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IN THIS ISSUE

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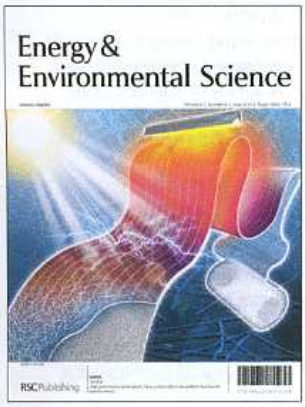

Cover
See Lee *et al.*, pp. 1811–1817.
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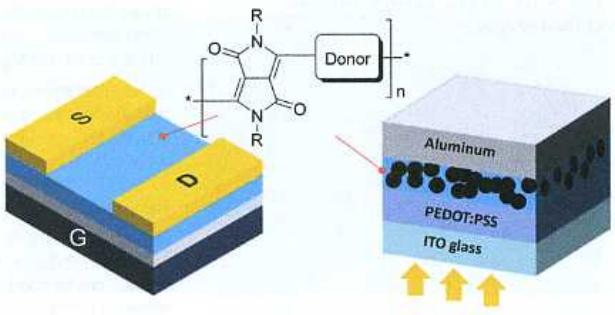
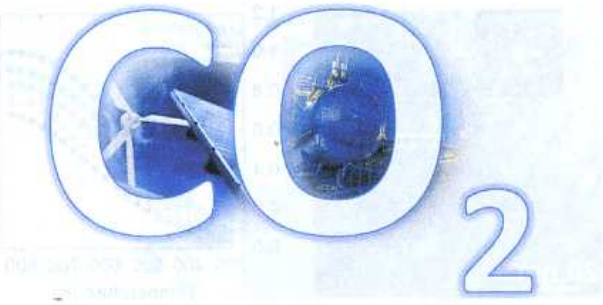
Inside cover
See Román-Leshkov *et al.*, pp. 1732–1738.
Image reproduced by permission of Yuriy Román-Leshkov from *Energy Environ. Sci.*, 2013, **6**, 1732.

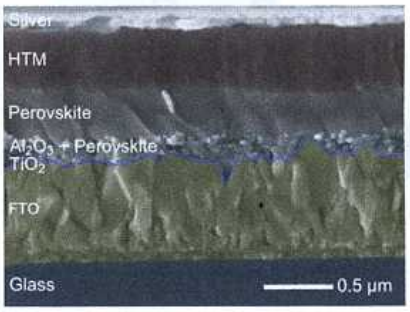
REVIEWS

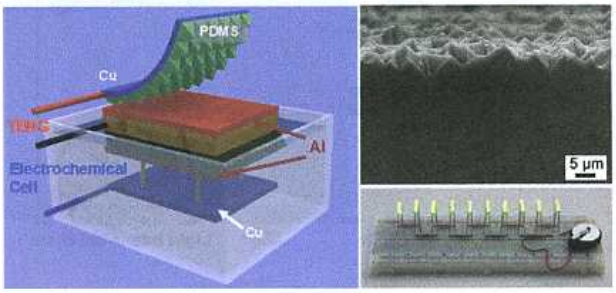


PERSPECTIVE



COMMUNICATIONS





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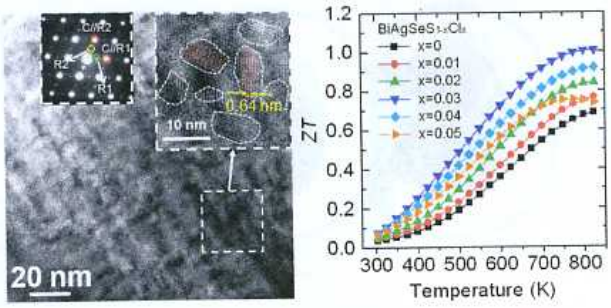
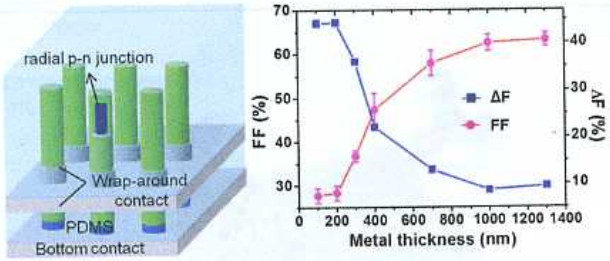


