

# Journal of Materials Chemistry A

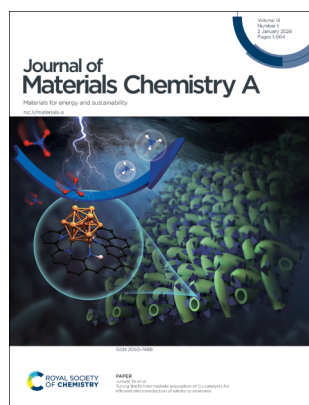
Materials for energy and sustainability

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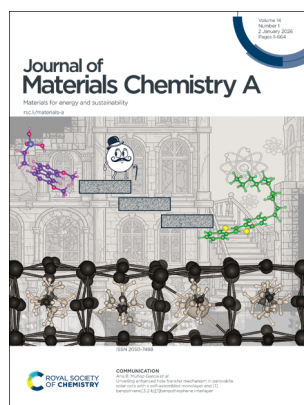
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## IN THIS ISSUE

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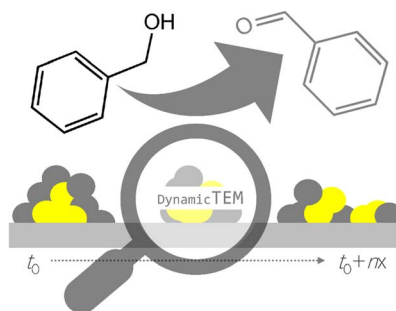
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## HIGHLIGHT

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### Catalysis in motion: unlocking mechanistic insights with dynamic transmission electron microscopy

Hanggara Sudrajat\* and Ari Susanti

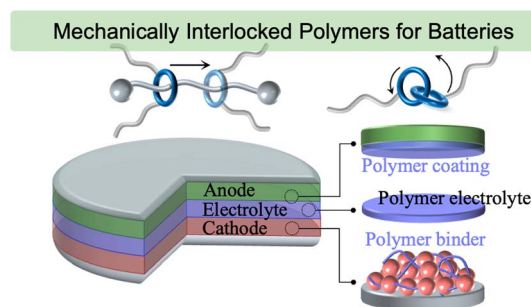


## REVIEWS

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### Leveraging battery performance through mechanically interlocked polymers

Yangju Lin,\* Mingrui Liang and Ahmed Eldeeb



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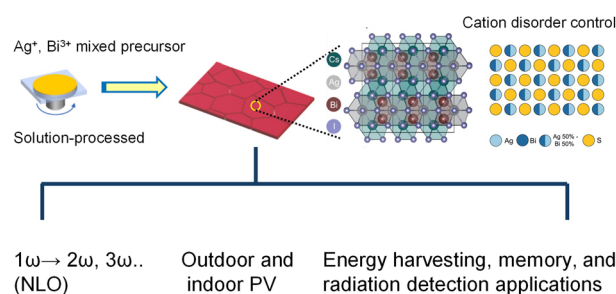
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## Silver–bismuth perovskite-inspired materials: chemistry, optoelectronic properties, and emerging applications in photovoltaics and beyond

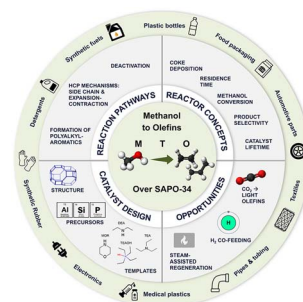
G. Krishnamurthy Grandhi, Noolu. Srinivasa Manikanta Viswanath, Marcello Righetto, Sara Domenici, Mokurala Krishnaiah, Marco Moroni, Adriana Pecoraro, Ana Belén Muñoz-García, Michele Pavone, Lorenzo Malavasi, Teresa Gatti and Paola Vivo\*



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## A review of methanol-to-olefins conversion over SAPO-34: catalyst design, mechanisms, and kinetics

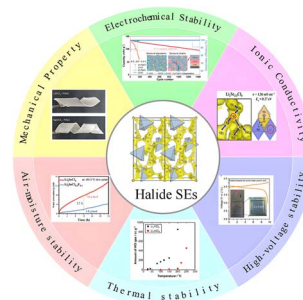
Ralph Al Hussami, Mohammad Ghavipour, Galal Nasser, Chasty Duah, Shaza Yousef and Jan Kopyscinski\*



