

Journal of Materials Chemistry A

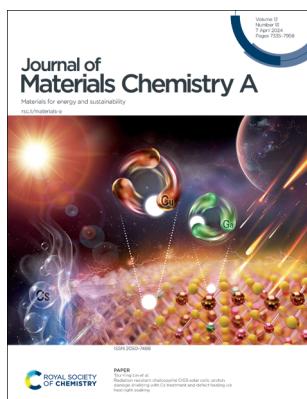
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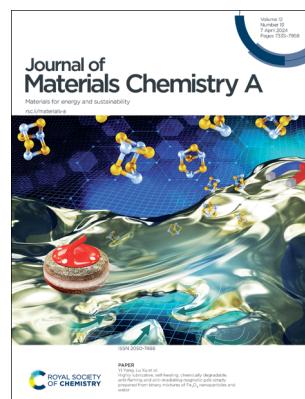
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ISSN 2050-7488 CODEN JMCAET 12(13) 7335–7958 (2024)



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See Tzu-Ying Lin *et al.*, pp. 7536–7548. Image reproduced by permission of Tzu-Ying Lin from *J. Mater. Chem. A*, 2024, 12, 7536.



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See Yi Yang, Lu Xu *et al.*, pp. 7549–7563. Image reproduced by permission of Lu Xu from *J. Mater. Chem. A*, 2024, 12, 7549.

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Scope, evaluation and current perspectives of MXene synthesis strategies for state of the art applications

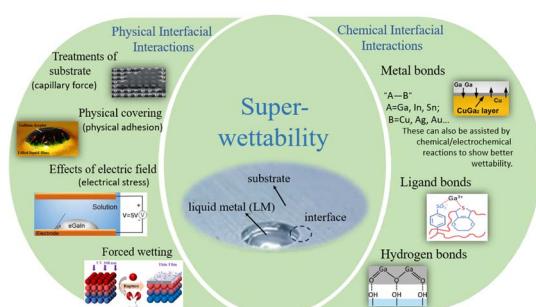
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Interfacial interaction-induced super-wettability of gallium-based liquid metals: a review

Yiran Wang and Yibing Xie*





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REVIEWS

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Critical review of the recent progress and challenges of polyanion $\text{Na}_3\text{V}_2(\text{PO}_4)_3$ cathode materials in rechargeable sodium-ion batteries

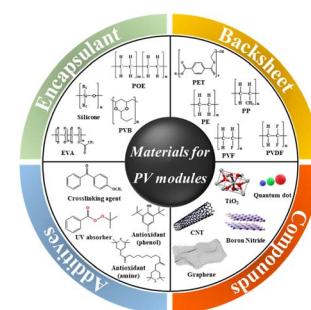
Ranjit S. Kate, Harsharaj S. Jadhav, Ujjwala P. Chothe, Kaustav Bhattacharjee, Milind V. Kulkarni, Ramesh J. Deokate,* Bharat B. Kale* and Ramchandra S. Kalubarme*



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Recent developments of polymer-based encapsulants and backsheets for stable and high-performance silicon photovoltaic modules: materials nanoarchitectonics and mechanisms

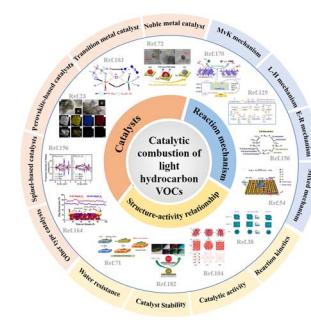
Donggyun Kim, Hyunsoo Lim, Sung Hyun Kim, Kang No Lee, Jungmok You, Du Yeol Ryu* and Jeonghun Kim*



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Recent advances and future challenges in the catalytic combustion of light hydrocarbon VOCs

Xiuzi He, Fang Dong,* Weigao Han, Zhicheng Tang* and Yong Ding

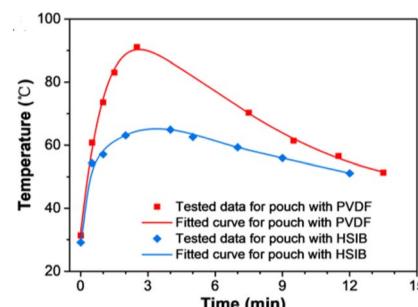


COMMUNICATIONS

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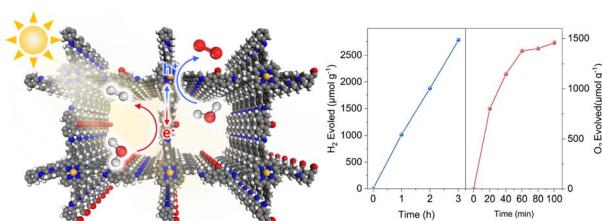
Novel heat storage ionomer binder for thermal management of Li-ion batteries

