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Energy & Environmental Science

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ISSN 1754–5692 CODEN EESNBY 8(11) 3051–3382 (2015)

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See Chengxiang Xiang, Nathan S. Lewis, Harry A. Atwater *et al.*, pp. 3166–3172. Image reproduced by permission of Chengxiang Xiang from *Energy Environ. Sci.*, 2015, **8**, 3166.

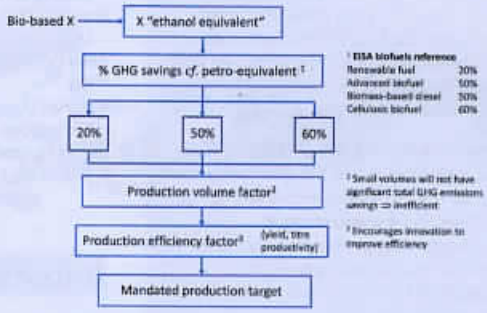
Inside cover
See Yongchun Zhu, Yitai Qian *et al.*, pp. 3181–3186. Image reproduced by permission of Yongchun Zhu from *Energy Environ. Sci.*, 2015, **8**, 3181.

OPINION

Balancing the bioeconomy: supporting biofuels and bio-based materials in public policy

Jim Philp

Key objectives for a bioeconomy are now embedded in the strategic activities of more than 30 countries, with an increasing number developing a national bioeconomy strategy.

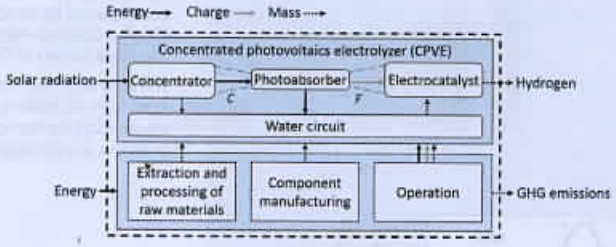


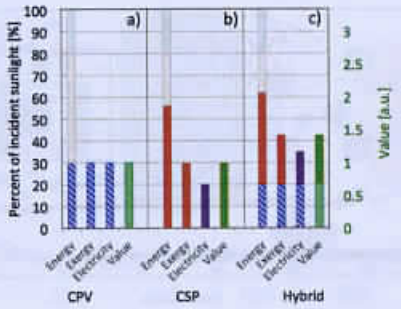
ANALYSIS

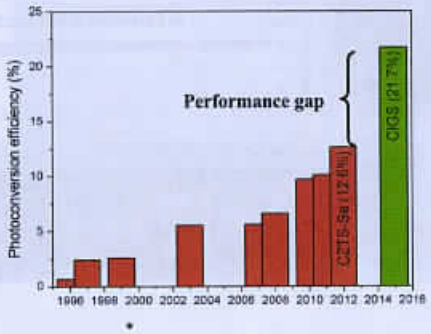
Design guidelines for concentrated photo-electrochemical water splitting devices based on energy and greenhouse gas yield ratios

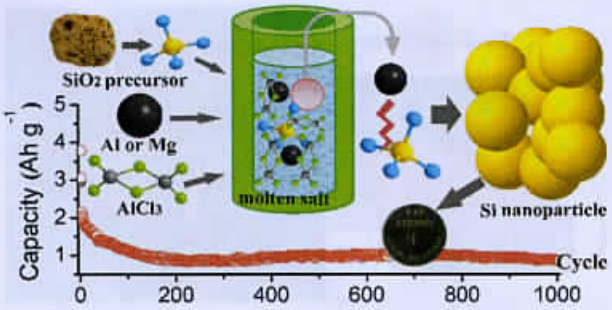
Mikaël Dumortier and Sophia Haussener*

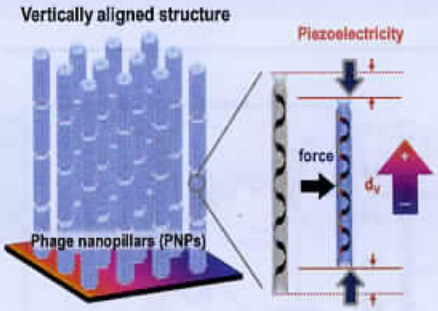
Solar irradiation concentration is considered a viable strategy for reducing the energy and financial investment of photo-electrochemical hydrogen generation.

