

Energy & Environmental Science

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ISSN 1754–5706 CODEN EESNBY 16(10) 4107–4696 (2023)



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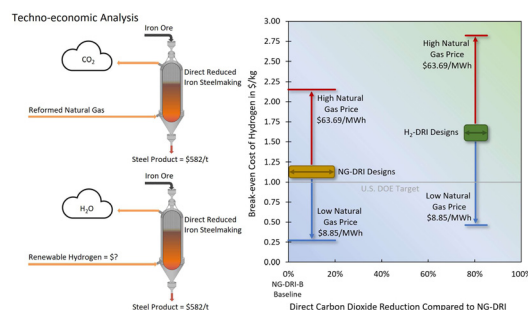
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ANALYSIS

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Green steel: design and cost analysis of hydrogen-based direct iron reduction

Fabian Rosner, Dionissios Papadias, Kriston Brooks, Kelvin Yoro, Rajesh Ahluwalia, Tom Autrey and Hanna Breunig*

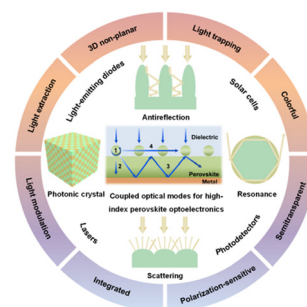


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Light management using photonic structures towards high-index perovskite optoelectronics: fundamentals, designing, and applications

Yan Zhan,* Chang Li, Zhigang Che, Ho Cheung Shum, Xiaotian Hu* and Huizeng Li*



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(electronic: ISSN 1754-5706) is published 12 times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, CB4 0WF, UK.

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Henry J. Snaith, Gregory J. Wilson and
Ruy Sebastian Bonilla

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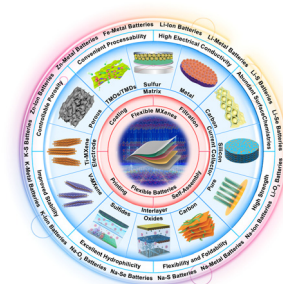
Figure 1 illustrates the various parameters of rear junction silicon solar cells. The parameters and their corresponding configurations are as follows:

- Silicon wafer surfaces:** Four different surface textures are shown, ranging from smooth to various degrees of roughness.
- Silicon wafer polarity:** Two configurations are shown: one with orange wavy lines (n-type) and one with dark blue wavy lines (p-type).
- Silicon p-n junction location:** Three configurations are shown, representing different depths and positions of the p-n junction within the wafer.
- Rear contact type and bifaciality:** Four configurations are shown, including different contact patterns and bifacial designs.
- Rear metalisation order:** Two configurations are shown, representing different sequences of metal layers.

Two-dimensional MXenes for flexible energy storage devices

Yongling An,* Yuan Tian, Hengtao Shen, Quanyan Man,
Shenqlin Xiong and Jinkui Feng*

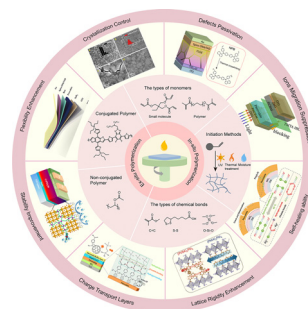
Yongling An,* Yuan Tian, Hengtao Shen, Quanyan Man,
Shenqlin Xiong and Jinkui Feng*



Cross-linking polymerization boosts the performance of perovskite solar cells: from material design to performance regulation

Xing Yin, Ziyu Wang, Yingjie Zhao,* Shasha Zhang,
Yiqiang Zhang and Yanlin Song*

Xing Yin, Ziyu Wang, Yingjie Zhao,* Shasha Zhang,
Yiqiang Zhang and Yanlin Song*

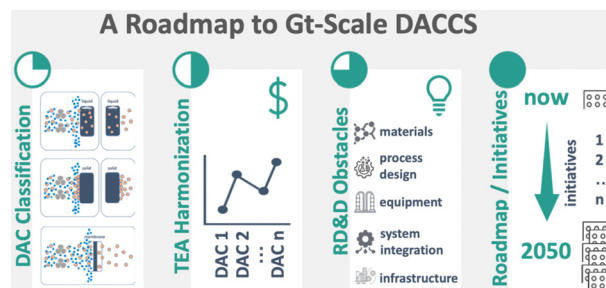


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A roadmap for achieving scalable, safe, and low-cost direct air carbon capture and storage