Danni Shen, Tingting Han, Jie Liu,* Junwu Yang, Jinqiu Zhou, Yufei Li, Xi Zhou, Zhenkang Wang, Tao Qian and Chenglin Yan*



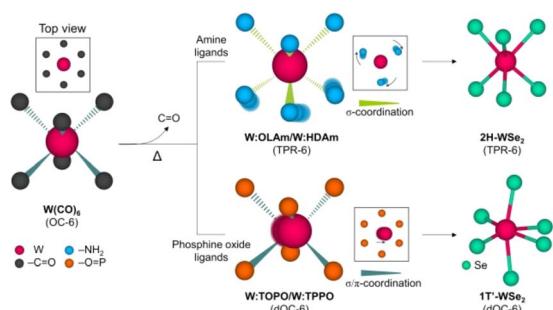
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**A dual-functional metalloporphyrin-fluorenone covalent organic framework for solar hydrogen and oxygen production**

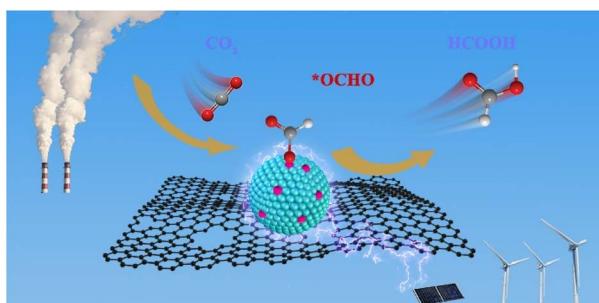
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**Unveiling the ligand-mediated phase engineering mechanism in two-dimensional transition metal chalcogenides through coordination geometry control**

Sungju Jun, Joo-Won Lee, Sung-Chul Kim, Soong Ju Oh and Sohee Jeong*

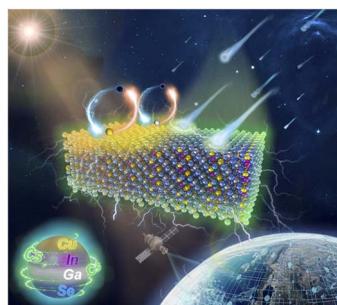
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**Radiation resistant chalcopyrite CIGS solar cells: proton damage shielding with Cs treatment and defect healing via heat-light soaking**

Tzu-Ying Lin,* Chi-Feng Hsieh, Ayaka Kanai, Takahiko Yashiro, Wen-Jing Zeng, Jian-Jie Ma, Sung-Fu Hung and Mutsumi Sugiyama

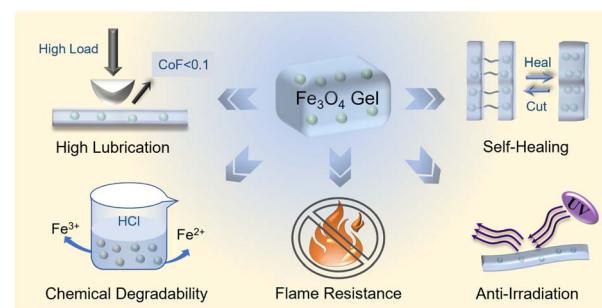


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Highly lubricative, self-healing, chemically degradable, anti-flaming and anti-irradiating magnetic gels simply prepared from binary mixtures of Fe_3O_4 nanoparticles and water

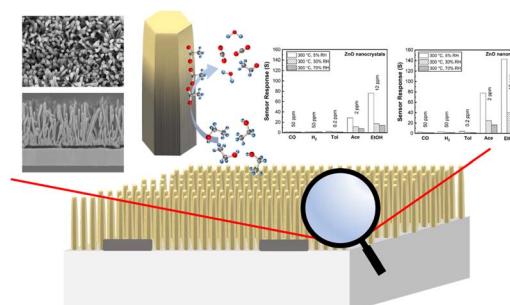
Lulin Hu, Weiyan Yu, Jian Liu, Yi Yang,* Jingcheng Hao and Lu Xu*



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Ethanol sensing mechanism of ZnO nanorods revealed by DRIFT spectroscopy and DFT calculations

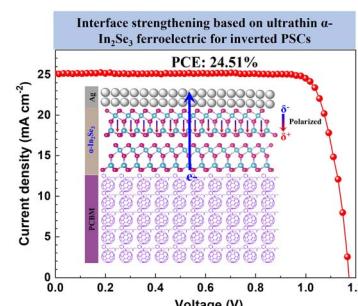
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Strengthened cathode interface using an ultrathin 2D ferroelectric semiconductor for inverted perovskite solar cells

