

Materials Horizons

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ISSN 2051-6347 CODEN MHAOAL 12(22) 9321-9854 (2025)



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See Takuji Hatakeyama *et al.*, pp. 9556–9561. Image reproduced by permission of Takuji Hatakeyama from *Mater. Horiz.*, 2025, 12, 9556.



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See Raymond J. Turner, Gorka Orive, Aziz Maleki *et al.*, pp. 9337–9358. Image reproduced by permission of Aziz Maleki from *Mater. Horiz.*, 2025, 12, 9337. Image designed by Ehsan Keshavarzi.

EDITORIAL

9334

Toward advanced materials research and emerging engineering education at the School of Materials Science and Engineering, Nankai University

Moyuan Cao,* Yaping Du,* Jiajie Liang,*
Zhong-Yong Yuan,* Shuqi Chen* and Xian-He Bu*

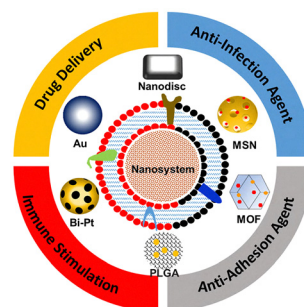


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Engineering biomimetic bacteria membrane-coated nanoparticles: an emerging anti-infection platform

Fatemeh Hakimi, Faezeh Almasi, Haniyeh Etezadi, Laleh Salarilak, Massoud Vosough, Giti Karimkhanlooei, Kimia Esmaeilzadeh, Jon Zarate, Hajar Homa Maleki, Raymond J. Turner,* Gorka Orive* and Aziz Maleki*



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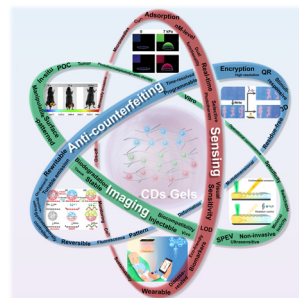
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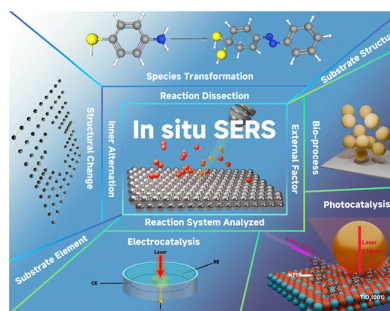


Shuangshuang Wu, Yu Zhang, Minhuan Lan* and
Youju Huang*



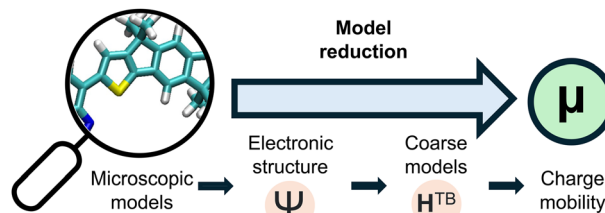
9381

Jingyi Wei, Sixian Yu, Tianxiang Zhou, Jing Shang,
Songling Liu, Feng Han,* Xiaodong Li* and Qi An*



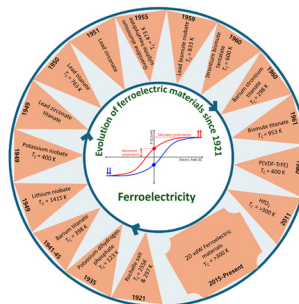
9416

Colm Burke and Alessandro Troisi*



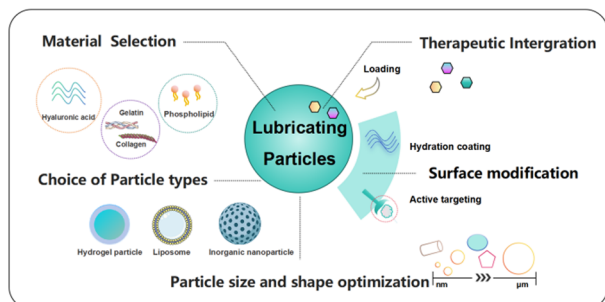
9432

Budhi Singh, Jaerok Kim, Donggyu Kim, Nayeong Lee,
Cheolhwa Jang, Yoonmyung Lee* and Sungjoo Lee*



REVIEWS

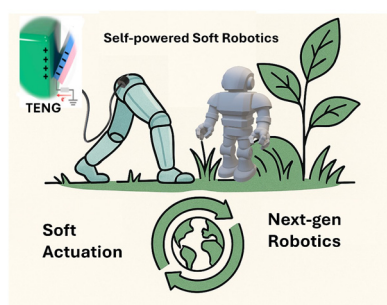
9476



Lubricating nano/micro particles for osteoarthritis therapy

Qing Yao, Xiaoyue Chen, Huixiang Sheng, Yuzhi Zhang, Ruijie Chen, Pei Fan* and Longfa Kou*

