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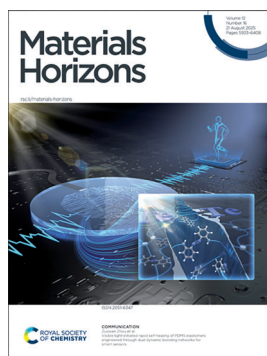
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ISSN 2051-6347 CODEN MHAOAL 12(16) 5933-6408 (2025)



Cover

See Ziyi Ling, Steven Wang, Xiaoming Fang *et al.*, pp. 6133–6142. Image reproduced by permission of Ziyi Ling from *Mater. Horiz.*, 2025, 12, 6133.



Inside cover

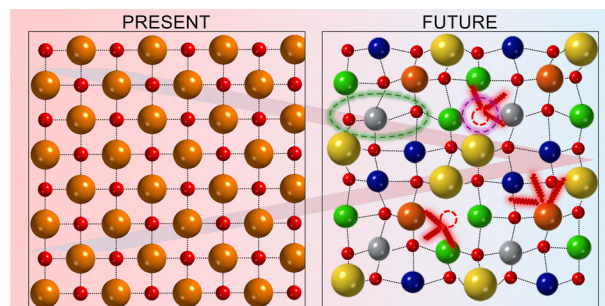
See Zuowan Zhou *et al.*, pp. 6143–6154. Image reproduced by permission of Zuowan Zhou from *Mater. Horiz.*, 2025, 12, 6143.

FOCUS

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Beyond the four core effects: revisiting thermoelectrics with a high-entropy design

Corey Oses,* Tianhao Li, Xiao Xu, Guangshuai Han, Guotao Qiu and Jonathan R. Owens

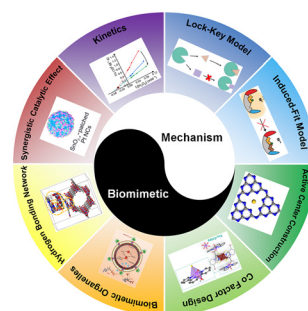


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Bioinspired rational design of nanozymes

Zhihong Chen, Bingyan Li, Yiqing Zhang, Xinyue Shang, Cheng Ma, Weiwei Gao* and Zhiling Zhu*



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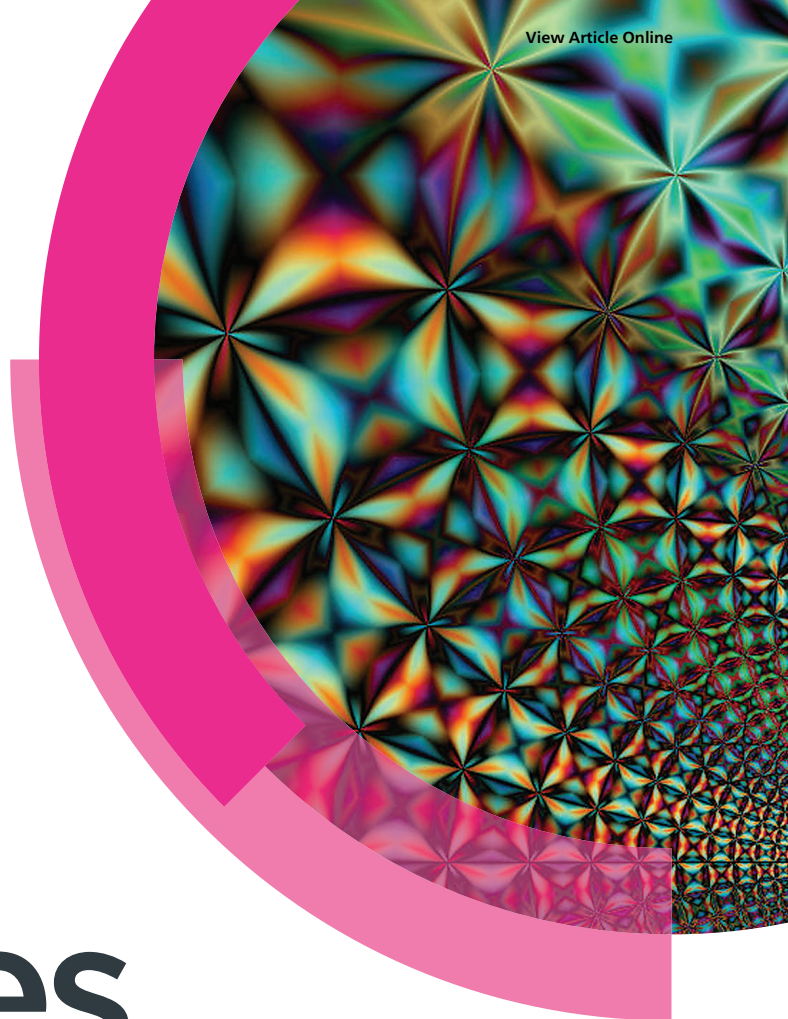