High thermoelectric performance in n-type BiAgSeS due to intrinsically low thermal conductivity

Yan-Ling Pei, Haijun Wu, Jiehe Sui, Jing Li, David Berardan, Celine Barreteau, Lin Pan, Nita Dragoe, Wei-Shu Liu, Jiaqing He* and Li-Dong Zhao*

Intrinsically low thermal conductivity coupling with enhanced electrical transport properties leads to a $ZT \sim 1.0$ at 823 K for $BiAgSeS_{0.97}Cl_{0.03}$.

1756

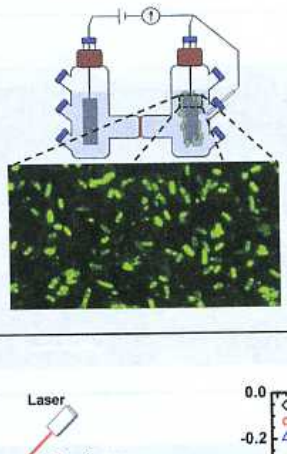


A novel wrap-around metal contact optimized for radial p–n junction Si wire solar cells

Sun-Mi Shin, Jin-Young Jung, Kwang-Tae Park, Han-Don Um, Sang-Won Jee, Yoon-Ho Nam and Jung-Ho Lee*

A novel wrap around top-contact method for radial junction wire solar cells has been developed without the need for transparent conducting oxides.

1761

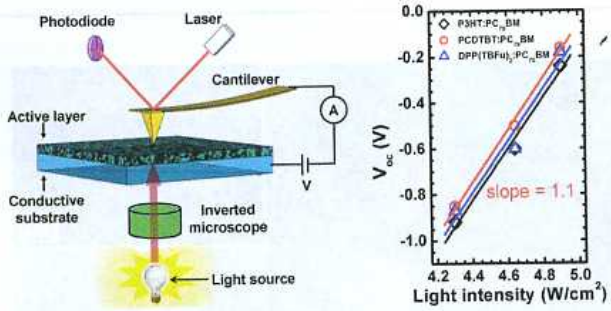


A lipid membrane intercalating conjugated oligoelectrolyte enables electrode driven succinate production in *Shewanella*

Alexander W. Thomas, Logan E. Garner, Kelly P. Nevin, Trevor L. Woodard, Ashley E. Franks, Derek R. Lovley, James J. Sumner, Christian J. Sund and Guillermo C. Bazan*

A synthetic, lipid membrane intercalating molecule enables *Shewanella* to use a graphite electrode as the sole electron donor for production of succinate.

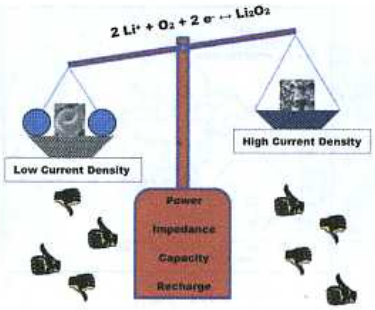
1766

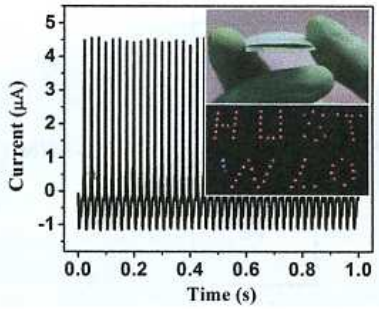


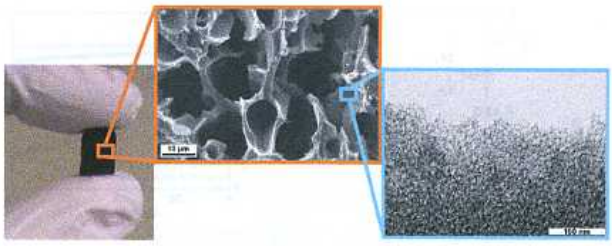
High light intensity effects on nanoscale open-circuit voltage for three common donor materials in bulk heterojunction solar cells

