

IN THIS ISSUE

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Cover
See Odobel *et al.*, pp. 2041–2052. Image reproduced by permission of Fabrice Odobel from *Energy Environ. Sci.*, 2013, **6**, 2041.



Inside cover
See Poizot *et al.*, pp. 2124–2133. Image reproduced by permission of Philippe Poizot from *Energy Environ. Sci.*, 2013, **6**, 2124.

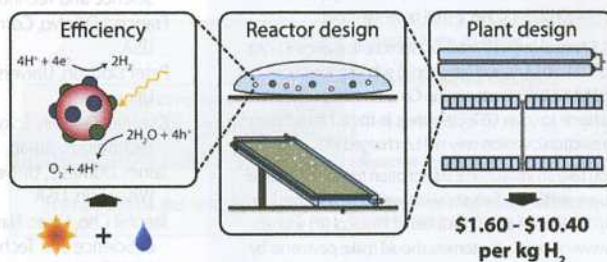
ANALYSIS

1983

Technical and economic feasibility of centralized facilities for solar hydrogen production via photocatalysis and photoelectrochemistry

Blaise A. Pinaud, Jesse D. Benck, Linsey C. Seitz, Arnold J. Forman, Zhebo Chen, Todd G. Deutsch, Brian D. James, Kevin N. Baum, George N. Baum, Shane Ardo, Heli Wang, Eric Miller and Thomas F. Jaramillo*

This work describes the design and technoconomics of four conceptual water splitting reactors based on particle suspensions and panel electrodes.



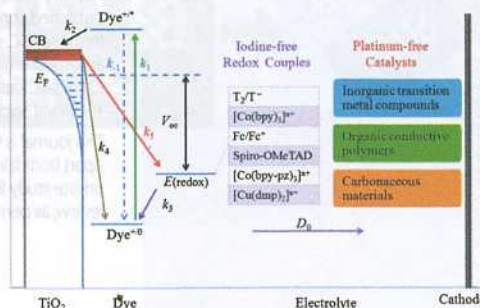
REVIEWS

2003

Recent advances in alternative cathode materials for iodine-free dye-sensitized solar cells

Feng Hao, Pei Dong, Qiang Luo, Jianbao Li, Jun Lou* and Hong Lin*

Recent advances in novel platinum-free cathode materials for iodine-free electrolytes based DSCs are selectively summarized and reviewed.

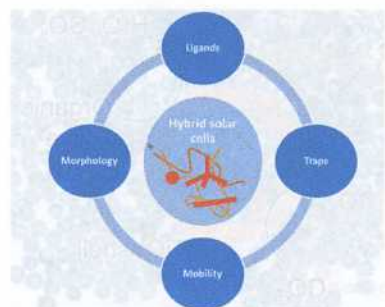


2020

The renaissance of hybrid solar cells: progresses, challenges, and perspectives

Feng Gao,* Shenqiang Ren* and Jianpu Wang*

This article reviews fundamental photovoltaic processes in the operation of hybrid solar cells, and relates recent advances with these processes.



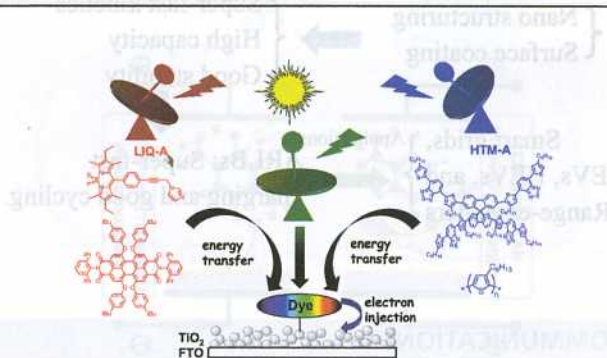
PERSPECTIVES

2041

Bio-inspired artificial light-harvesting antennas for enhancement of solar energy capture in dye-sensitized solar cells

Fabrice Odobel,* Yann Pellegrin and Julien Warnan

This perspective article highlights the benefit of antenna effect to amplify light absorption cross section in dye-sensitized solar cell.