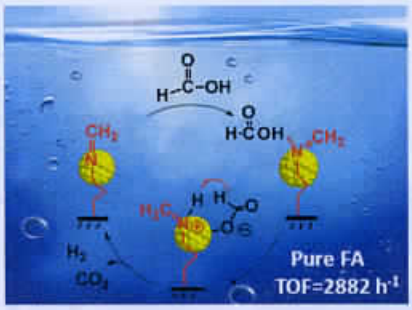


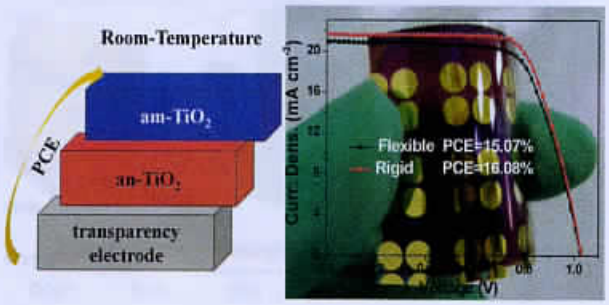








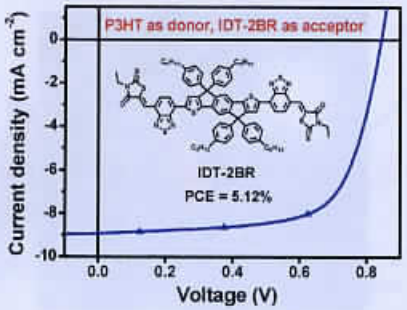




High efficiency flexible perovskite solar cells using superior low temperature TiO_2

Dong Yang, Ruixia Yang, Jing Zhang, Zhou Yang, Shengzhong (Frank) Liu* and Can Li*

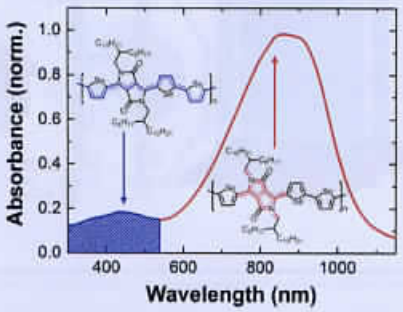
15.07% efficiency for flexible perovskite solar cells is achieved using low temperature TiO_2.



A planar electron acceptor for efficient polymer solar cells

Yao Wu, Huitao Bai, Zaiyu Wang, Pei Cheng, Siya Zhu, Yifan Wang, Wei Ma and Xiaowei Zhan*

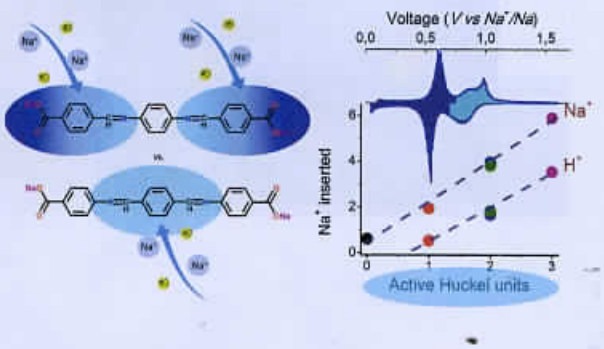
Polymer solar cells (PSCs) based on blended films of a novel planar acceptor and P3HT gave power conversion efficiencies of up to 5.12%, which are much higher than that of $PC_{61}BM$-based control devices (3.71%) and the highest values reported for P3HT-based fullerene-free PSCs.



Natures of optical absorption transitions and excitation energy dependent photostability of diketopyrrolopyrrole (DPP)-based photovoltaic copolymers

Sebastian Wood, Jessica Wade, Munazza Shahid, Elisa Collado-Fregoso, Donal D. C. Bradley, James R. Durrant, Martin Heeney and Ji-Seon Kim*

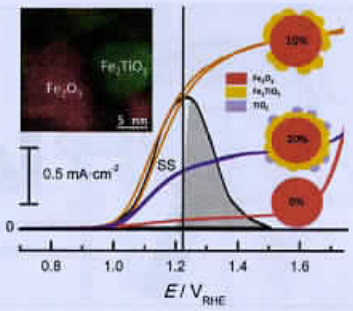
The photostability of diketopyrrolopyrrole (DPP)-based copolymers is examined by investigating the natures of the two dominant optical absorption transitions.

