersen, Y. Wang, H. Luo	
Synthesis and characterization of LiCo _{1/3} Mn _{1/3} Fe _{1/3} PO ₄ /C nanocomposite cathode of lithium batteries with high rate performance ...	627
S. Akimoto, I. Taniguchi	
Novel polymer electrolyte from poly(carbonate-ether) and lithium tetrafluoroborate for lithium–oxygen battery	677
Q. Lu, Y. Gao, Q. Zhao, J. Li, X. Wang, F. Wang	

Micro-fibrous organic radical electrode to improve the electrochemical properties of organic rechargeable batteries	683
J.-K. Kim	
Elastic moduli of polycrystalline $\text{Li}_{15}\text{Si}_4$ produced in lithium ion batteries	732
Z. Zeng, N. Liu, Q. Zeng, Y. Ding, S. Qu, Y. Cui, W.L. Mao	
Interplay between two-phase and solid solution reactions in high voltage spinel cathode material for lithium ion batteries.	736
J. Xiao, X. Yu, J. Zheng, Y. Zhou, F. Gao, X. Chen, J. Bai, X.-Q. Yang, J.-G. Zhang	
Optimal management of stationary lithium-ion battery system in electricity distribution grids	742
A. Purvins, M. Sumner	
Synthesis and cathode properties of a cubic rocksalt-type Si-doped $\text{Li}_2\text{NiTiO}_4$ for lithium-ion batteries.	768
Y. Kawano, A. Kitajou, S. Okada	
Investigation of thermal aging and hydrolysis mechanisms in commercial lithium ion battery electrolyte	832
L. Terborg, S. Weber, F. Blaske, S. Passerini, M. Winter, U. Karst, S. Nowak	
Arrayed titanium dioxide shells architecture as anode of lithium ion microbattery.	838
J. Lei, W. Li, X. Li, L. Zeng	
Analysis of hard carbon for lithium-ion batteries by hard X-ray photoelectron spectroscopy	844
H. Hori, M. Shikano, H. Kobayashi, S. Koike, H. Sakaebe, Y. Saito, K. Tatsumi, H. Yoshikawa, E. Ikenaga	
Binder-free nitrogen-doped carbon nanotubes electrodes for lithium-oxygen batteries.	855
X. Lin, X. Lu, T. Huang, Z. Liu, A. Yu	
<i>In-situ</i> synthesis of carbon coated $\text{Li}_2\text{MnSiO}_4$ nanoparticles with high rate performance.	865
D. Sun, H. Wang, P. Ding, N. Zhou, X. Huang, S. Tan, Y. Tang	
Lithium Batteries: Engineering	
Computational models for simulations of lithium-ion battery cells under constrained compression tests	325
M.Y. Ali, W.-J. Lai, J. Pan	
Reducing diffusion-induced stresses of electrode-collector bilayer in lithium-ion battery by pre-strain	415
F. Hao, D. Fang	
Adaptive on-line prediction of the available power of lithium-ion batteries	548
W. Waag, C. Fleischer, D.U. Sauer	
Measuring electrical components of lithium ion battery at different states of charge	714
K.H. Norian	
Lithium Batteries: Applications	
Adaptive state of charge estimator for lithium-ion cells series battery pack in electric vehicles.	699
R. Xiong, F. Sun, X. Gong, H. He	
Lead-Acid Batteries: Science and Technology	
Solvothermal synthesis of α -PbO from lead dioxide and its electrochemical performance as a positive electrode material.	299
P. Gao, Y. Liu, X. Bu, M. Hu, Y. Dai, X. Gao, L. Lei	
Capacitive carbon and electrochemical lead electrode systems at the negative plates of lead-acid batteries and elementary processes on cycling	380
D. Pavlov, P. Nikolov	
Other Electrochemical Power Sources: Science and Technology	
Thermal hydraulic behavior and efficiency analysis of an all-vanadium redox flow battery	314
B. Xiong, J. Zhao, K.J. Tseng, M. Skyllas-Kazacos, T.M. Lim, Y. Zhang	
Investigation of the effect of shunt current on battery efficiency and stack temperature in vanadium redox flow battery	349
A. Tang, J. McCann, J. Bao, M. Skyllas-Kazacos	
Ti- and Zr-based metal-air batteries	400
A. Van der Ven, B. Puchala, T. Nagase	
Amphiphilic block copolymer membrane for vanadium redox flow battery.	575
F. Wang, J.M. Sylvia, M.M. Jacob, D. Peramunage	
Other Electrochemical Power Sources: Engineering	