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## Halide solid electrolytes: composition tuning, structural design, and performance optimization for all-solid-state lithium batteries

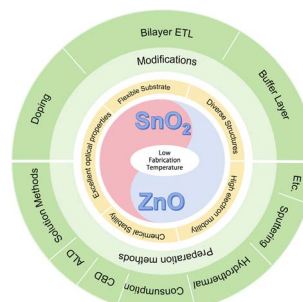
Yinglei Wu,\* Guangfu Ge, Sirui Wang, Jinhui Zhu and Xiaodong Zhuang\*



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## The application of low-temperature processed metal oxide electron transport layers in flexible perovskite solar cells

Jianghao Tian, Kun Wang, Zhipeng Zhou, Lexiang Zhang, Pu Fan,\* Huajing Zheng,\* Ding Zheng\* and Junsheng Yu\*



## REVIEWS

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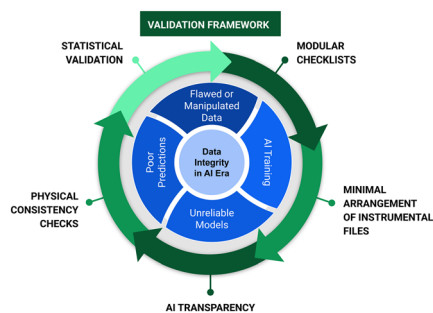


### Radiative cooling materials and strategies for suppressing ice melting and enabling passive cold-chain management

Cheng-Yu He, Xu-Yan Xu, Ying-Ying Wu, Ge-Ting Sun, Qi-Sen Wang, Yong-Zhi Zhang, Rui-Ting Gao and Xiang-Hu Gao\*

## PERSPECTIVES

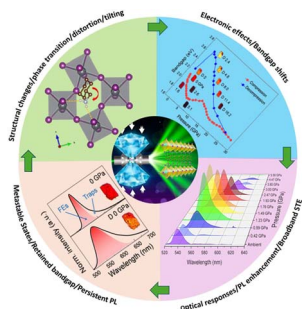
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### Data integrity in materials science in the era of AI: balancing accelerated discovery with responsible science and innovation

Nik Reeves-McLaren\* and Sarah Moth-Lund Christensen

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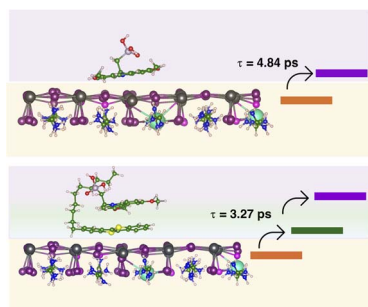


### Pressure-tuned 2D hybrid perovskites: emerging insights and future opportunities

Aditya Kutty and Yang Song\*

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### Unveiling enhanced hole transfer mechanism in perovskite solar cells with a self-assembled monolayer and [1]benzothieno[3,2-b][1]benzothiophene interlayer

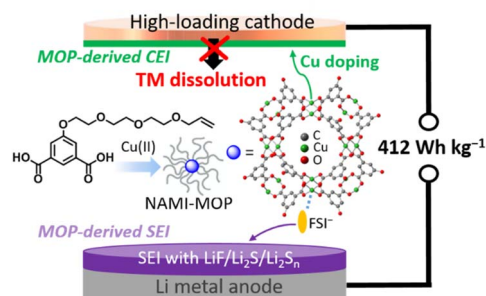
Adriana Pecoraro, Francesca Fasulo, Michele Pavone, Aldo Di Carlo and Ana B. Muñoz-García\*



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### Stabilizing electrode–electrolyte interphases using soluble metal–organic polyhedra for high-performance lithium metal batteries

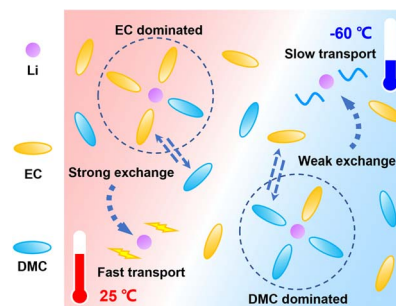
Yan-Lung Wong,<sup>\*</sup> Wei Huang, Cuili Zhang, Lang Wang, Shengbo Lu<sup>\*</sup> and Chenmin Liu<sup>\*</sup>