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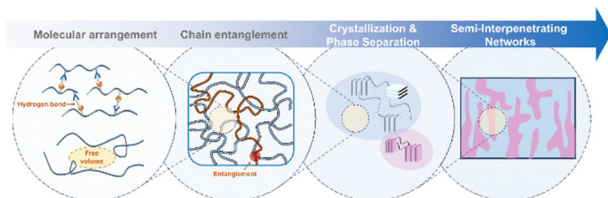
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REVIEWS

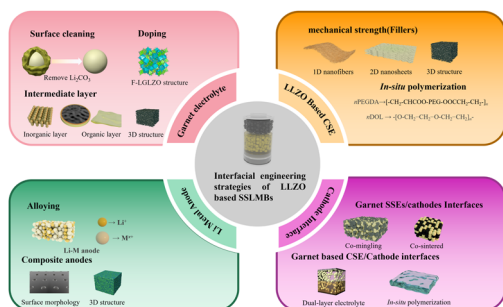
6069



Control of molecular aggregation structures towards flexible organic photovoltaics

Jiayuan Zhu, Cenqi Yan,* Jiayu Wang, Hongxiang Li and Pei Cheng*

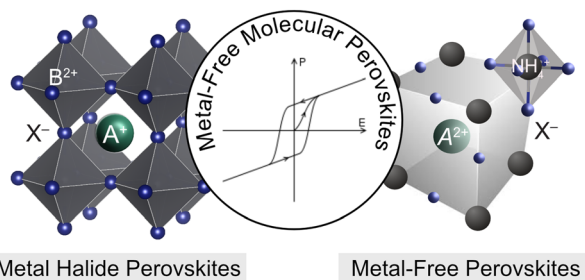
6082



Recent advances in garnet-based electrolytes for solid-state lithium metal batteries: interfacial challenges and engineering strategies

Yuezhen Mao, Jilong Liu, Wei Chen, Wei Zhang and Chunwen Sun*

6124

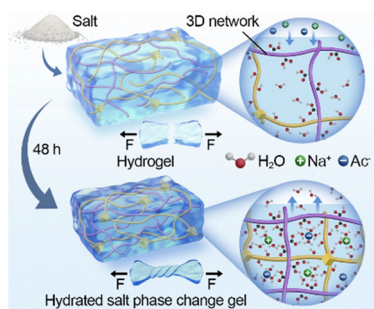


The emergence of metal-free molecular perovskites: challenges and opportunities

Loreta A. Muscarella,* Gianluca Bravetti and Jovana V. Milić*

COMMUNICATIONS

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Enhanced stimuli-responsive phase change gels through pickling-enabled ion permeation