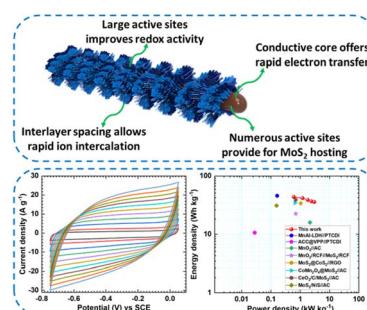
Hua Zhang,* Weihong Liu, Yongping Bao, Rong Wang, Jianfei Liang, Lei Wan and Huan Wang*



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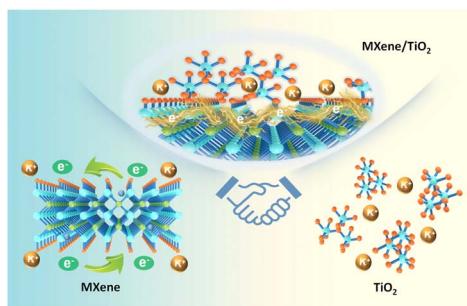
Extrinsic pseudocapacitive ultrathin MoS_2 nanoflakes clamped on 1D Sb_2S_3 nanorods: an advanced heterostructured anode for high-energy ammonium ion hybrid capacitors

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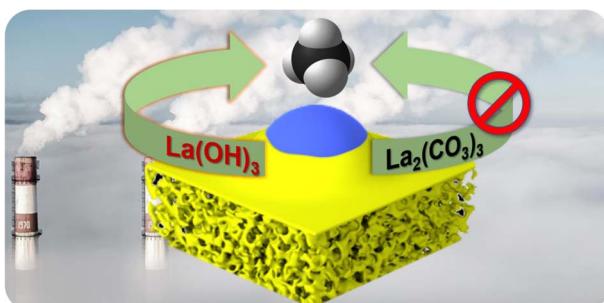
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A 3D crinkled MXene/TiO₂ heterostructure with interfacial coupling for ultra-fast and reversible potassium storage

Xinyue Zhang, Jing Wang, Yuting Jiang, Meng Zhang, Huihua Min, Hao Yang* and Jin Wang*

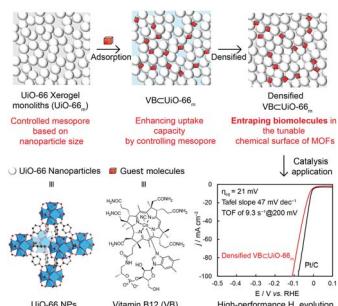
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Uncovering the critical function of lanthanum in CH₄ production from CO₂ using exsolved LaNiO₃ perovskite catalysts

Mathias Barreau,* Davide Salusso, Jinming Zhang, Michael Haevecker, Detre Teschner, Anna Efimenko, Fabrice Bournel, Jean-Jacques Gallet, Elisa Borfecchia, Kamil Sobczak, Corinne Petit and Spyridon Zafeiratos*

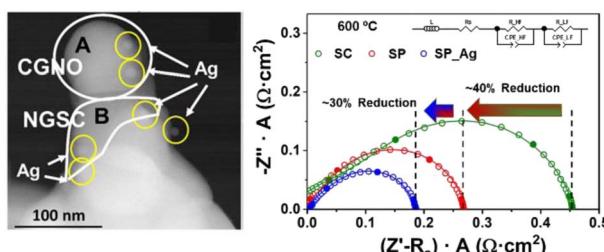
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"Ship-in-a-bottle" entrapment of biomolecules in MOF-based xerogel monoliths for high-performance electrochemical hydrogen evolution

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Optimisation of the electrochemical performance of (Nd,Gd)_{1/3}Sr_{2/3}CoO_{3-δ} cathode for solid oxide fuel cells via spray-pyrolysis deposition and decoration with Ag nanoparticles

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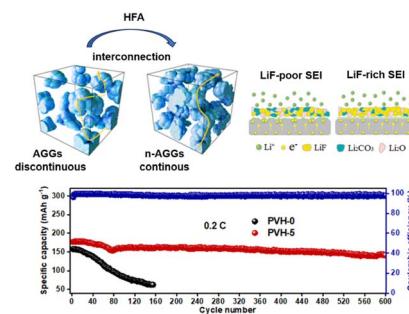


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Engineering a well-connected ion-conduction network and interface chemistry for high-performance PVDF-based polymer-in-salt electrolytes