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### The mechanism of Li-ion transport in carbonate-based electrolytes

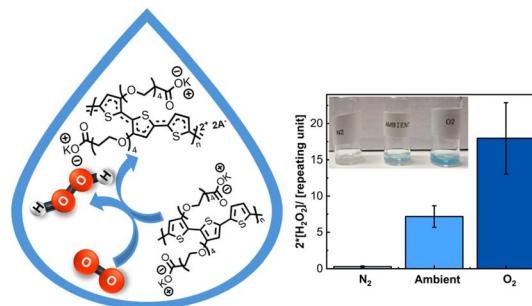
Junyu Huang, Tao Wang, Hongjin Li, Yuechao Wu, Shu Li, Bin Kan and Tianying Yan<sup>\*</sup>



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### Autonomous aqueous H<sub>2</sub>O<sub>2</sub> production with a carboxylate-functionalized polythiophene

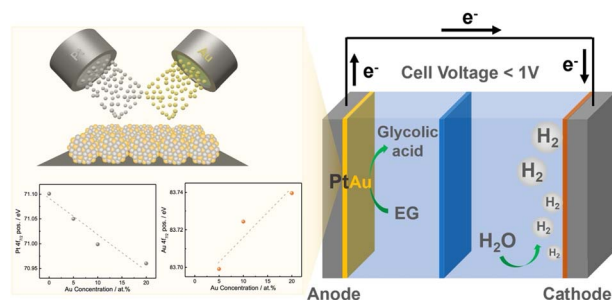
Cecilia Bruschi,<sup>\*</sup> Asaminew Yerango Shimolo, Johanna Heimonen, Qilun Zhang, Mats Fahlman, Mikhail Vagin and Renee Kroon<sup>\*</sup>



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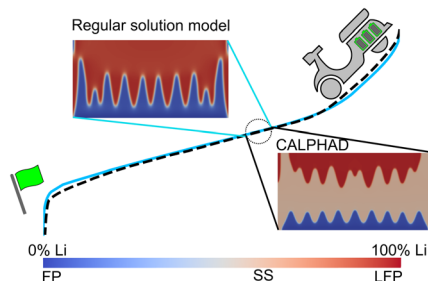
### Effective and selective ethylene glycol electrooxidation with compositionally controlled Pt–Au bimetallic electrocatalysts

Hui Luo,<sup>\*</sup> Xianxian Xie, Jiamin Sun, Shaohui Guo and Ivan Khalakhan<sup>\*</sup>



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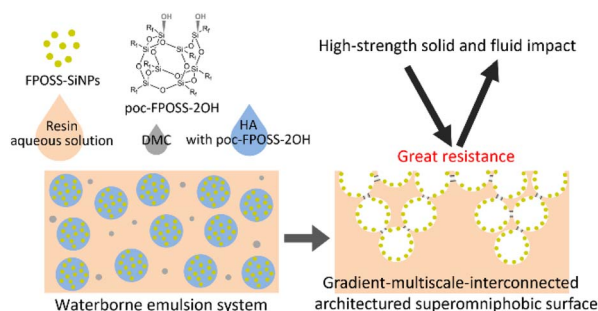
Thermodynamic driving forces stabilize an intermediate phase



### Consecutive intra-particle phase transitions in the $\text{LiFePO}_4$ battery electrode material

Souzan Hammadi, Nana Ofori-Opoku, Daniel Brandell and Peter Broqvist\*

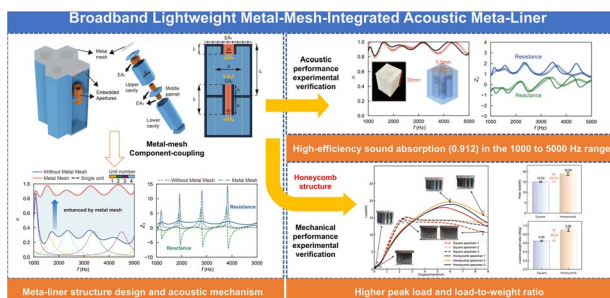
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### Gradient-multiscale-interconnected architectures enable waterborne superomniphobic surfaces to resist the high-strength impact of solids and fluids