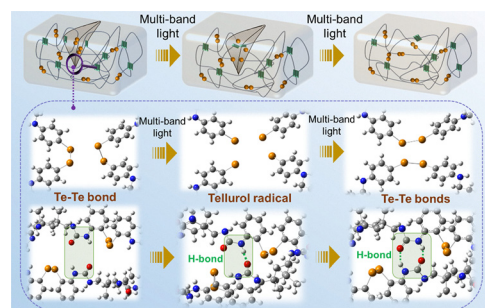
Peimin Yu, Xiong Wang, Ziye Ling,* Zhengguo Zhang, Steven Wang* and Xiaoming Fang*



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Visible light-initiated rapid self-healing of PDMS elastomers engineered through dual dynamic bonding networks for smart sensors

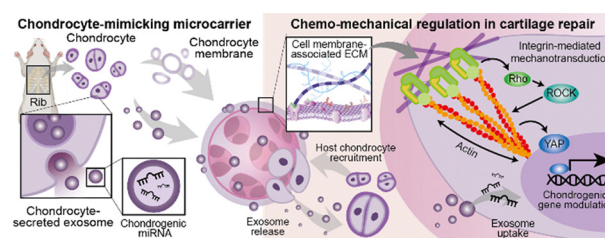
Mingfeng Dai, Xiang Han, He Zhang, Jing Yan, Ruipeng Han, Longkun Que, Yifan Guo and Zuowan Zhou*



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Chondrocyte-mimetic therapeutic microcarriers for synergistic chemo-mechanical signaling in cartilage regeneration

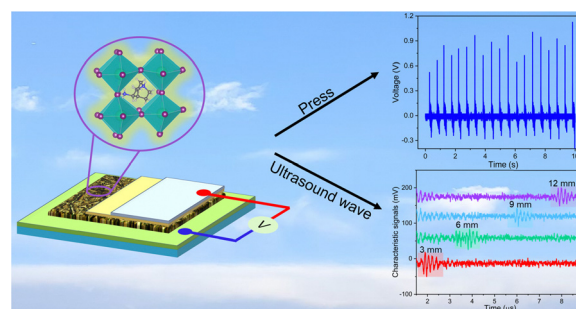
Na-Hyun Lee, Zechu Zhou, Ji-Young Yoon, Nandin Mandakhbayar, Cheng Ji Li, Jung-Hwan Lee, Hae-Won Kim* and Hye Sung Kim*



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Luminescent 3D chiral hybrid metal-halide perovskites for piezoelectric energy harvesting and ultrasound detection

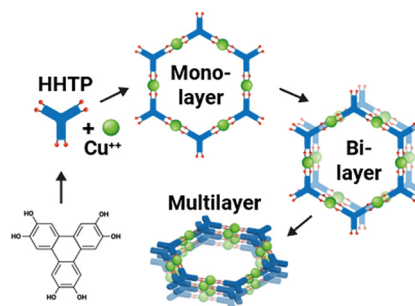
Kai Li, Zhi-Gang Li, Yong-Ji Gong,* Yong-Qiang Chen and Wei Li*



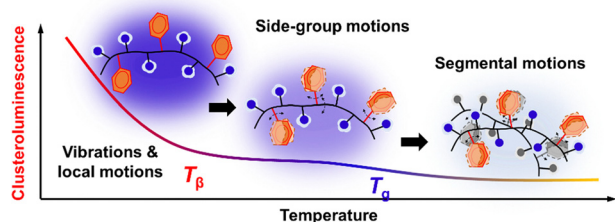
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Dirac-cone induced metallic conductivity in $\text{Cu}_3(\text{HHTP})_2$: high-quality MOF thin films fabricated via ML-driven robotic synthesis

Chatrawee Scheiger, Jonas F. Pöhls, Mersad Mostaghimi, Lena Pilz, Mariana Kozłowska, Yidong Liu, Lars Heinke, Carlos Cesar Bof Bufon, R. Thomas Weitz, Wolfgang Wenzel* and Christof Wöll*