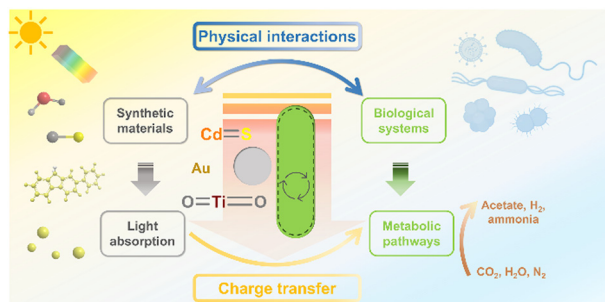
Lukas Küng, Silvan Aeschlimann, Charitheia Charalambous,
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PERSPECTIVES

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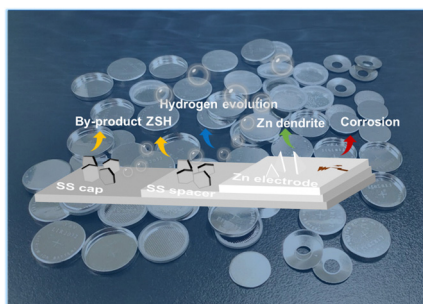


Making the connections: physical and electric interactions in biohybrid photosynthetic systems

Ying Yang, Lu-Ning Liu, Haining Tian, Andrew I. Cooper* and Reiner Sebastian Sprick*

COMMUNICATIONS

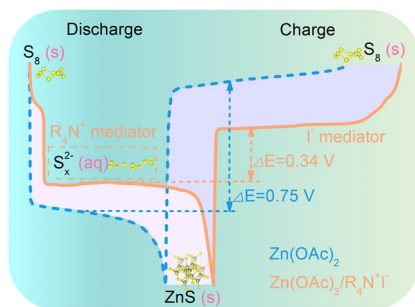
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The pitfalls of using stainless steel (SS) coin cells in aqueous zinc battery research

Gang Wu, Yang Yang, Ruijie Zhu, Wuhai Yang, Huijun Yang* and Haoshen Zhou*

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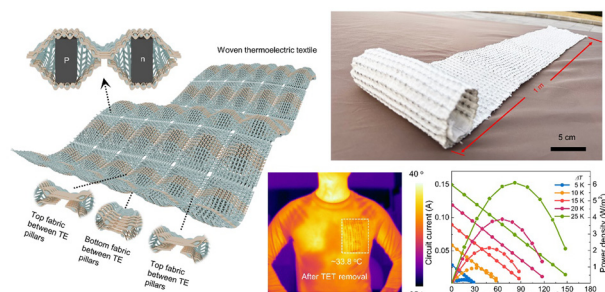


A dual-mediator for a sulfur cathode approaching theoretical capacity with low overpotential in aqueous Zn–S batteries

Wanlong Wu, Sibao Wang, Lu Lin, Hua-Yu Shi and Xiaoqi Sun*

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Scalable manufacturing of a durable, tailorable, and recyclable multifunctional woven thermoelectric textile system

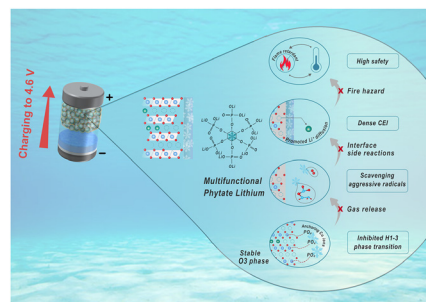
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Phytate lithium as a multifunctional additive stabilizes LiCoO₂ to 4.6 V

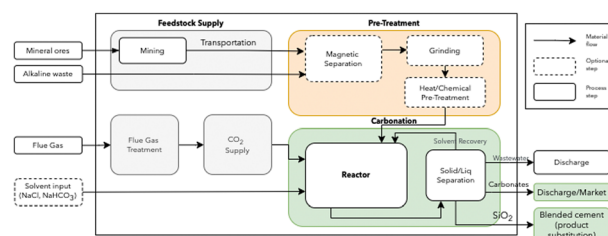
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On the role of system integration of carbon capture and mineralization in achieving net-negative emissions in industrial sectors