Fang Suo, Boxu Chen, Zhenqiang Lin, Xin Yan, Yinglei Zhai, Jinyi Zhong and Jingwen Liao\*

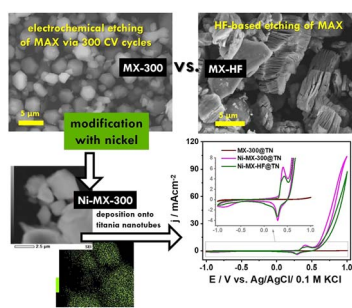
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### Broadband lightweight metal-mesh-integrated acoustic metaliner

Yujie Cheng, Hua Ding, Yilong Yang, Nengyin Wang, Tongwei Lu, Kai Zhang, Yabin Jin\* and Yong Li\*

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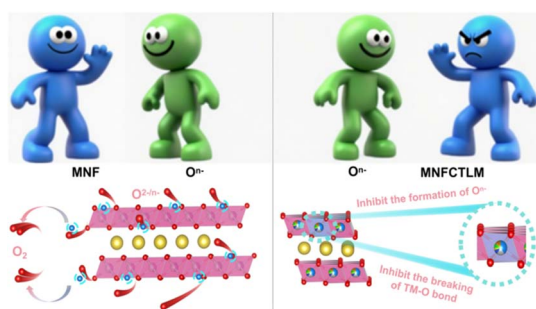
### Electrocatalytic activity of 1D/3D $\text{TiO}_2$ tubular layers/ Ni-modified MXene microsphere heterojunction electrodes

Dujearic-Stephane Kouao,\* Agnieszka Kramek, Justyna Gumieniak, Karol Załęski, Emerson Coy, Jakub Karczewski, Guowei Li and Katarzyna Siuzdak\*





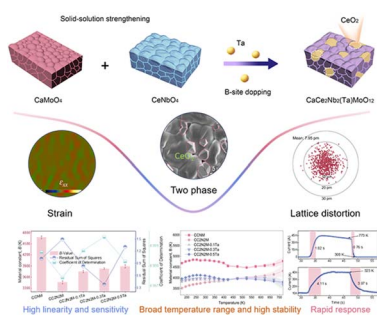
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### Synergistic high-entropy engineering in biphasic layered oxides enables high-rate sodium-ion cathodes

Jing Sun, Cailing Liu,<sup>\*</sup> Hongbo Huang,<sup>\*</sup> Xiaohong Liu, Meilan Xie, Lingling Liu, Juntong Huang, Dui Ma, Huan Liu, Peixun Xiong and Xiao Liang<sup>\*</sup>

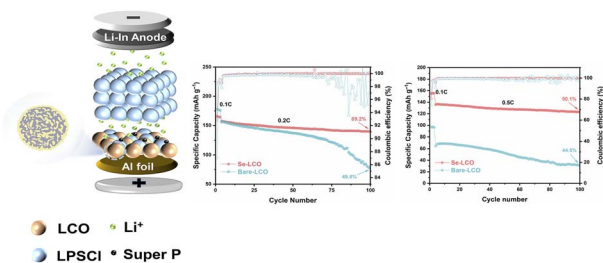
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### Multiscale structural regulation enables ultra-rapid and stable high-temperature sensing in fergusonite ceramics

Hao Sun, Ruifeng Wu, Yafei Liu, Jia Chen, Jianan Xu, Xia Huang, Aimin Chang and Bo Zhang<sup>\*</sup>

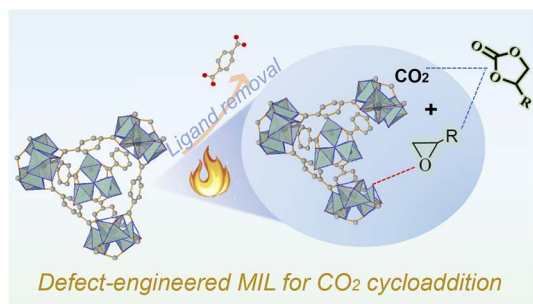
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### Construction of a self-sacrificing selenium interfacial coating and its performance in all-solid-state lithium-ion batteries

Simin You, Minghao Zhang, Jingting Yang,<sup>\*</sup> Zeheng Li,<sup>\*</sup> Zhan Lin and Jun Lu<sup>\*</sup>