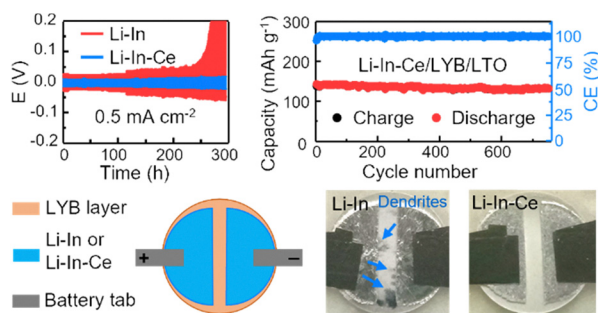
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Detection of β -transition in polyesters via clusteroluminescence

Xiang Li, Xiong Liu, Yanbing Lv, Ziteng Zhang, Kailuo Chen, Bo Chu, Jing Zhi Sun, Haoke Zhang,* Xinghong Zhang* and Ben Zhong Tang*

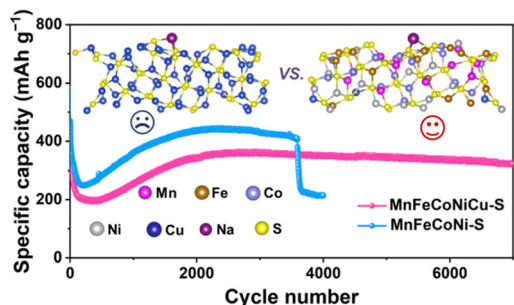
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Cerium-alloyed dendrite-inhibited highly stable anodes for all-solid-state lithium batteries

Xiaomeng Shi, Zhichao Zeng,* Chao Li, Wenshuo Zhang, Zhiqiang Li, Guangrui Zhang, Lele Gao and Yaping Du*

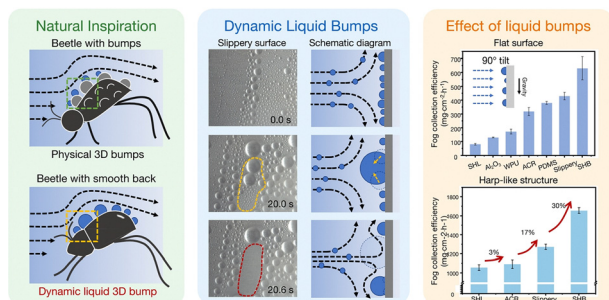
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High mixing entropy of MnFeCoNiCu-S to drive high performance sodium storage

Wei Shuang, Junjia Xu, Fuyou Chen, Yujun Wu, Lin Yang* and Zhengyu Bai*

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Unravelling the aerodynamic enhancement of water harvesting via dynamic liquid bumps

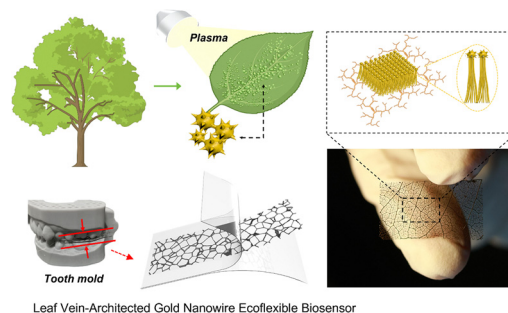
Haoyu Bai, He Sun, Zhihang Ye, Zhe Li, Tianhong Zhao, Xinsheng Wang, Mingren Cheng, Ziwei Wang, Shouying Huang and Moyuan Cao*



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Bioinspired leaf vein-architected gold nanowire ecoflexible biosensors for ultrasensitive occlusal force monitoring

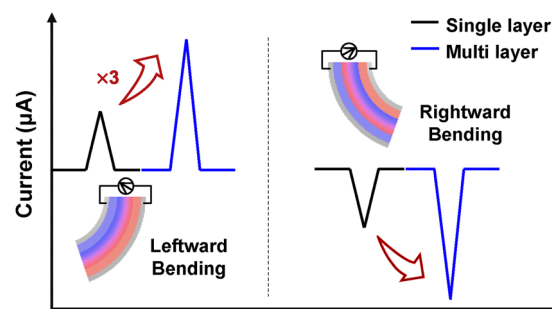
Wuxing Zhang, Heng Zhang, Gangsheng Chen, Biao Ma, Yang Xia and Yi Chen*