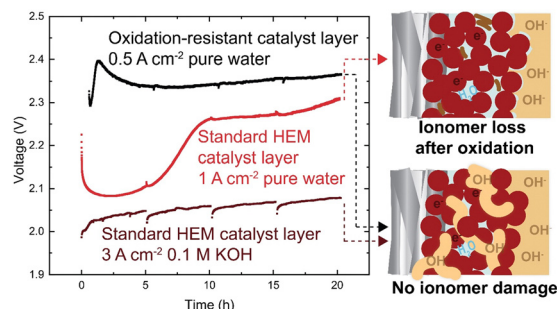
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Oxidative instability of ionomers in hydroxide-exchange-membrane water electrolyzers

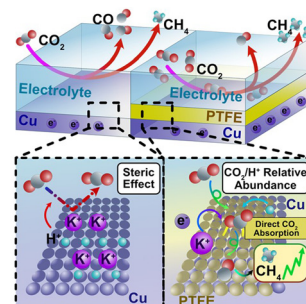
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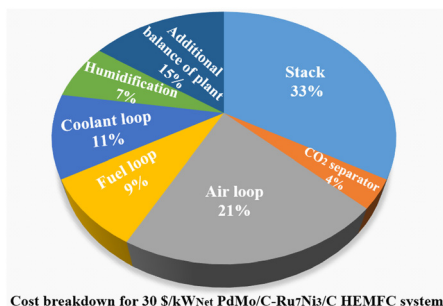
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Deciphering electrochemical interactions in metal-polymer catalysts for CO₂ reduction

Xingyu Wang, Sanjubala Sahoo, Jose Gascon, Mikhail Bragin, Fangyuan Liu, Julia Olchowski, Samuel Rothfarb, Yuankai Huang, Wenjun Xiang, Pu-Xian Gao, S. Pamir Alpay and Baikun Li*



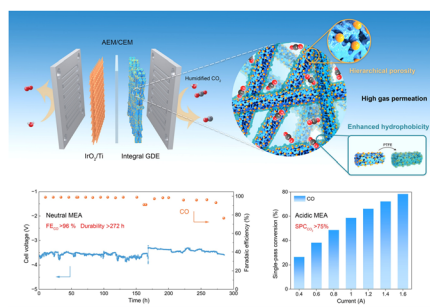
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Material and system development needs for widespread deployment of hydroxide exchange membrane fuel cells in light-duty vehicles

Reza Abbasi,* Brian P. Setzler and Yushan Yan*

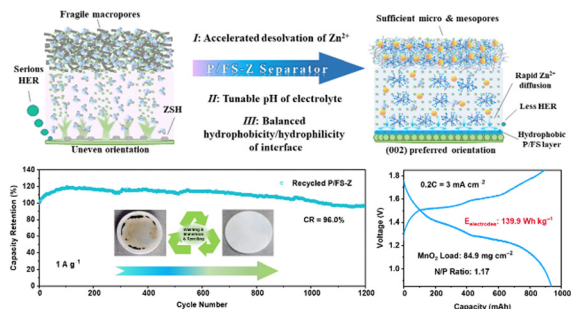
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Hydrophobized electrospun nanofibers of hierarchical porosity as the integral gas diffusion electrode for full-pH CO₂ electroreduction in membrane electrode assemblies

Min Wang, Ling Lin, Zhangyi Zheng, Zhenyang Jiao, Wei Hua, Guowei Wang, Xiaoxing Ke, Yuebin Lian, Fenglei Lyu,* Jun Zhong, Zhao Deng and Yang Peng*

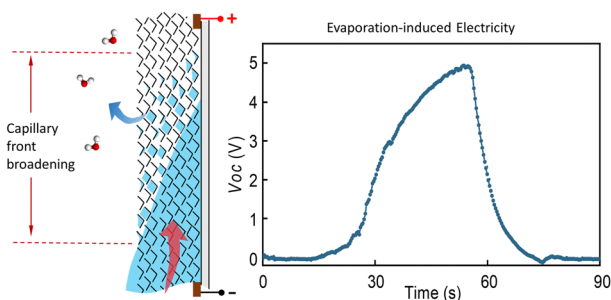
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Highly-reversible and recyclable zinc metal batteries achieved by inorganic/organic hybrid separators with finely tunable hydrophilic–hydrophobic balance

Lingbo Yao, Gege Wang, Feifan Zhang, Xiaowei Chi* and Yu Liu*

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Capillary front broadening for water-evaporation-induced electricity of one kilovolt

Wei Deng, Gu Feng, Luxian Li, Xiao Wang, Huan Lu, Xuemei Li, Jidong Li, Wanlin Guo* and Jun Yin*