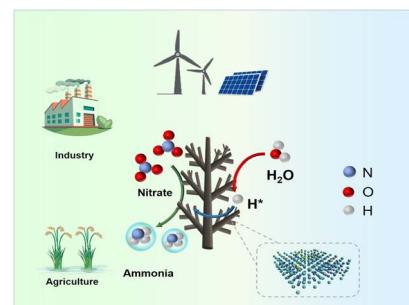
Xiaodan Li, Yucheng Wang, Qingfeng Zhou, Hongxiang Kuai, Chuang Ji and Xunhui Xiong*



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A 3D porous P-doped Cu–Ni alloy for atomic H* enhanced electrocatalytic reduction of nitrate to ammonia

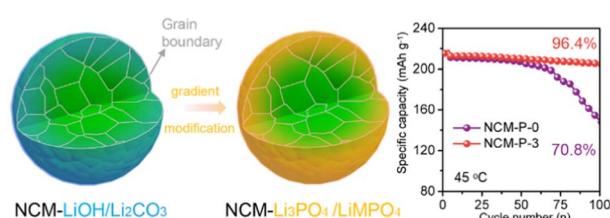
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Gradient and multilevel surface modification of Ni-rich layered cathodes by gas penetration for enhanced electrochemical performance

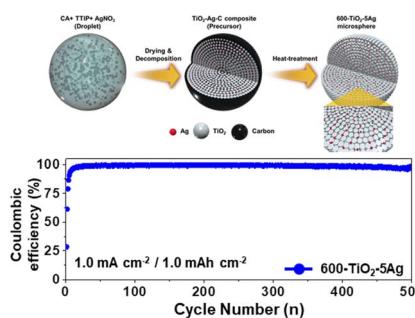
Rui Jiang,* Zhongjia Dai, Yongen Gao, Xikang Zhao, Jianfang Du, Gang Li* and Zexue Du



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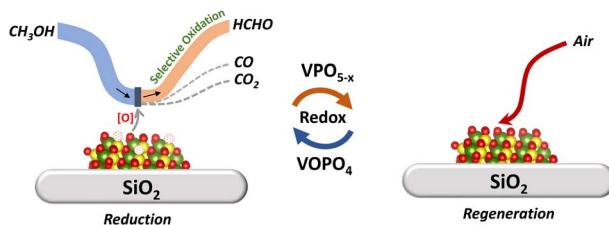
Optimized lithium deposition on Ag nanoparticles-embedded TiO₂ microspheres: a facile spray pyrolysis approach for enhanced lithium metal anode

Jae Wook Kang, Jae Hun Choi, Jung-Kul Lee* and Yun Chan Kang*



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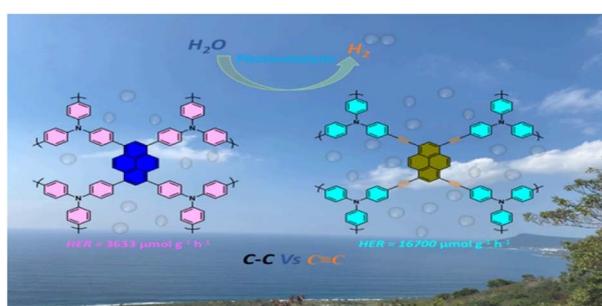
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Chemical looping methanol oxidation using supported vanadium phosphorous oxide carriers for formaldehyde production

Anuj Joshi, Sonu Kumar, Melissa Marx, Amanda H. Trout, Sudeshna Gun, Zain Mohammad, Yehia Khalifa and Liang-Shih Fan*

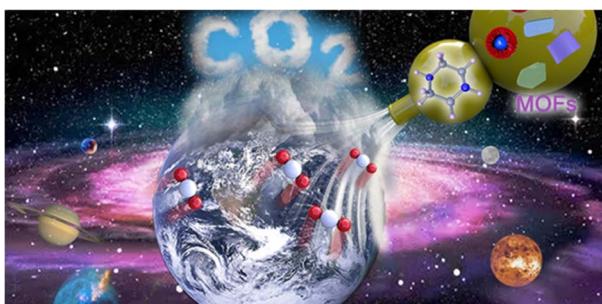
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Reticular design and alkyne bridge engineering in donor- π -acceptor type conjugated microporous polymers for boosting photocatalytic hydrogen evolution

Mohamed Gamal Mohamed,* Mohamed Hammad Elsayed,* Chia-Jung Li, Ahmed E. Hassan, Islam M. A. Mekhemer, Ahmed Fouad Musa, Mahmoud Kamal Hussien, Li-Chyong Chen, Kuei-Hsien Chen, Ho-Hsiu Chou and Shiao-Wei Kuo*