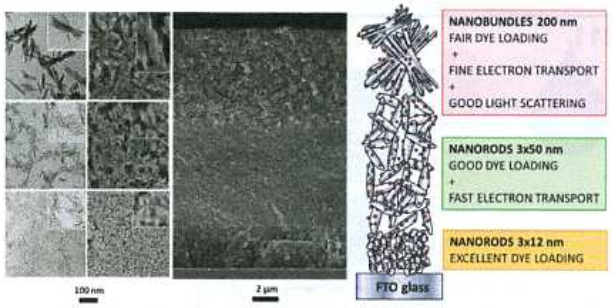
Yuan Zhang, Xuan-Dung Dang, Martijn Kuik, Sarah R. Cowan, Peter Zalar, Chunki Kim and Thuc-Quyen Nguyen*

The V_{oc} of three benchmarked organic bulk heterojunctions shows a unified electrode work function dependence measured by photoconductive atomic force microscopy.









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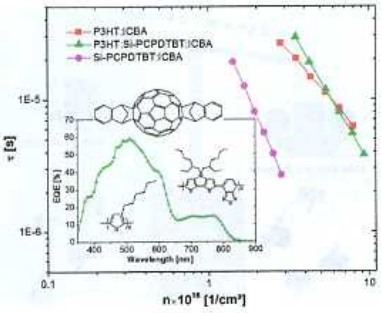
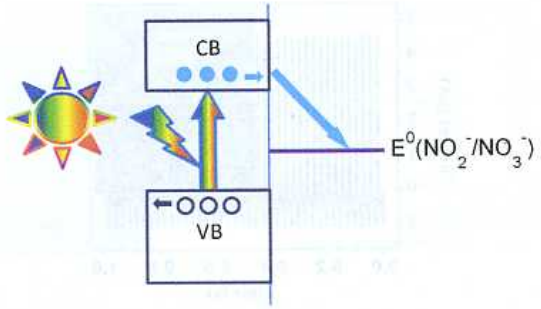


IR sensitization of an indene-C60 bisadduct (ICBA) in ternary organic solar cells

Tayebeh Ameri,* Thomas Heumüller, Jie Min, Ning Li, Gebhard Matt, Ullrich Scherf and Christoph J. Brabec

We demonstrate a smart strategy to sensitize the indene-C60 bisadduct in the near IR region employing the concept of ternary organic solar cells.

1802

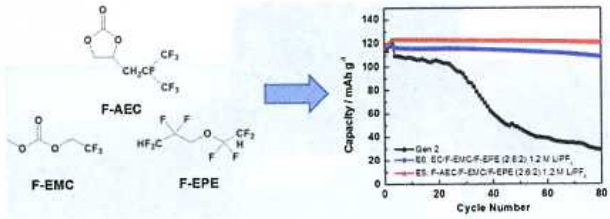


Photoelectrochemical reduction of nitrates at the illuminated p-$GaInP_2$ photoelectrode

Heli Wang* and John A. Turner

Nitrates are photoelectrochemically reduced at the p-$GaInP_2$ electrode with very high efficiency, by promoting the rate-determining step with illumination.

1806

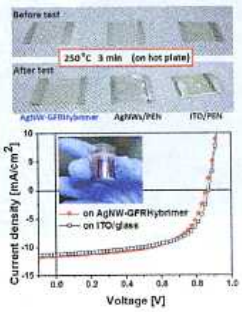


Fluorinated electrolytes for 5 V lithium-ion battery chemistry

Zhengcheng Zhang,* Libo Hu, Huiming Wu, Wei Weng, Meiten Koh, Paul C. Redfern, Larry A. Curtiss and Khalil Amine

Fluorinated electrolytes for LTO/LNMO high voltage lithium ion batteries.