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### Defect-engineered MIL-101(Cr) *via* facile low-temperature calcination for efficient CO<sub>2</sub> cycloaddition under mild conditions

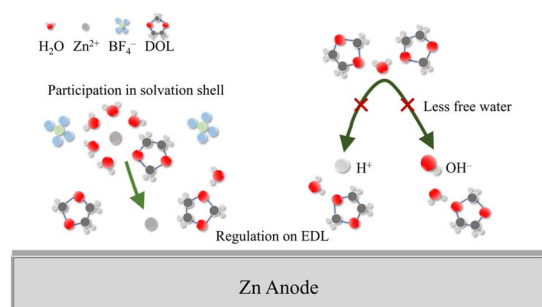
Ziyang Xu, Zicheng Yang, Jiale Ni, Yi Feng<sup>\*</sup> and Jianfeng Yao<sup>\*</sup>



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## Water-modulated electrolyte enables the development of advanced low-temperature Zn-ion batteries

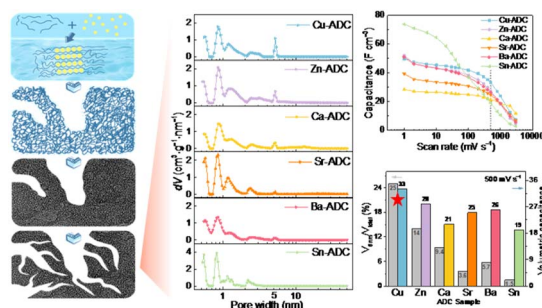
Yilong Zhu, Xun Zhao, Yanzhang Zhao, Qianru Chen, Junnan Hao\* and Yan Jiao\*



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## Metal-ion mediated mesopore engineering in hierarchical porous carbons for enhanced high-rate volumetric capacitance

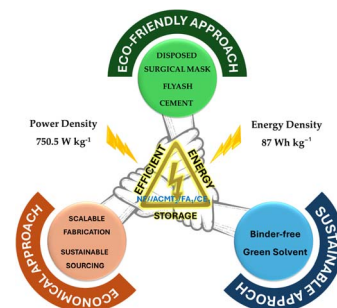
Jie Du, Xinkun Zhao, Xin Chen, Tianxiang Sun, Bona Dai, Jiabin Li, Tangming Mo, Bo Cui,\* Qinglei Liu\* and Di Zhang



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## Activated carbon microtube electrodes with cement and fly ash for enhanced supercapacitor performance

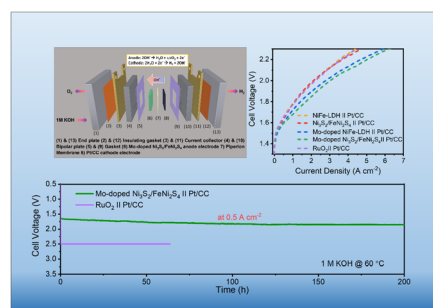
S. Nagarani, Jih-Hsing Chang,\* Mohanraj Kumar, Krishnan Vancheeswaran Prasad and Raman Arunpandian



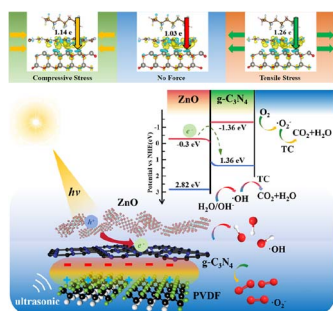
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## Interfacial engineering of Mo-doped Ni<sub>3</sub>S<sub>2</sub>/FeNi<sub>2</sub>S<sub>4</sub> heterostructures for durable industrial level-current-density AEM water electrolysis

Komal Patil, Jiyeon Lee, Daim Choi, Ruturaj Jadhav, Yujin Cho, Sujin Kwon, Nochang Park, Tae Kyung Lee,\* Dong-Won Kang\* and Jongsung Park\*



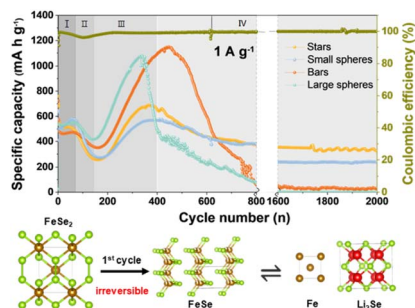
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### Boosting piezo-photocatalytic performance in antibiotic wastewater treatment through graphitic carbon nitride–zinc oxide based heterojunction engineering