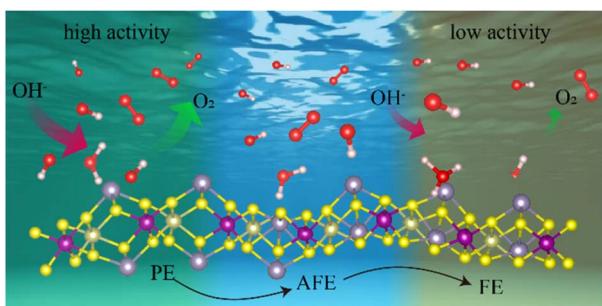
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Heterocycles for direct air capture and MOFs prepared from CO₂ utilization

Jingcheng Du, Linghao Liu, Qian Sun, Ziye Song, Ayan Yao, Ji Ma, Tai-Shung Chung,* Wei Xu, Hongjun Zhang and Jiangtao Liu*

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Effect of ferroelectric polarization on the oxygen evolution reaction: a theoretical study of MIrSn₂S₆ (M = Bi, Mn, and Sb)

Haoyun Bai, Weng Fai Ip, Wenlin Feng and Hui Pan*

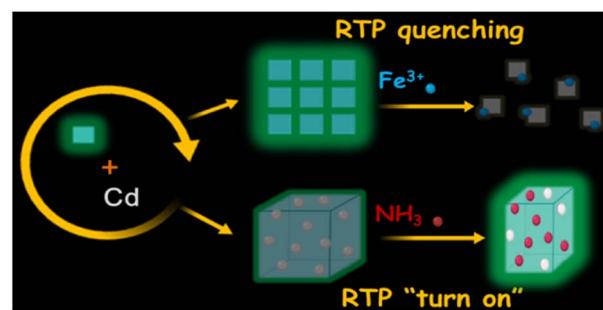


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Two new Cd-based metal–organic frameworks for afterglow detection of Fe^{3+} and NH_3

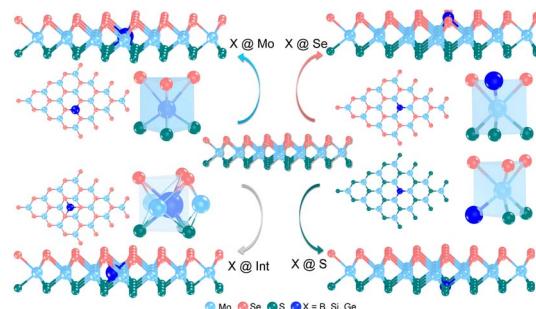
Wen-Qi Zhang, Bo-Lun Zhang, Ting Wang, Jun Chen, Zhong-Yi Li,* Rui-Hong Wang, Shuqin Liu and Jian-Jun Zhang*



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Metalloid-doping in SMoSe Janus layers: first-principles study on efficient catalysts for the hydrogen evolution reaction

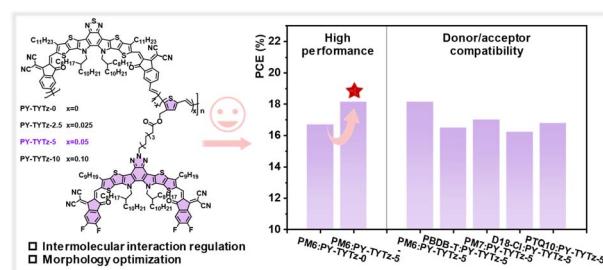
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High-performance binary all-polymer solar cells enabled by a Y-derivative pendant random-copolymerized polymer acceptor with a broad donor–acceptor matching tolerance

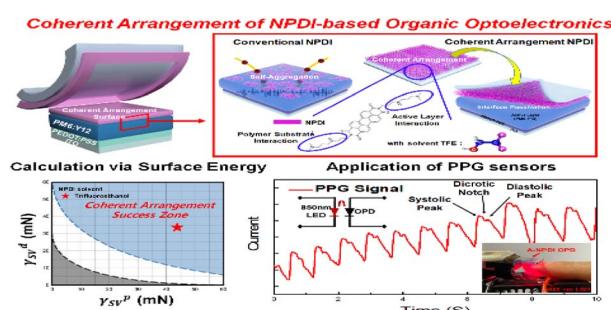
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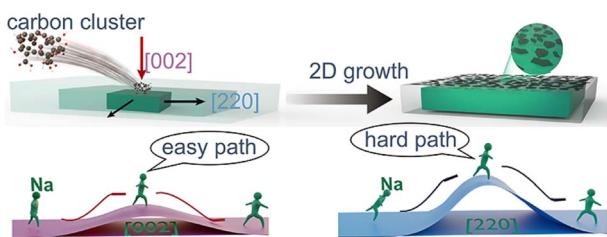
Coherent arrangement of perylene diimide derivative via adhesion-controlled transfer for noise-suppressed light signal detection