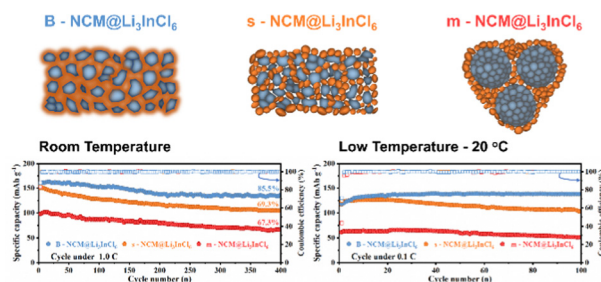


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An ultraconformal chemo-mechanical stable cathode interface for high-performance all-solid-state batteries at wide temperatures

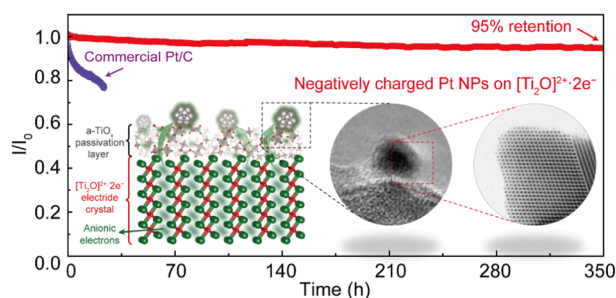
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Negatively charged platinum nanoparticles on dititanium oxide electrode for ultra-durable electrocatalytic oxygen reduction

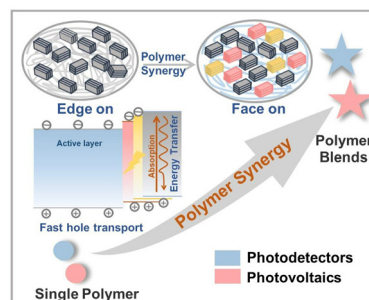
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Polymer synergy for efficient hole transport in solar cells and photodetectors

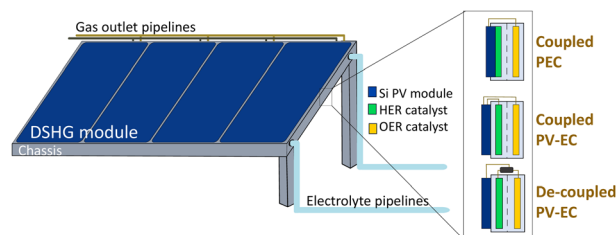
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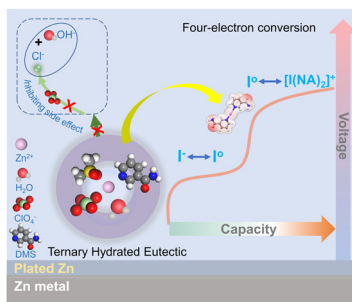
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Comparative techno-economic analysis of different PV-assisted direct solar hydrogen generation systems

Astha Sharma,* Thomas Longden, Kylie Catchpole and Fiona J. Beck



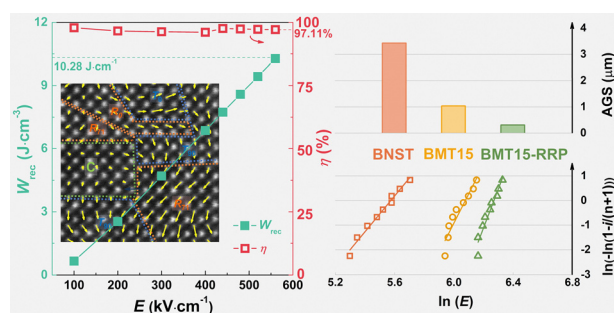
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Designing ternary hydrated eutectic electrolyte capable of four-electron conversion for advanced Zn–I₂ full batteries

Wenda Li, Hengyue Xu, Hongyi Zhang, Facai Wei, Tingting Zhang, Yong Wu, Lingyan Huang, Jianwei Fu, Chengbin Jing, Jiangong Cheng and Shaohua Liu*