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Multilayer iontronic sensors with controlled charge gradients for high-performance, self-powered tactile sensing

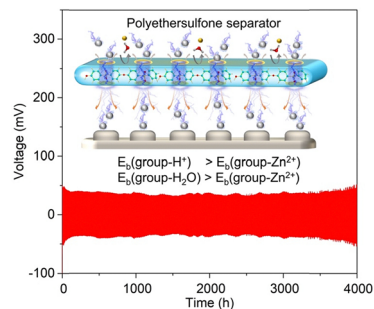
Haryeong Cho, Young-Ryul Kim, Jaehun Kim, Seungjae Lee, Seokhee Jung, Jeeyoon Kim, Jinyoung Kim, Yong-Jin Park, Sung-Phil Kim* and Hyunhyub Ko*



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Regulating $\text{Zn}^{2+}/\text{H}^{+}$ selectivity through functional group design of separators for long-lifespan aqueous zinc batteries

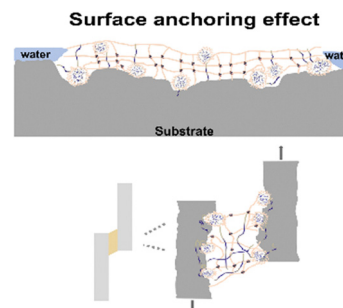
Jiaxian Zheng, Ali Sufyan, Chong Li, Zheng Han, Xin Liu, Yuguo Zheng, J. Andreas Larsson,* Gang Huang, Binbin Wei, Zhengbing Qi, Zhoucheng Wang, Qiugen Zhang* and Hanfeng Liang*



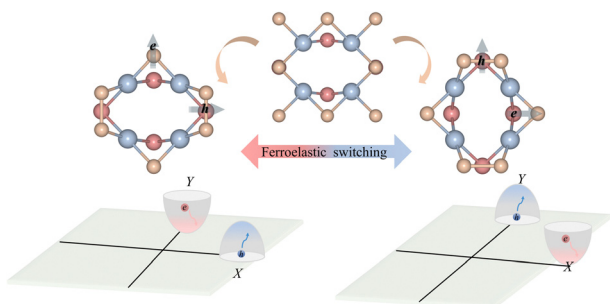
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Water-induced phase separation enables underwater adhesion far exceeding dry adhesion

Pan Du, Yan Wang and Xianru He*



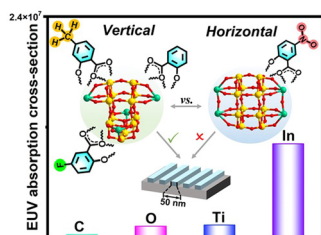
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Intrinsic ferroelastic valleytronics in 2D Pd₄X₃Te₃ (X = S, Se) materials: a new platform for ultrafast intervalley carrier dynamics

Chengan Lei, Zhao Qian,* Yandong Ma and Rajeev Ahuja

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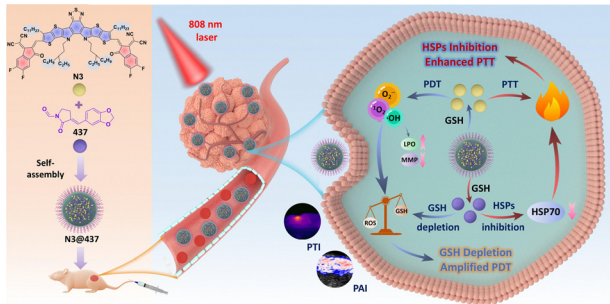


- ★ Indium enhances EUV absorption ability
- ★ Ligand regulation strategy modulates configuration and solution processability

Ligand effect on In–Ti-oxo nanoclusters for nanolithography

Jiao Wu, Jiali Chen, Liming Wang, Yuting Ye, Xiaozhi Zhan, Yihang Song, Qiao-Hong Li, Xiaofeng Yi* and Jian Zhang*