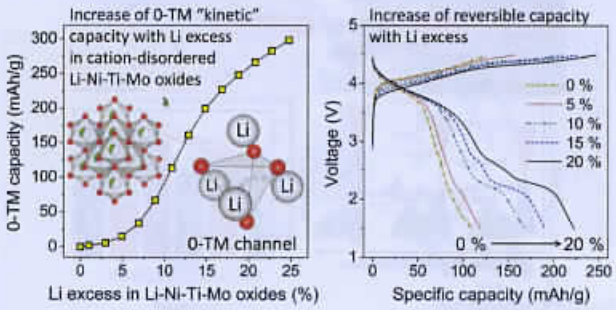


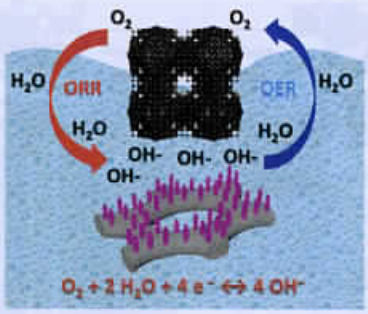
Oligomeric-Schiff bases as negative electrodes for sodium ion batteries: unveiling the nature of their active redox centers

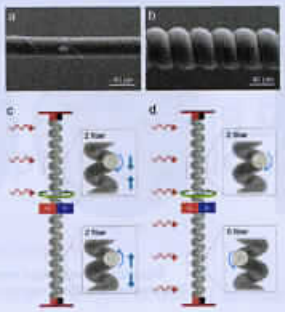
Maria López-Herraiz, Elizabeth Castillo-Martinez,* Javier Carretero-González, Javier Carrasco, Teófilo Rojo and Michel Armand*

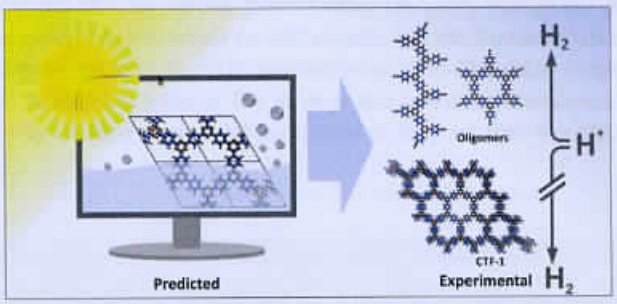
Novel hybrids between carboxylate and aromatic Schiff base show reversible sodium insertion below 1.2 V *vs.* Na^+. Identifying the redox active units leads to sustainable and low cost anode materials beyond 250 mA h g^{-1}.

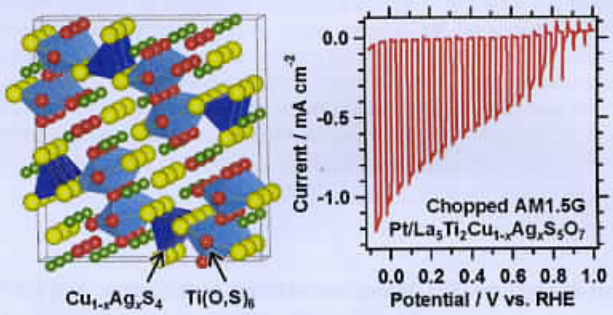


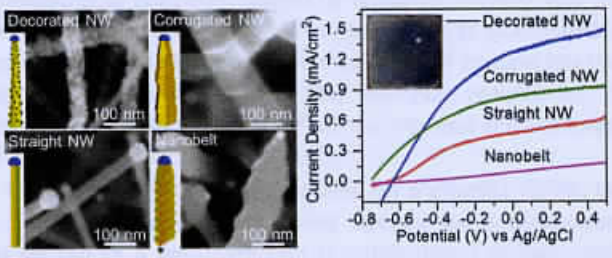


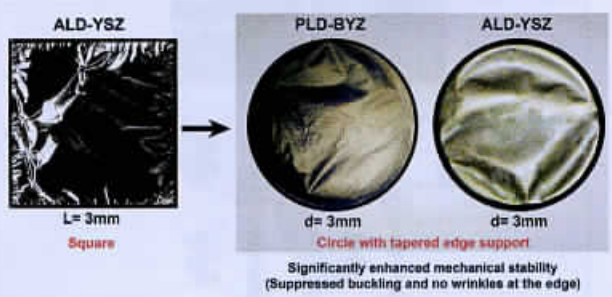












A circular membrane for nano thin film micro solid oxide fuel cells with enhanced mechanical stability

Jong Dae Baek, Yong-Jin Yoon, Wonyoung Lee and Pei-Chen Su*

We demonstrate a new architecture for a low temperature solid oxide fuel cell to enlarge the lateral dimension of the fragile nano thin film electrolyte from the micrometer to millimeter scale with greatly enhanced mechanical stability.