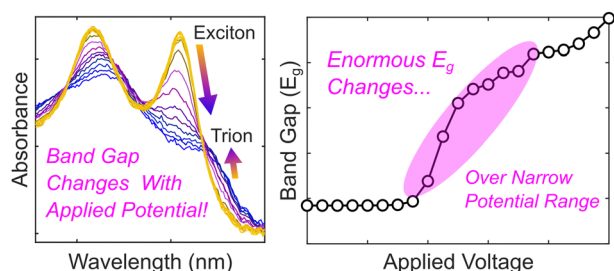
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A high-temperature performing and near-zero energy loss lead-free ceramic capacitor

Da Li, Diming Xu,* Weichen Zhao, Max Avdeev, Hongmei Jing, Yan Guo, Tao Zhou, Wenfeng Liu, Dong Wang* and Di Zhou*

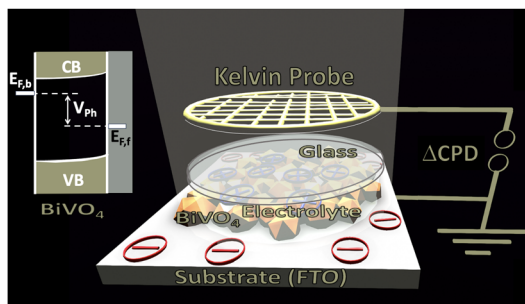
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Quantifying interfacial energetics of 2D semiconductor electrodes using *in situ* spectroelectrochemistry and many-body theory

Rafael Almaraz, Thomas Sayer, Justin Toole, Rachelle Austin, Yusef Farah, Nicholas Trainor, Joan M. Redwing, Amber Krummel, Andrés Montoya-Castillo and Justin Sambur*

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Contactless measurement of the photovoltage in BiVO₄ photoelectrodes

Sahar Daemi, Anna Kundmann, Kathleen Becker, Peter Cendula and Frank E. Osterloh*

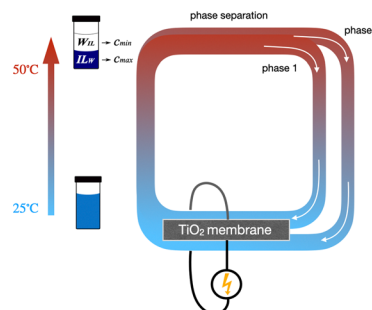


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Waste heat recovery using thermally responsive ionic liquids through TiO₂ nanopore and macroscopic membranes

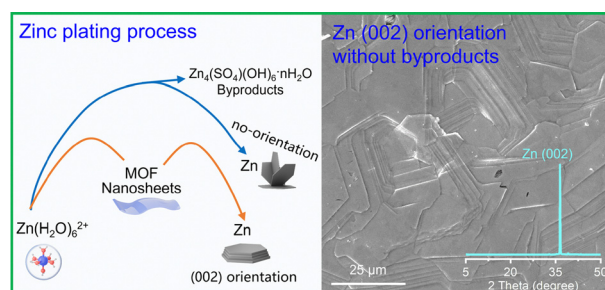
Marc Pascual, Nicolas Chapuis, Soufiane Abdelghani-Idrissi, Marie-Caroline Jullien, Alessandro Siria and Lydéric Bocquet*



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MOF nanosheets as ion carriers for self-optimized zinc anodes

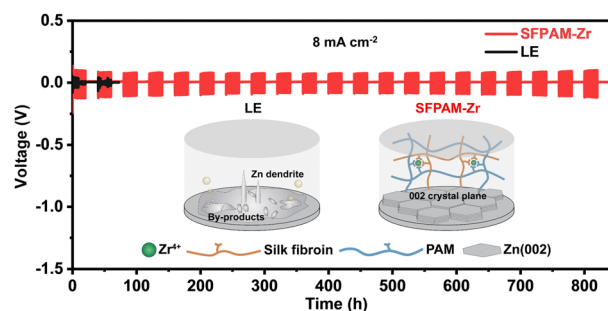
Hanmiao Yang, Kaiyue Zhu,* Weili Xie, Liming Zhang, Weikang Jiang, Weijian Li, Zhengsen Wang and Weishen Yang*



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Manipulating Zn 002 deposition plane with zirconium ion crosslinked hydrogel electrolyte toward dendrite free Zn metal anodes