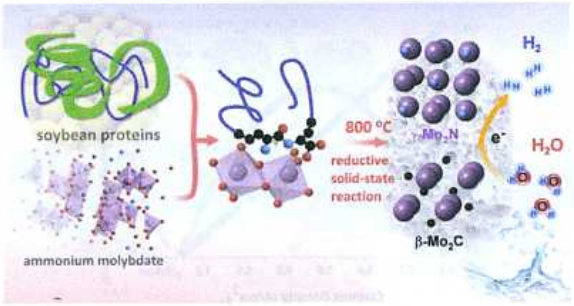
1811

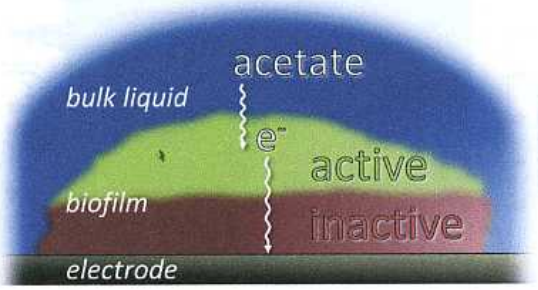


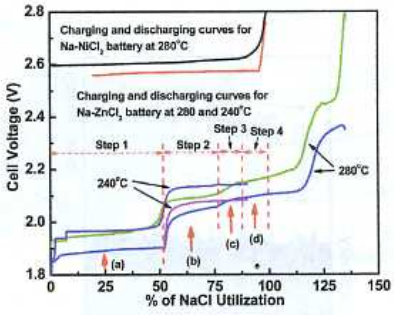
High-performance hybrid plastic films: a robust electrode platform for thin-film optoelectronics

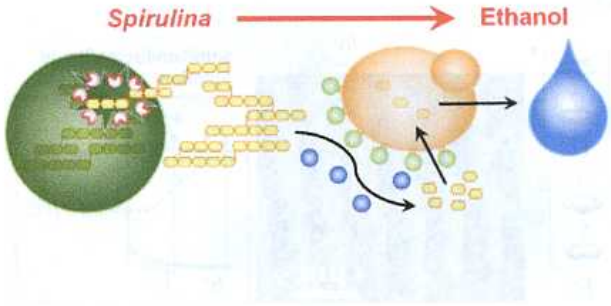
Jungho Jin, Jaemin Lee, Seonju Jeong, SeungCheol Yang, Ji-Hoon Ko, Hyeon-Gyun Im, Se-Woong Baek, Jung-Yong Lee* and Byeong-Soo Bae*

A flexible hybrid film is proposed as a robust electrode for thin-film optoelectronic devices: a silver nanowire embedded glass-fabric reinforced hybrimer.









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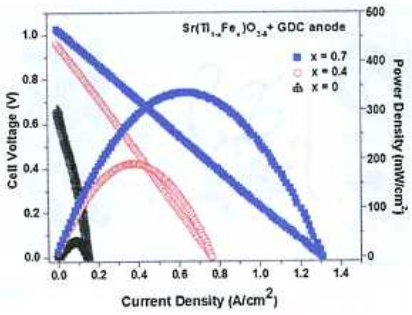
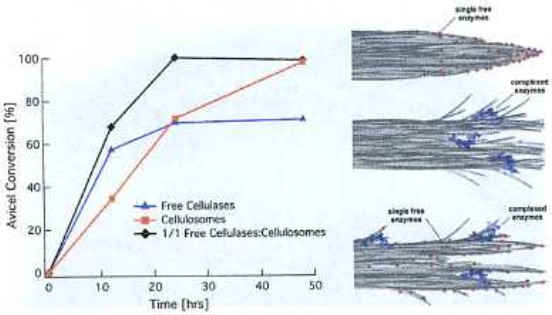