Jihyun Lim, Woongsik Jang, Zhao Yang and Dong Hwan Wang*



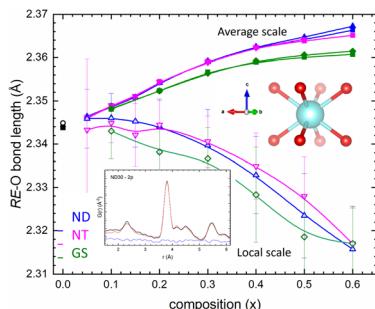
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Exposing the (002) active facet by reducing surface energy for a high-performance $\text{Na}_3\text{V}_2(\text{PO}_4)_2\text{F}_3$ cathode

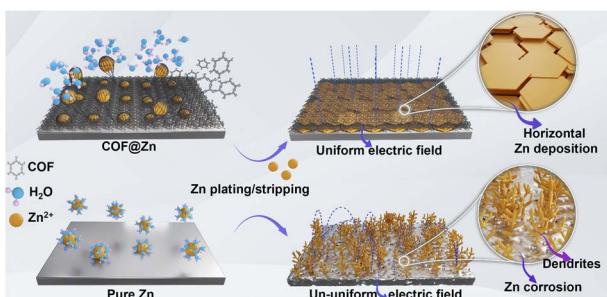
Zhuangzhi Li, Lang Qiu, Ping Li, Hao Liu, Dong Wang, Weibo Hua, Ting Chen, Yang Song, Fang Wan, Benhe Zhong, Zhenguo Wu* and Xiaodong Guo*

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Unveiling the local structure of doubly doped CeO_2 : a synchrotron X-ray pair distribution function study

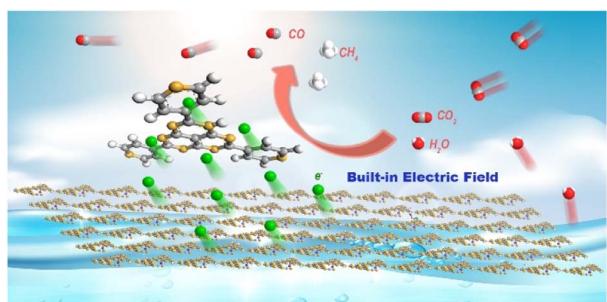
Alberto Martinelli, Sara Massardo, Cristina Artini,* Maria M. Carnasciali and Marcella Pani

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Interface regulation using a fluorinated vinylene-linked covalent organic framework for a highly stable Zn anode

Yanjie Wang, Ning Li, Huiyan Liu, Haoyang Sun, Zhuo Wang, Lipeng Zhai,* Kongyao Chen, Liwei Mi,* Zhe Fang and Yunhui Huang*

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Construction of a graphitic carbon nitride-based photocatalyst with a strong built-in electric field via $\pi-\pi$ stacking interactions boosting photocatalytic CO_2 reduction

Yanrui Li,* Linda Wang, Xiang Gao, Yingying Xue, Bozhan Li and Xiaolin Zhu*

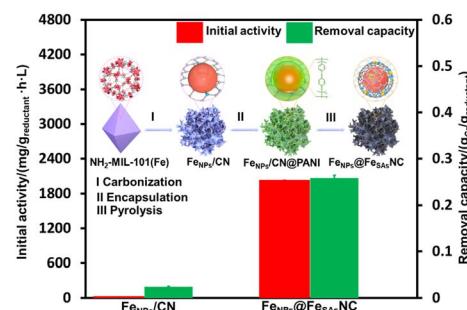


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Engineering Fe–N–C sites onto Fe nanoparticles for synergistically boosting Cr(vi) reduction: performance, mechanism, and applications

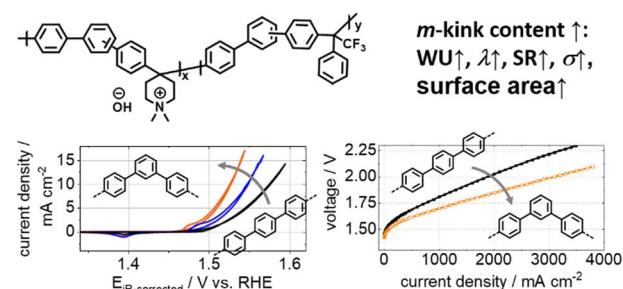
Minghui Li, Wenjing Liu, Panxinchen Liu, Xiaoqin Lin, Hongjie Zhu, Caixia Fang, Wenwen Li and Chang Liu*