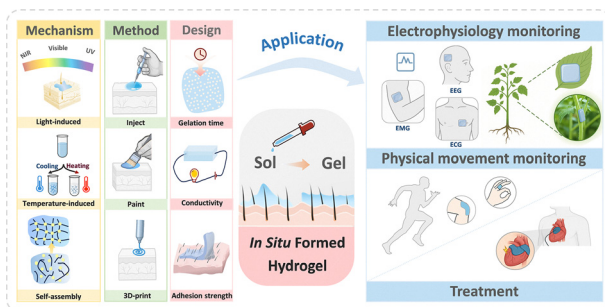
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Triboelectric self-powered soft robotics: paving the way towards a sustainable future

Arraboina Srujan Kumar, Borem Avinash, Mamidi Yugandhar Rao, Jananipriya Boominathan, Sugato Hajra, Swati Panda, Hoe Joon Kim, Kaliyannan Manojkumar* and Venkateswaran Vivekananthan*

9537

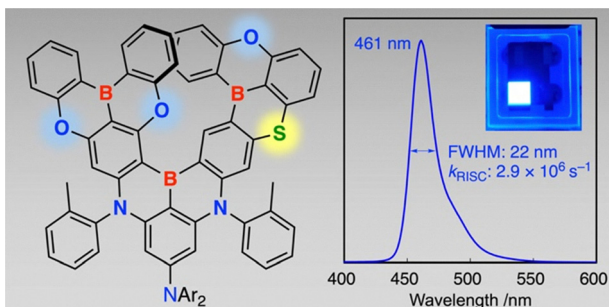


In situ formed hydrogels for soft bioelectronics

Xilu Ye, Yidan Chen, Chenghui Lv, Yibin Ying, Jianfeng Ping, Jinming Pan* and Lingyi Lan*

COMMUNICATIONS

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Improving the TADF properties of deep-blue multiple-resonance emitters by strategic oxygen–sulfur replacement

Junki Ochi, Yuki Yamasaki, Susumu Oda, Masakazu Kondo, Yasuhiro Kondo, Masahiro Hayakawa and Takuji Hatakeyama*

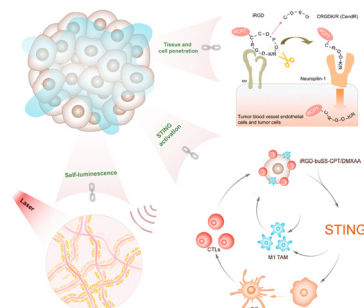


COMMUNICATIONS

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A polymer-free, tumor-microenvironment responsive sol–gel platform for spatiotemporal STING activation and self-amplifying immunotherapy

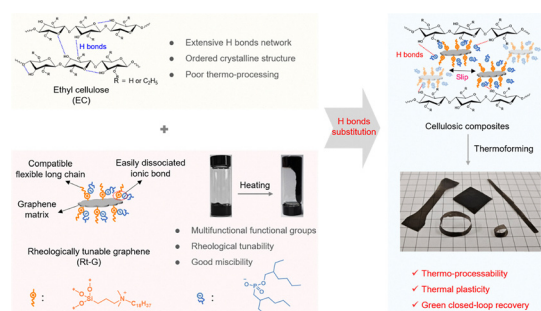
Feng Feng, Wangqing Li, Qilong Li, Xuefei Sun, Zhengdong Cheng, Xiuyu Wang,* Wenchao Li* and Li Yao*



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A robust strategy for thermoformable cellulosic composite bioplastics via hydrogen bond substitution

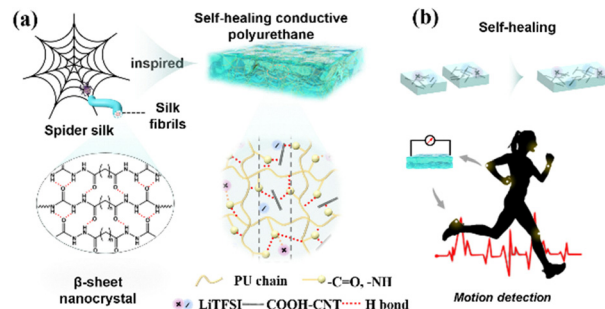
Xuyue Liu, Jingzhou He, Tong Zhou, Shiwei Li, Yi Guo, Ting Han, Zehong Wang* and Lijie Dong*