Fe-substituted $SrTiO_{3-\delta}$–$Ce_{0.9}Gd_{0.1}O_2$ composite anodes for solid oxide fuel cells

Sungmee Cho, Daniel E. Fowler, Elizabeth C. Miller, J. Scott Cronin, Kenneth R. Poeppelmeier and Scott A. Barnett*

A new composite solid oxide fuel cell anode material, $SrTi_{1-x}Fe_xO_{3-\delta}$ mixed with Gd-doped ceria, was tested in $La_{0.9}Sr_{0.1}Ga_{0.8}Mg_{0.2}O_3$ electrolyte-supported cells with $La_{0.4}Ce_{0.6}O_2$ barrier layers and $La_{0.6}Sr_{0.4}Fe_{0.8}Co_{0.2}O_3$ cathodes.

1858

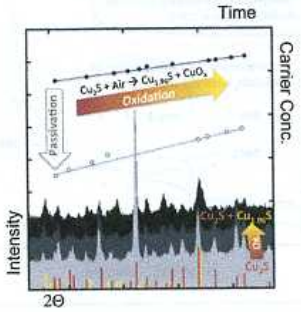


Fungal cellulases and complexed cellulosomal enzymes exhibit synergistic mechanisms in cellulose deconstruction

Michael G. Resch,* Bryon S. Donohoe, John O. Baker, Stephen R. Decker, Edward A. Bayer, Gregg T. Beckham and Michael E. Himmel

Free cellulases and cellulosomal systems exhibit different physical mechanisms in biomass deconstruction, when mixed together display significant synergy. This enzymatic combination suggests new approaches for biomass saccharification.

1868

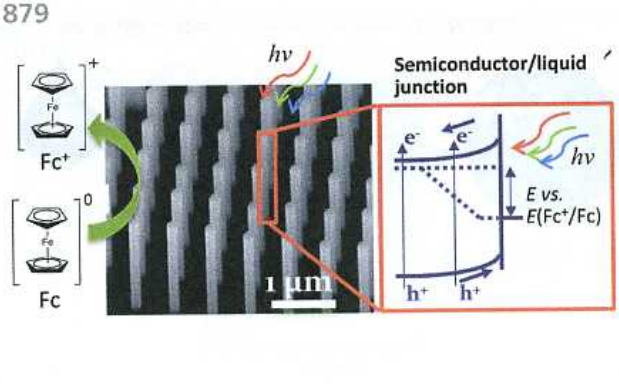


Structural, optical, and electronic stability of copper sulfide thin films grown by atomic layer deposition

Alex B. F. Martinson,* Shannon C. Riha, Elijah Thimsen, Jeffrey W. Elam and Michael J. Pellin

The intrinsic p-type doping of model Cu_2S thin films is monitored in time as a function storage environment. Surface oxidation is characterized and ameliorated.

1879



Optical, electrical, and solar energy-conversion properties of gallium arsenide nanowire-array photoanodes

Shu Hu, Chun-Yung Chi, Katherine T. Fountaine, Maoqing Yao, Harry A. Atwater,* P. Daniel Dapkus,* Nathan S. Lewis* and Chongwu Zhou

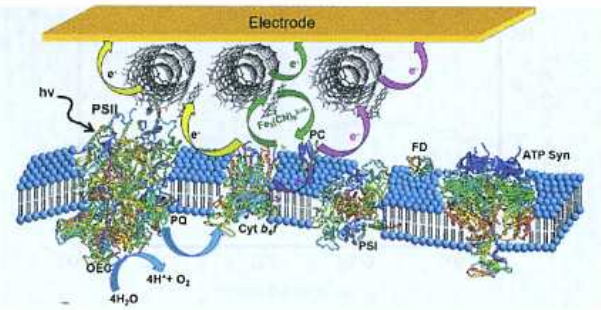
Nanowire arrays of GaAs on Si show promise for use in solar energy conversion applications.