The choice of the mathematical method for prediction of electrochemical accumulator parameters value in power installations of space-rocket objects	365
K.V. Bezruchko, A.O. Davidov, J.G. Katorgina, V.M. Logvin, A.A. Kharchenko	
Other Electrochemical Power Sources: Applications	
An implementation of particle swarm optimization to evaluate optimal under-voltage load shedding in competitive electricity markets	122
M.M. Hosseini-Bioki, M. Rashidinejad, A. Abdollahi	
Supercapacitors: Science and Technology	
Nitrogen-doped porous carbons by conversion of azo dyes especially in the case of tartrazine	41
Z.J. Zhang, C. Chen, P. Cui, X.Y. Chen	
Design, hydrothermal synthesis and electrochemical properties of porous birnessite-type manganese dioxide nanosheets on graphene as a hybrid material for supercapacitors	78
Y. Liu, D. Yan, R. Zhuo, S. Li, Z. Wu, J. Wang, P. Ren, P. Yan, Z. Geng	
Investigating the role of electrolyte acidity on hydrogen uptake in mesoporous activated carbons.	137
S.-E. Chun, J.F. Whitacre	

A novel asymmetric supercapacitor with an activated carbon cathode and a reduced graphene oxide–cobalt oxide nanocomposite anode.....	148
L.-J. Xie, J.-F. Wu, C.-M. Chen, C.-M. Zhang, L. Wan, J.-L. Wang, Q.-Q. Kong, C.-X. Lv, K.-X. Li, G.-H. Sun	
Important parameters affecting the cell voltage of aqueous electrical double-layer capacitors	289
T.-H. Wu, C.-T. Hsu, C.-C. Hu, L.J. Hardwick	
Nanoporous LiMn_2O_4 spinel prepared at low temperature as cathode material for aqueous supercapacitors	560
F.X. Wang, S.Y. Xiao, X.W. Gao, Y.S. Zhu, H.P. Zhang, Y.P. Wu, R. Holze	
Sodium titanate nanotube/graphite, an electric energy storage device using Na^+ -based organic electrolytes	597
L. Zhao, L. Qi, H. Wang	
Synthesis and characterization of mesoporous spinel NiCo_2O_4 using surfactant-assembled dispersion for asymmetric supercapacitors.....	662
C.-T. Hsu, C.-C. Hu	
Mild chemical strategy to grow micro-roses and micro-woolen like arranged CuO nanosheets for high performance supercapacitors.....	687
D.P. Dubal, G.S. Gund, R. Holze, C.D. Lokhande	
Direct-growth of poly(3,4-ethylenedioxythiophene) nanowires/carbon cloth as hierarchical supercapacitor electrode in neutral aqueous solution.....	718
Y.-K. Hsu, Y.-C. Chen, Y.-G. Lin, L.-C. Chen, K.-H. Chen	
Facile fabrication of self-assembled polyaniline nanotubes doped with D-tartaric acid for high-performance supercapacitors	797
J. Mu, G. Ma, H. Peng, J. Li, K. Sun, Z. Lei	
Photo-electrochemical Cells	
Novel two-step synthesis of NiS nanoplatelet arrays as efficient counter electrodes for dye-sensitized solar cells	28
W. Zhao, X. Zhu, H. Bi, H. Cui, S. Sun, F. Huang	
Study of H_2SO_4 concentration on properties of H_2SO_4 doped polyaniline counter electrodes for dye-sensitized solar cells.....	438
S. Wang, S. Lu, X. Li, X. Zhang, S. He, T. He	
Theoretical investigations of metal-free dyes for solar cells: Effects of electron donor and acceptor groups on sensitizers.....	464
N. Santhanamoorthi, K.-H. Lai, F. Taufany, J.-C. Jiang	
Fabrication of coral-like Cu_2O nanoelectrode for solar hydrogen generation	541
Y.-K. Hsu, C.-H. Yu, Y.-C. Chen, Y.-G. Lin	
Solvothermal growth of high surface area mesoporous anatase TiO_2 nanospheres and investigation of dye-sensitized solar cell properties.....	803
J. Archana, M. Navaneethan, Y. Hayakawa	
Morphology transformations in tetrabutyl titanate–acetic acid system and sub-micron/micron hierarchical TiO_2 for dye-sensitized solar cells	848
N. Huang, Y. Xie, B. Sebo, Y. Liu, X. Sun, T. Peng, W. Sun, C. Bu, S. Guo, X. Zhao	
Molecular engineering on a chlorophyll derivative, chlorin e_6 , for significantly improved power conversion efficiency in dye-sensitized solar cells	860
X.-F. Wang, H. Tamiaki, O. Kitao, T. Ikeuchi, S.-i. Sasaki	