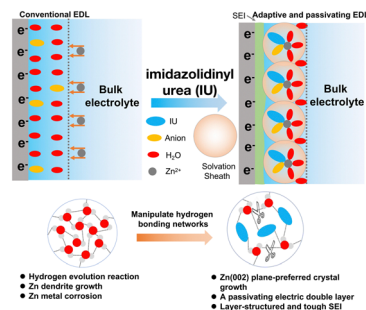
Yong Cheng, Yucong Jiao* and Peiyi Wu*



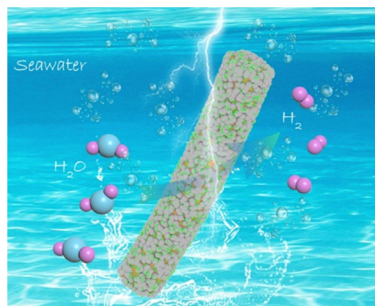
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Preferred planar crystal growth and uniform solid electrolyte interfaces enabled by anion receptors for stable aqueous Zn batteries

Xinyu Wang, Yiran Ying, Xiaomin Li, Shengmei Chen,* Guowei Gao, Haitao Huang* and Longtao Ma*



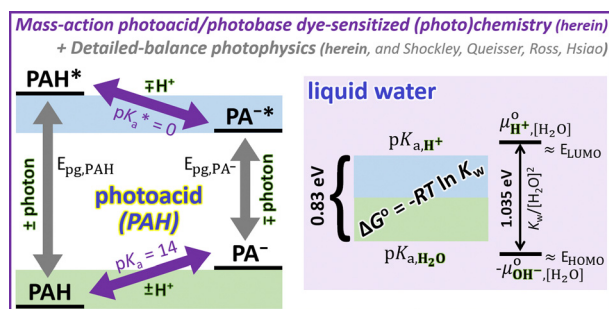
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An ultra-low Pt metal nitride electrocatalyst for sustainable seawater hydrogen production

Huashuai Hu, Zhaorui Zhang, Yaowen Zhang, Tiju Thomas, Haiying Du, Keke Huang, J. Paul Attfield and Minghui Yang*

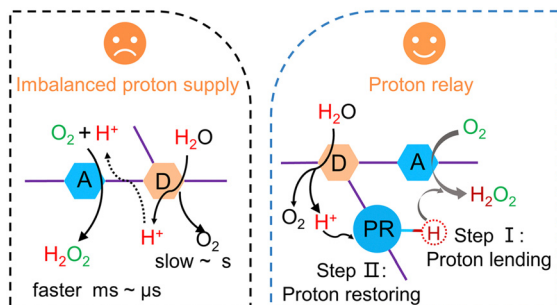
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Detailed-balance limits for sunlight-to-protonic energy conversion from aqueous photoacids and photobases based on reversible mass-action kinetics

Gabriel S. Phun, Rohit Bhide and Shane Ardo*

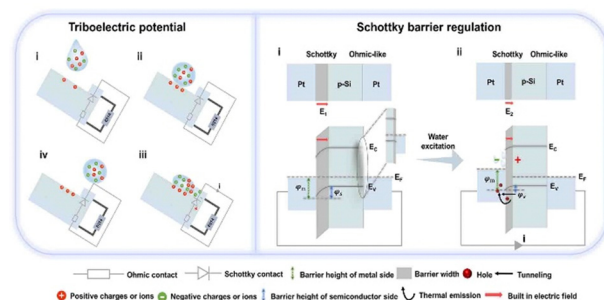
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Proton reservoirs in polymer photocatalysts for superior H₂O₂ photosynthesis

Bo Sheng, Yangen Xie, Qi Zhao, Hua Sheng* and Jincai Zhao

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A constant-current generator *via* water droplets driving Schottky diodes without a rectifying circuit

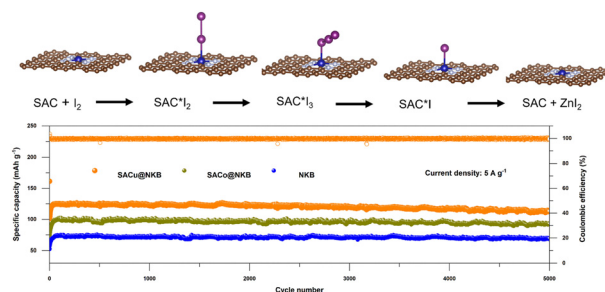
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Single atom catalysts for triiodide adsorption and fast conversion to boost the performance of aqueous zinc–iodine batteries