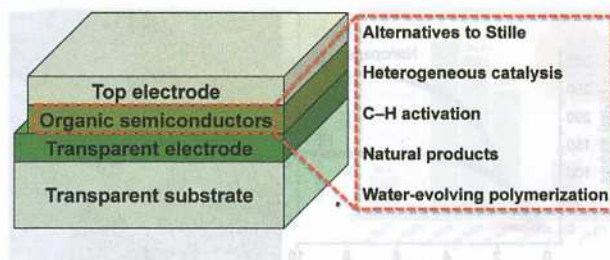


2053

Green chemistry for organic solar cells

Daniel J. Burke and Darren J. Lipomi*

This Perspective discusses strategies for synthesizing semiconducting polymers for organic solar cells using green chemistry.

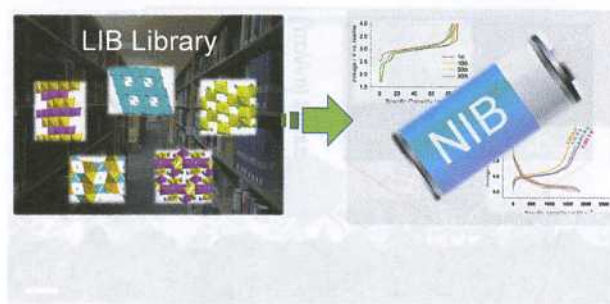


2067

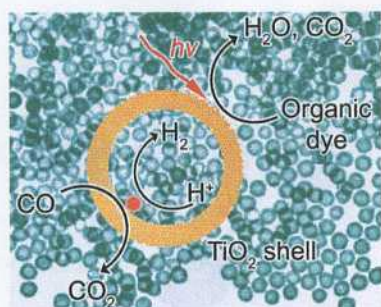
Charge carriers in rechargeable batteries: Na ions vs. Li ions

Sung You Hong, Youngjin Kim, Yuwon Park, Aram Choi, Nam-Soon Choi and Kyu Tae Lee*

This perspective provides a comparative overview on similarities and dissimilarities of Li-ion vs. Na-ion batteries in terms of negative and positive electrodes.



2082

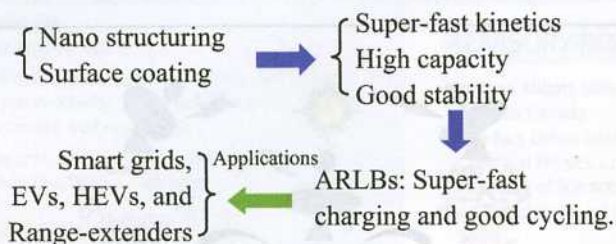


Tailored synthesis of mesoporous TiO_2 hollow nanostructures for catalytic applications

Ji Bong Joo, Michael Dahl, Na Li, Francisco Zaera and Yadong Yin*

In this minireview we summarize the recent advances in tailored synthesis of mesoporous TiO_2 hollow nanostructures and their catalytic applications.

2093



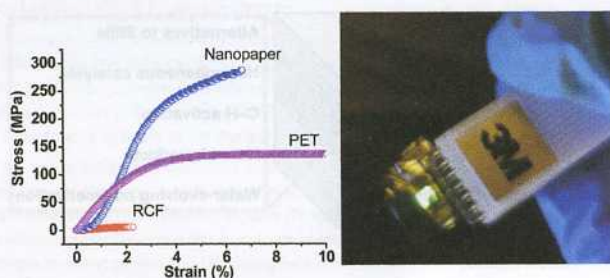
Aqueous rechargeable lithium batteries as an energy storage system of superfast charging

Wei Tang, Yusong Zhu, Yuyang Hou, Lili Liu, Yuping Wu,* Kian Ping Loh, Hanping Zhang and Kai Zhu

The advantages and challenges associated with aqueous rechargeable lithium batteries, with emphasis on the electrochemical performance of various electrode materials, is discussed.

COMMUNICATIONS

2105

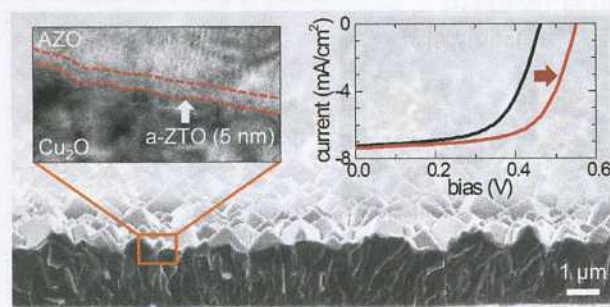


Biodegradable transparent substrates for flexible organic-light-emitting diodes

Hongli Zhu, Zhengguo Xiao, Detao Liu, Yuanyuan Li, Nicholas J. Weadock, Zhiqiang Fang, Jinsong Huang and Liangbing Hu*

Transparent nanopaper and a regenerated cellulose film are prepared and their properties are compared. Highly flexible organic-light-emitting diodes (OLEDs) are also demonstrated on the biodegradable substrates.