1891

High photo-electrochemical activity of thylakoid–carbon nanotube composites for photosynthetic energy conversion

Jessica O. Calkins, Yogeswaran Umasankar, Hugh O'Neill and Ramaraja P. Ramasamy*

Multiple membrane proteins in plant thylakoids participate in direct electron transfer with the nanostructured electrode resulting in photocurrent generation.

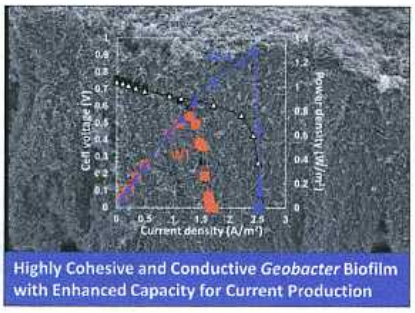


1901

Engineering *Geobacter sulfurreducens* to produce a highly cohesive conductive matrix with enhanced capacity for current production

Ching Leang,* Nikhil S. Malvankar, Ashley E. Franks, Kelly P. Nevin and Derek R. Lovley

These studies demonstrate that it is possible to enhance the bioelectronics performance and tune the electrical properties of living, self-renewing materials with genetic engineering.

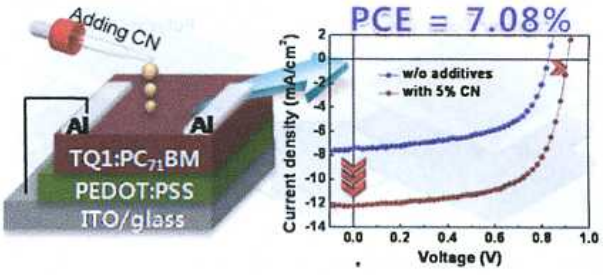


1909

High-efficiency polymer solar cells with a cost-effective quinoxaline polymer through nanoscale morphology control induced by practical processing additives

Yiho Kim, Hye Rim Yeom, Jin Young Kim* and Changduk Yang*

Upon adding CN, cost-effective quinoxaline (TQ1)-based polymer solar cells afford a high efficiency of 7.08%.

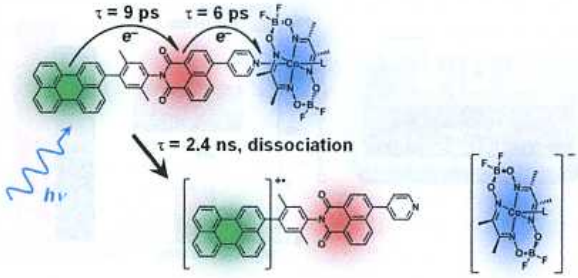


1917

Photoinitiated multi-step charge separation and ultrafast charge transfer induced dissociation in a pyridyl-linked photosensitizer–cobaloxime assembly

Brad S. Veldkamp, Won-Sik Han, Scott M. Dyar, Samuel W. Eaton, Mark A. Ratner and Michael R. Wasielewski*

Photoinduced multi-step charge separation with a donor-bridge-acceptor-catalyst triad generates the reduced catalyst in high quantum yield and initiates dissociation.



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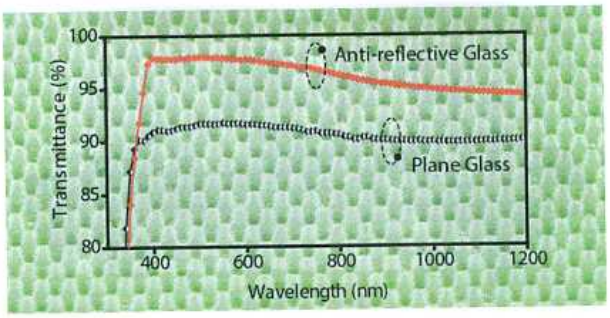
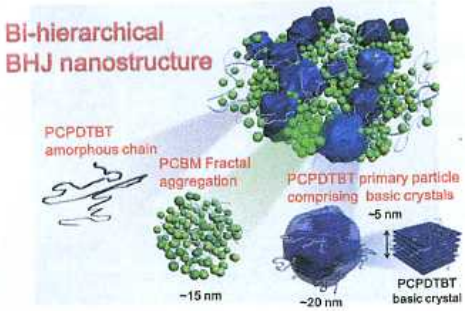