Jiajun Li, Bing Yang, Ran Deng, Tingting Yu,\* Tao Yang, Wenbin Chen and Jizhou Jiang\*

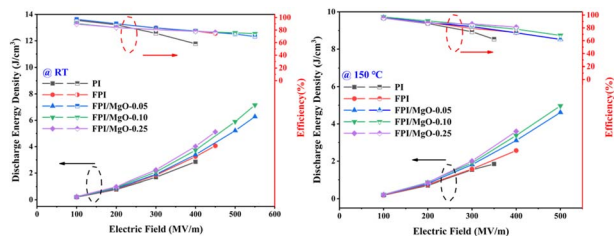
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### Morphology and facet effects on the charge and discharge mechanisms in FeSe<sub>2</sub>-based lithium-ion storage

Chih-Hsueh Li, Yu-Bo Hung, Bo-Hao Chen, Vandana Meena, Wei-Cheng Chu, Hsing-Yu Tuan\* and Michael H. Huang\*

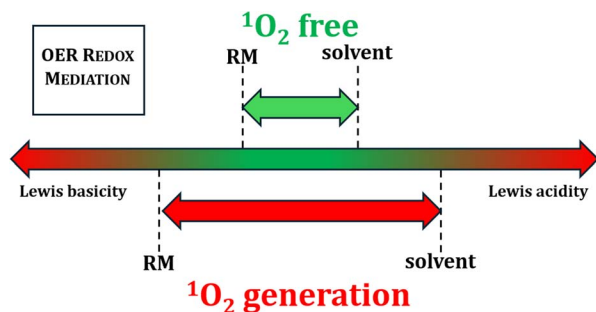
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### Polymer dielectrics enabled by molecular engineering design and charge trap regulation for high-temperature energy storage

Guangyu Duan,\* Fengying Hu, Yiran He, Zuming Hu, Ming Tian and Junwei Zha

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### Deciphering the role of LiBr as a redox mediator in Li–O<sub>2</sub> aprotic batteries

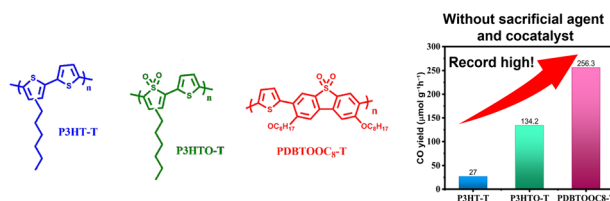
Angelica Petrongari, Lucrezia Desiderio, Adriano Pierini, Enrico Bodo, Mauro Giustini and Sergio Brutti\*



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### Novel soluble sulfonyl-containing conjugated polymers as highly efficient photocatalysts for CO<sub>2</sub> reduction reaction

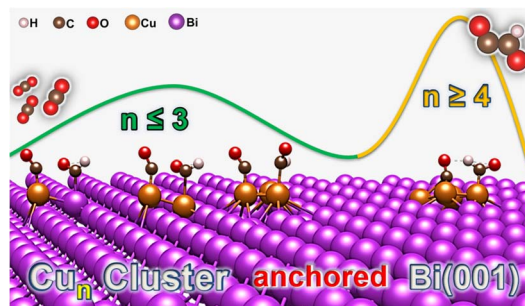
Cai Cheng-Wei, Kuang-Hao Cheng, Palraj Ranganathan, Kuei-Jhong Lin, Ching-I. Huang, Kun-Han Lin, Jyh-Chien Chen and Leeyih Wang\*



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### Cu cluster-anchored bismuthene promoting electrocatalytic reduction of CO<sub>2</sub> into C<sub>2</sub> products: a theoretical study

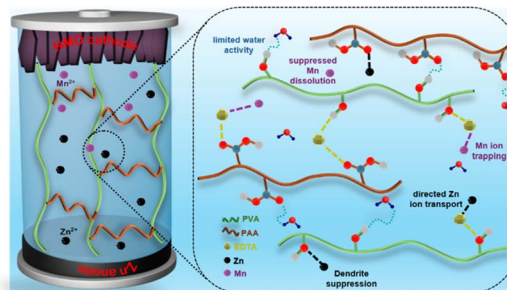
Mengting Zhou, Hongxia Liu, Juntao Yan, Huiping Zhao, Rong Chen\* and Lei Liu\*