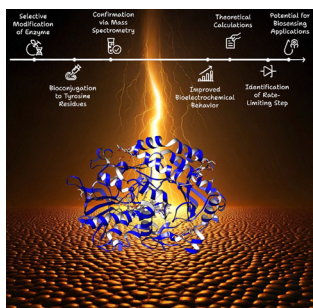
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Dual-target regulation of glutathione and heat shock proteins *via* molecular-carrier-pathway triple-engineering for potentiated phototherapy

Yike Tu, Laiping Fang, Shufang Li, Kuo He, Yanzhao Diao, Lifeng Hang, Lina Wang, Jianan Dai,* Ping'an Ma* and Guihua Jiang*

6301



Tyrosine-specific bioconjugation allowing hole hopping along aromatic chains of glucose oxidase

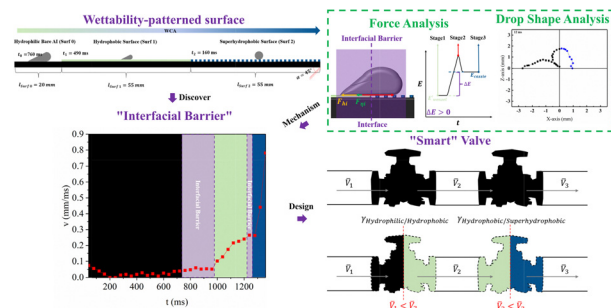
Guoda Vecelytė, Vygailė Dudkaitė, Ondrej Šedo, Zbyněk Zdráhal and Gintautas Bagdžiūnas*



6310

The smart valve for micro flow-velocity regulation based on the "Interfacial Barrier" effect of wettability-patterned surfaces

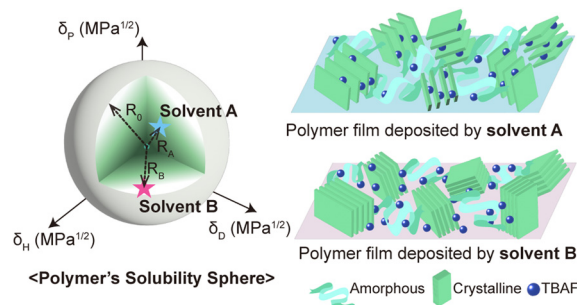
Litao Chen, Yimin Luo,* Jincheng Liu, Boran Hao, Shushen Lyu and Zhuangzhu Luo*



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Leveraging solvent affinity for phase-selective doping to enhance doping efficiency in a DPP-based n-type conjugated polymer

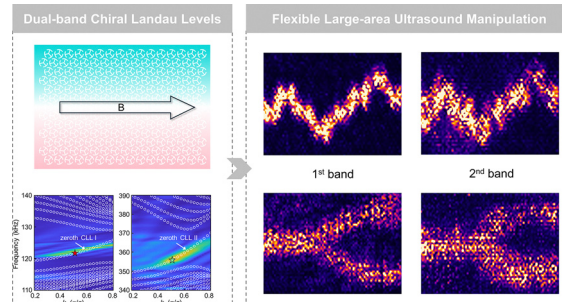
Soyeong Jang, Osnat Zapata-Arteaga,* Diego Rosas Villalva, Guorong Ma, Andrew Bates, Anirudh Sharma, Abdul-Hamid Emwas, Yongcao Zhang, Jianhua Han, Xiaodan Gu and Derya Baran*



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Dual-band flexible large-area ultrasonic energy conveying via elastic chiral Landau levels

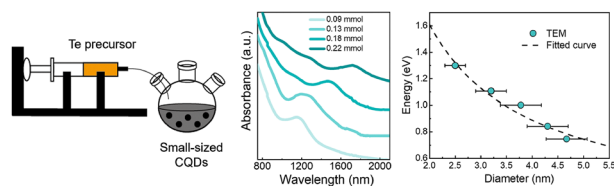
Lei Fan, Zhihao Lan, Yafeng Chen, Jie Zhu and Zhongqing Su*