Robust and durable polyhedral oligomeric silsesquioxane-based anti-reflective nanostructures with broadband quasi-omnidirectional properties

Hemant Kumar Raut, Saman Safari Dinachali, Ai Yu He, V. Anand Ganesh, Mohammad S. M. Saifullah,* Jaslyn Law and Seeram Ramakrishna*

Polyhedral oligomeric silsesquioxane-based moth's eye anti-reflective nanostructures imprinted on glass with broadband quasi-omnidirectional properties are demonstrated.

1938

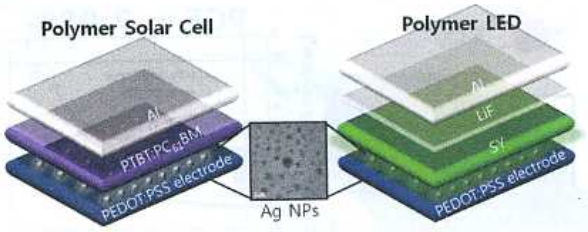


Bi-hierarchical nanostructures of donor–acceptor copolymer and fullerene for high efficient bulk heterojunction solar cells

Hsueh-Chung Liao, Cheng-Si Tsao,* Yu-Tsun Shao, Sheng-Yung Chang, Yu-Ching Huang, Chih-Min Chuang, Tsung-Han Lin, Charn-Ying Chen, Chun-Jen Su, U-Ser Jeng, Yang-Fang Chen and Wei-Fang Su*

Bi-hierarchical nanostructures of D–A copolymers and fullerenes tuned by solvent additives are characterized by GISAXS/GIWAXS technique and model analysis.

1949

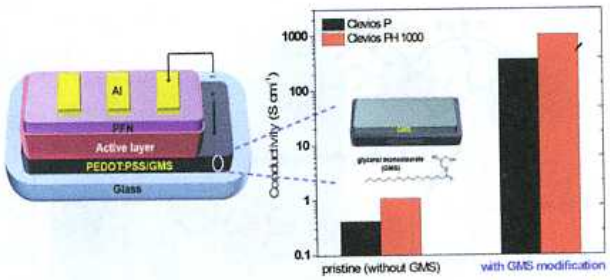


Highly efficient plasmonic organic optoelectronic devices based on a conducting polymer electrode incorporated with silver nanoparticles

Seo-Jin Ko, Hyosung Choi, Wonho Lee, Taehyo Kim, Bo Ram Lee, Jae-Woo Jung, Jong-Ryul Jeong, Myoung Hoon Song, Jeong Chul Lee, Han Young Woo* and Jin Young Kim*

A solution-processed PEDOT:PSS electrode incorporated with silver nanoparticles can be a promising candidate for replacing indium-tin-oxide in organic optoelectronic devices.

1956



High-efficiency ITO-free polymer solar cells using highly conductive PEDOT:PSS/surfactant bilayer transparent anodes

Wenfeng Zhang, Baofeng Zhao, Zhicai He, Xuemei Zhao, Haitao Wang, Shangfeng Yang,* Hongbin Wu* and Yong Cao

A PEDOT:PSS/surfactant (glycerol monostearate, GMS) bilayer film was prepared and applied as the transparent anode for high-efficiency ITO-free BHJ-PSC devices.

1965

Facile synthesis of carbon-coated hematite nanostructures for solar water splitting

Jiujun Deng, Xiaoxin Lv, Jing Gao, Aiwu Pu, Ming Li, Xuhui Sun* and Jun Zhong*

Carbon-coated hematite was prepared by a simple pyrolysis of ferrocene with a photocurrent of 2.1 mA cm^{-2} at 1.23 V.