9580

Spider-silk-inspired self-healing conductive elastomer for joint rehabilitation detection and tactile temperature warning

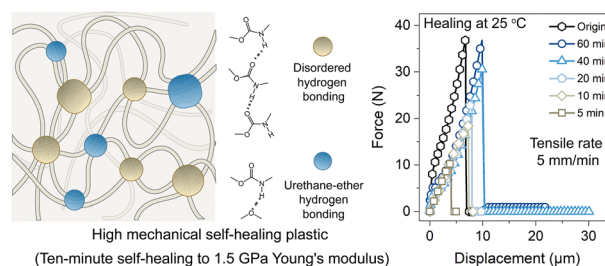
Kai Yan,* Xiaolong Cao, Yuhao Tang, Qunna Xu, Yan Zong, Zejian Yang and Can Zhou



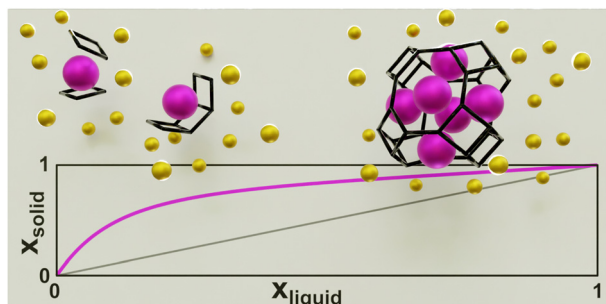
9594

Room-temperature self-healing waterborne glassy polyurethane via a disordered hydrogen bonding network

Chenxi Huyan, Chuncheng Pan, Qiuzhen Chen, Tianyu Wang, Fahu Yang, Dong Liu* and Fei Chen*



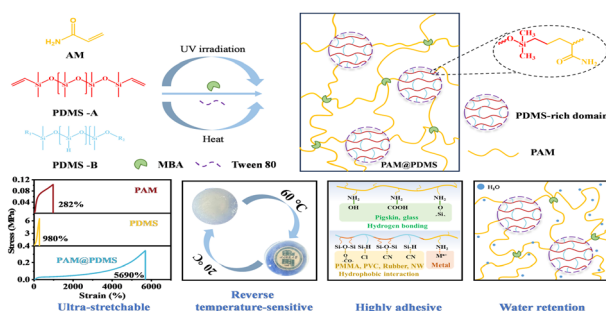
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Ion exchange selectivity governs phase selection in zeolite synthesis

Anjul Rais, Dries Vandenabeele, Nikolaus Doppelhammer, Karel Asselman, Wauter Wangermez, Christine E. A. Kirschhock and Eric Breynaert*

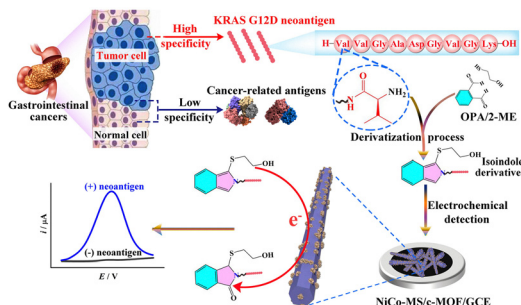
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High-performance reverse thermoresponsive hydrogel enabled by one-pot PDMS-enriched domain crosslinking

Qianqian Liang, Wanting Yuan, Yi He, Ziqi Wang, Yong Liu, Jinrong Wu, Lijuan Zhao* and Yi Wang*

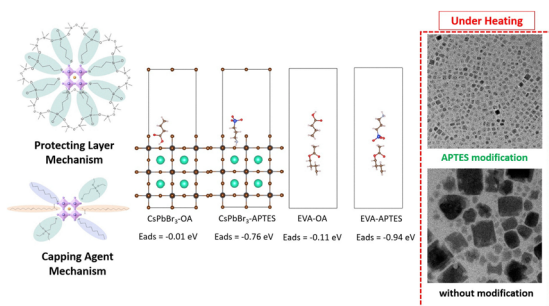
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In situ partial vulcanization synthesis of a conductive and highly catalytic bimetal organic framework for sensitive electrochemical cancer-specific neoantigen detection

Xinmei Song, Hao Wang, Chunfang Gan,* Ruo Yuan and Yun Xiang*

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Suppressing thermal degradation of CsPbBr₃ quantum dot/EVA films via APTES-mediated interface engineering: toward efficient and stable luminescence down-shifting for silicon solar cells