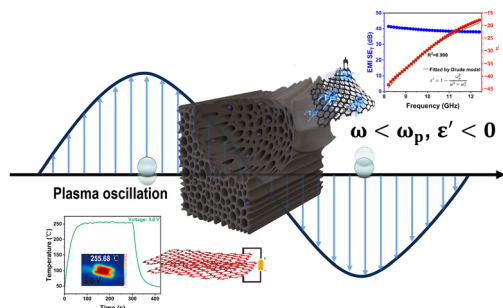
6342

Continuous monomer supply for highly monodisperse Ag₂Te colloidal quantum dots for SWIR photodetectors

Ha-Neul Kim, Doheon Yoo, Abhishek Sharma and Min-Jae Choi*



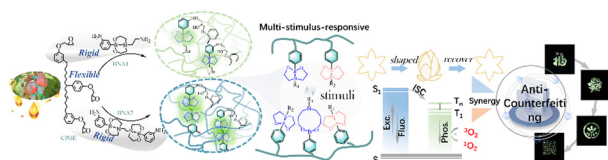
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Bio-based derived carbon materials for permittivity metamaterials: dual efficacy of electromagnetic wave protection and Joule heating

Chenchen Wang, Xiuyi Lin, Chuanshuang Hu,* Yao Ding, Zhuoqun Wang, Yonghui Zhou,* Xi Lin and Jiangtao Xu*

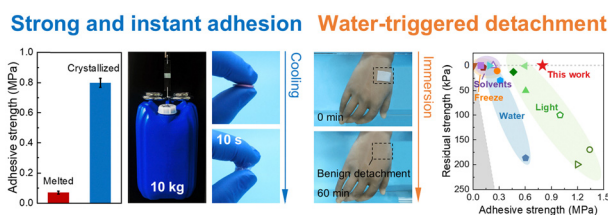
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A multifunctional cardanol-based room-temperature phosphorescent material with multi-stimulus-responsive shape-memory for anti-counterfeiting and encryption

Caiying Bo,* Yiran Fu, Miao Li, Lihong Hu,* Meng Zhang,* Fei Song and Yonghong Zhou*

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Scab-inspired strong adhesive tapes with self-detachment based on water-mediated destruction of polymer crystals

Yichen Zhou, Yicheng Zhu, Xing Zhang, Ying Zheng, Junfeng Liu, Yongzhong Bao, Guorong Shan, Jinjun Yang,* Pengju Pan* and Chengtao Yu*

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Chain-length engineered interfacial architecture enables dendrite-free aqueous zinc-ion batteries

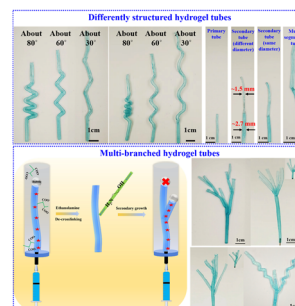
Jiaqi Yang, Zhengxiao Ji, Miaoran Deng, Chaocang Weng, Xusheng Wang, Min Xu,* Likun Pan* and Jinliang Li*



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Biomimetic differently structured and multi-branched hydrogel tubes inspired by bud-growth of plants

Guoqiang Lu, Jingyu Jin, Yicheng Wang, Guohua Wang, Jun Nie and Xiaoqun Zhu*



CORRECTION

6406

Correction: Regulating $\text{Zn}^{2+}/\text{H}^{+}$ selectivity through functional group design of separators for long-lifespan aqueous zinc batteries

Jiaxian Zheng, Ali Sufyan, Chong Li, Zheng Han, Xin Liu, Yuguo Zheng, J. Andreas Larsson,* Gang Huang, Binbin Wei, Zhengbing Qi, Zhoucheng Wang, Qiugen Zhang* and Hanfeng Liang*