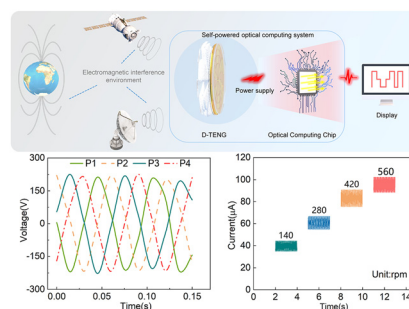
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High power and low crest factor of direct-current triboelectric nanogenerator for self-powered optical computing system

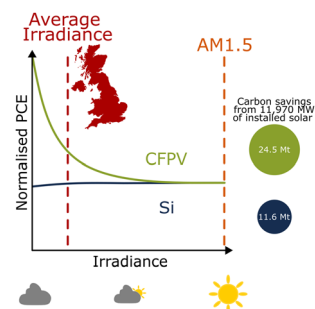
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Decarbonising electrical grids using photovoltaics with enhanced capacity factors

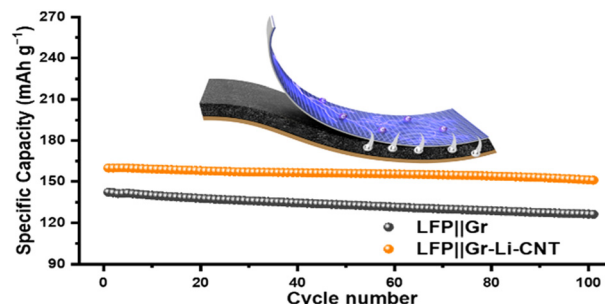
Cai Williams, Hannes Michaels, Andrew F. Crossland, Zongtai Zhang, Natasha Shirshova, Roderick C. I. MacKenzie, Hongjian Sun, Jeff Kettle, Marina Freitag and Christopher Groves*



4660

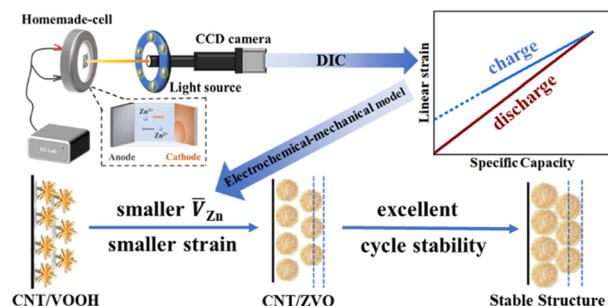
A large-area lithium metal–carbon nanotube film for precise contact prelithiation in lithium-ion batteries

Chao Wang,* Fangzhou Yang, Wang Wan, Shihe Wang, Yongyi Zhang,* Yunhui Huang* and Ju Li*



PAPERS

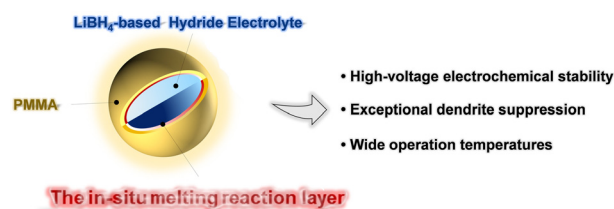
4670



Operando chemical strain analysis of CNT/VOOH during zinc insertion in Zn-ion batteries

Xiuling Shi, Yuchuan Sun, Yibo Weng, Xiaoying Long, Tongxing Lei, Jianli Zhou, Deping Li, Jin Zhang, Yan Huang,* Lijie Ci, Kaikai Li* and Tong-Yi Zhang*

4679



A wide temperature 10 V solid-state electrolyte with a critical current density of over 20 mA cm⁻²

Yiqi Wei, Zhenglong Li, Zichong Chen, Panyu Gao, Mingxi Gao, Chenhui Yan, Zhijun Wu, Qihang Ma, Yinzhu Jiang, Xuebin Yu, Xin Zhang, Yongfeng Liu, Yaxiong Yang,* Mingxia Gao, Wenping Sun, Zhiguo Qu, Jian Chen* and Hongge Pan*

CORRECTION

4693

Correction: Scalable manufacturing of a durable, tailorable, and recyclable multifunctional woven thermoelectric textile system

Yuanyuan Jing, Jun Luo, Xue Han, Jiawei Yang, Qiulin Liu, Yuanyuan Zheng, Xinyi Chen, Fuli Huang, Jiawen Chen, Qinliang Zhuang, Yanan Shen, Haisheng Chen, Huaizhou Zhao,* G. Jeffrey Snyder, Guodong Li,* Ting Zhang* and Kun Zhang*