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Meta-kinks are key to binder performance of poly(arylene piperidinium) ionomers for alkaline membrane water electrolysis using non-noble metal catalysts

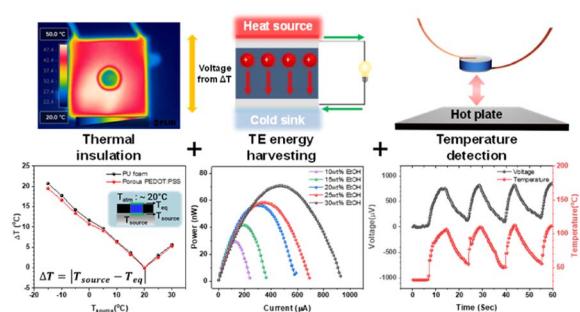
Richard Weber, Malte Klingenhof, Susanne Koch, Lukas Metzler, Thomas Merzdorf, Jochen Meier-Haack, Peter Strasser, Severin Vierrath and Michael Sommer*



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Porous PEDOT:PSS smart thermal insulators enabling energy harvesting and detection

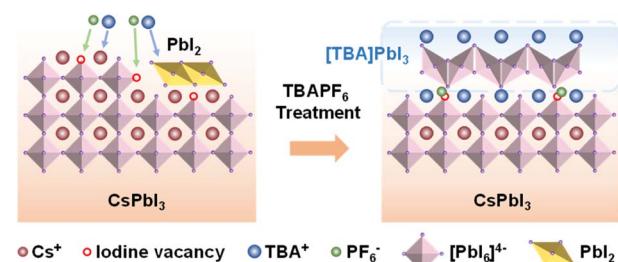
Jeong Seob Yun and Sang Hyuk Im*



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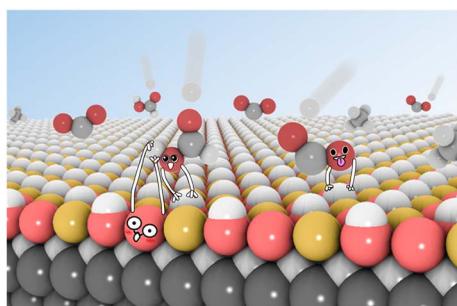
Surface engineering based on ionic liquids for efficient and stable CsPbI₃ perovskite solar cells

Dong Rui, Jianfei Fu, Qiaoyun Chen, Ji Cao, Wenting Wu, Lei Chen, Jing Zhang, Zelong Zhang,* Yi Zhou* and Bo Song*



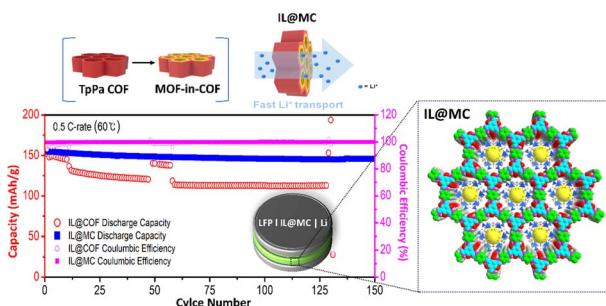
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**Surface termination dependent carbon dioxide reduction reaction on Ti_3C_2 MXene**

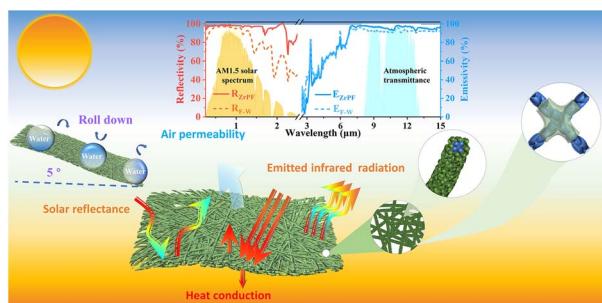
Ling Meng, Li-Kai Yan,* Francesc Viñes* and Francesc Illas

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**Ion-transporting channel-embedded MOF-in-COF structures as composite quasi-solid electrolytes with highly enhanced electrochemical properties**

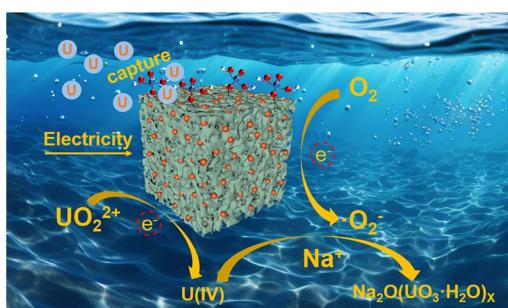
Kai Le Loo, Jeong Won Ho, Chan-Hwa Chung, Myoung-Woon Moon and Pil J. Yoo*