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### Chelating additive enabled dual-action hydrogel polymer electrolyte: suppressing dendrite formation and crosstalk in aqueous rechargeable zinc metal batteries

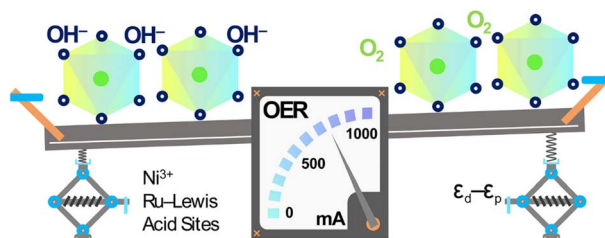
Athira Babu, Fazeela Noushad Femina, Swati Dilwale, Gopinadhanpillai Gopakumar and Sreekumar Kurungot\*



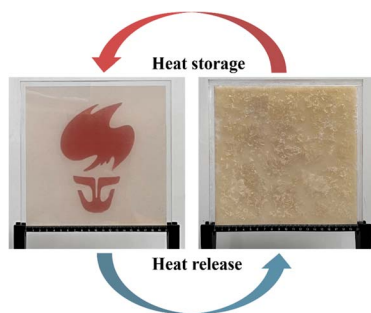
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### Orchestrating the d-band and p-band centroids with local Lewis acid sites accelerates O<sub>2</sub> evolution performance in ultralow Ru-doped NiFe LDH

Suvankar Deka, Manju Kumari Jaiswal, Tanmoy Kalita, Kangkon Saikia, Parasmani Rajput, Som Datta Kaushik, Dhruba Jyoti Kalita and Biswajit Choudhury\*



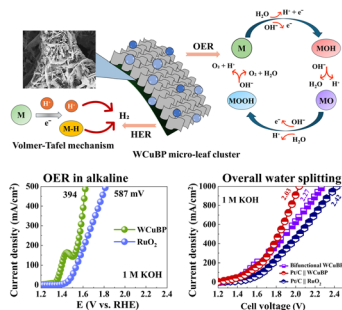
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### Core-ligand modulation alters core–shell coordination to produce stable supercooled phase-change materials for long-term heat storage and release

Yuchen Pan, Tianle Cheng, Rui Hu, Xusheng Zhang, Zeyu Niu, Zeyan Dong, Dong He, Siyuan Tang and Zhubing He\*

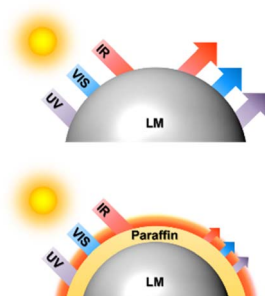
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### An efficient and durable electrocatalyst for electrochemical water splitting: WCuBP micro-leaf-clusters

Sumiya Akter Dristy, Shusen Lin, Shalmali Burse, Md Ahasan Habib, Mehedi Hasan Joni, Md Najibullah and Jihoon Lee\*

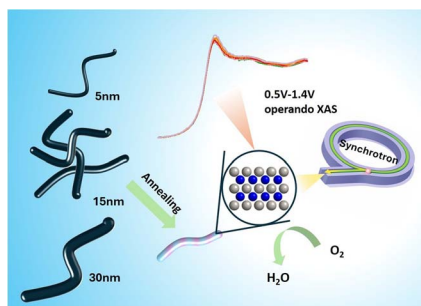
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### Liquid metal eutectic gallium–indium (EGaIn) blended with paraffinic wax for enhanced solar-to-heat conversion

Hyeonmin Jo, Somnath Chowdhury, Chimin Song, Eunju Na, Minjeong Cho, Sung Gu Kang\* and Joohyung Lee\*

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### Precise diameter control derived intermetallic PtNiCo nanowires: a simple two-step synthesis and operando XAS insight

Kuowei Liao, Weijie Cao, Mukesh Kumar,\* Neha Thakur, Mitsuhiro Matsumoto, Toshiki Watanabe, Masashi Matsumoto, Hideto Imai, Tomoya Uruga, Takuma Kaneko, Ryota Sato, Toshiharu Teranishi and Yoshiharu Uchimoto