2112



Ultrathin amorphous zinc-tin-oxide buffer layer for enhancing heterojunction interface quality in metal-oxide solar cells

Yun Seog Lee, Jaeyeong Heo, Sin Cheng Siah, Jonathan P. Malloa, Riley E. Brandt, Sang Bok Kim, Roy G. Gordon and Tonio Buonassisi*

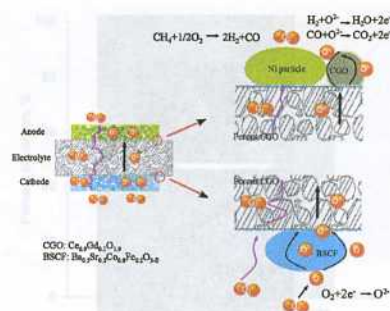
An atomic-layer deposited, tunable amorphous zinc-tin-oxide buffer layer reduces dark saturation current and increases open-circuit voltage and fill-factor in all-metal-oxide thin film solar cells.

2119

An all porous solid oxide fuel cell (SOFC): a bridging technology between dual and single chamber SOFCs

Youmin Guo, Mehdi Bessaa, Sonia Aguado, Marlu Cesar Steil, Damien Rembelski, Mathilde Rieu, Jean-Paul Viricelle, Nassira Benameur, Christian Guizard, Caroline Tardivat, Philippe Vernoux and David Farrusseng*

A porous conducting CGO electrolyte can control the oxygen concentration at the anode side for enabling safe methane oxy-reforming.



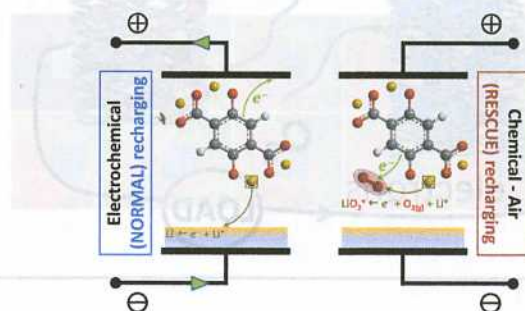
PAPERS

2124

A green Li-organic battery working as a fuel cell in case of emergency

Stéven Renault, Sébastien Gottis, Anne-Lise Barrès, Matthieu Courty, Olivier Chauvet, Franck Dolhem and Philippe Poizot*

Elaboration of a green organic cathode material for a Li battery which is self-rechargeable in air: towards smarter electrochemical generators with advanced chemistries.

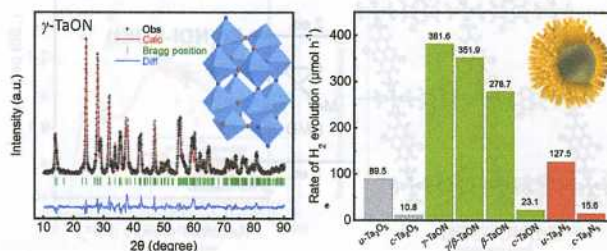


2134

Hierarchical metastable γ -TaON hollow structures for efficient visible-light water splitting

Zheng Wang, Jungang Hou, Chao Yang, Shuqiang Jiao, Kai Huang and Hongmin Zhu*

Novel hierarchical tantalum-based oxide and (oxy)nitride with hollow urchin-like nanostructures have been synthesized for the first time, and single-phase metastable γ -TaON among the tantalum (oxy)nitrides exhibits high photocatalytic activity for photocatalytic and photoelectrochemical performances.



2145

A low-cost and high performance ball-milled Si-based negative electrode for high-energy Li-ion batteries

Magali Gauthier, Driss Mazouzi, David Reyter, Bernard Lestriez,* Philippe Moreau, Dominique Guyomard and Lionel Roué*

A Si-based anode with improved performance can be achieved using high-energy ball-milling as a cheap and easy process to produce Si powders prepared from a coarse-grained material.