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**Superhydrophobic and mechanical properties enhanced the electrospinning film with a multiscale micro-nano structure for high-efficiency radiation cooling**

Lijing Kong, Puqing Sun, Jincheng Liu, Yongxing Lin, Chao Xiao, Chao Bao, Kang Zheng, Meng Xue, Xian Zhang, Xianglan Liu* and Xingyou Tian*

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**Nickel single atom mediated phosphate functionalization of moss derived biochar effectively enhances electrochemical uranium extraction from seawater**

Huachuan Feng, Huanhuan Dong, Pan He, Junhui He, Enmin Hu, Zishu Qian, Jin Li, Jiejie Li, Wenkun Zhu* and Tao Chen*

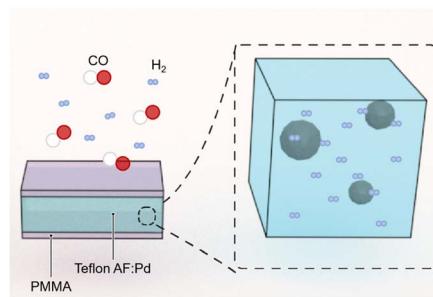


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A surface passivated fluorinated polymer nanocomposite for carbon monoxide resistant plasmonic hydrogen sensing

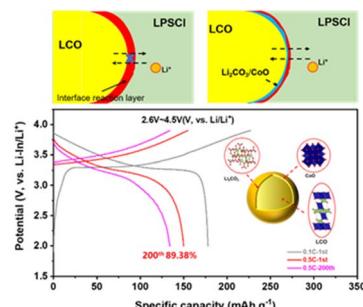
I. Östergren, I. Darmadi, S. Lerch, R. R. da Silva, M. Craigher, S. H. K. Paleti, K. Moth-Poulsen, C. Langhammer* and C. Müller*



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Surface reconstruction layer boosting interfacial stability of $\text{LiCoO}_2/\text{Li}_6\text{PS}_5\text{Cl}$ in bulk all-solid-state Li batteries

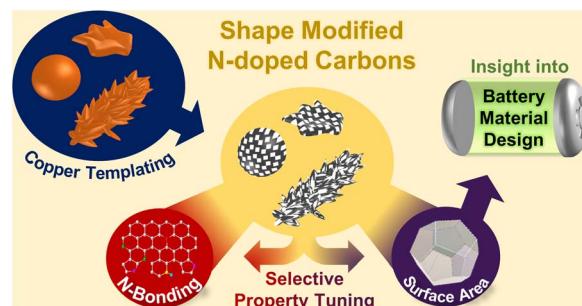
Shiliang Zheng, Zengzhu Li, Zhiwe He, Wenguang Zhao, Chenyu Liu,* Zhan Lin, Zengqing Zhuo* and Bingkai Zhang*



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Copper shape-templated N-doped carbons: exercising selective surface area control for lithium-ion batteries & beyond

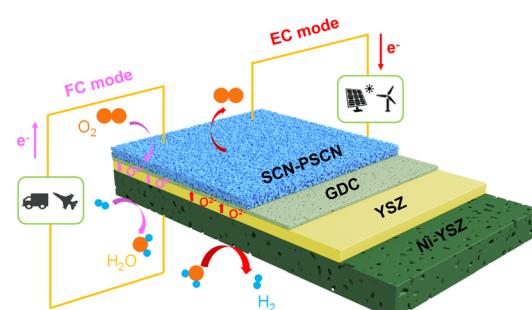
Samantha N. Lauro, James N. Burrow, Benjamin G. Broekhuis, Philippe E. Papa and C. Buddie Mullins*



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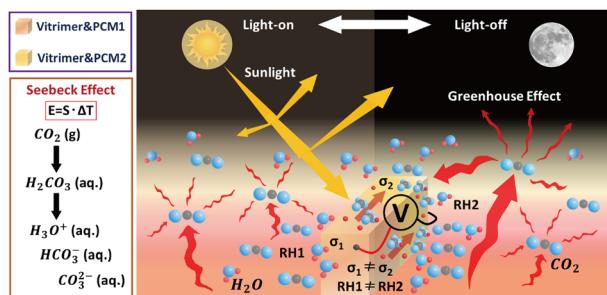
An active and durable air electrode with self-generated nanoparticles decorated on the surface for reversible oxygen-ionic ceramic electrochemical cells

Chuanyu Fang, Kang Xu, Feng Zhu, Yangsen Xu, Fan He and Yu Chen*



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Energy harvesting and electricity production through dissolved carbon dioxide by connecting two form-stable phase change materials

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