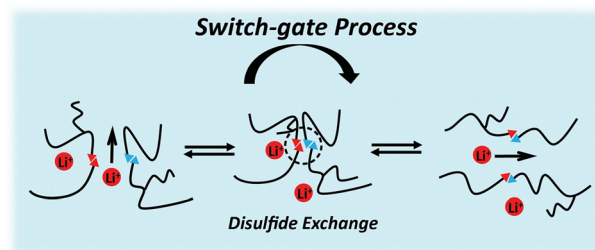
Hongfei Liang, Lu Chen, Yang Wu, Youwen Xue, Yuxuan Wang, Wenjie Ji, Huanqi Cao, Qian Zhao,* Jian Song* and Guoran Li



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Dynamic bonds transform ion transport mechanisms in polymeric covalent adaptable networks

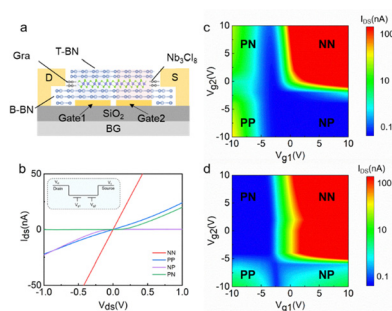
Mohammad Rezayani, Farhad Sharif* and Hesam Makki*



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Reconfigurable bipolar transistors enabled by breathing-Kagome Nb_3Cl_8

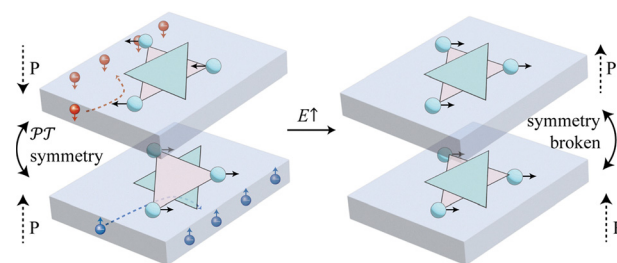
Lu-Qi Wei, Jia-Hao Huang, Zhi-Jie Ma, Ya-Fei Jiang, Wen-Yi Tong, Zhao Guan,* Ya-Qiong Wang, Bin-Bin Chen, Pinghua Xiang, You-Guo Shi, Chun-Gang Duan and Ni Zhong*



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Ferroelectricity driven interlayer magnetic phase transitions in van der Waals homobilayers

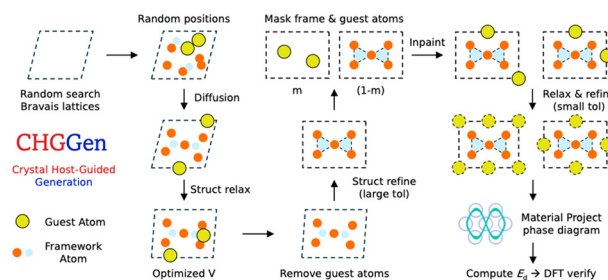
Jiale Wang, Xinru Li,* Yibo Liu, Ying Dai,* Baibiao Huang and Yandong Ma*



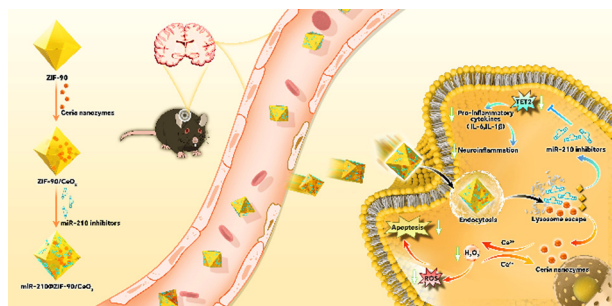
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Crystal structure prediction with host-guided inpainting generation and foundation potentials

Peichen Zhong,* Xinzhe Dai, Bowen Deng, Gerbrand Ceder and Kristin A. Persson*



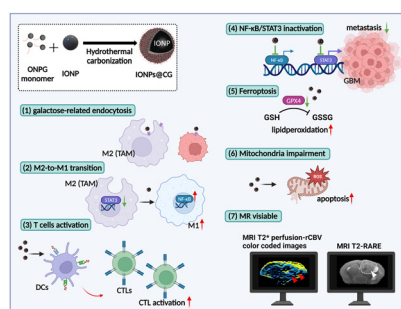
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Multifunctional miRNA delivery systems provide synergistic neuroprotection against cerebral ischemia reperfusion injury

Linlin Zhao, Meiyu Hu, Xiaohang Yin, Hao Yang, Liyun Zhu, Pingyuan Sun, Xiya Wang, Songwei Ai, Yonghui Zheng, Genjie Li, Tingting Yang,* Xuerui Chen* and Jingyu Zhang*

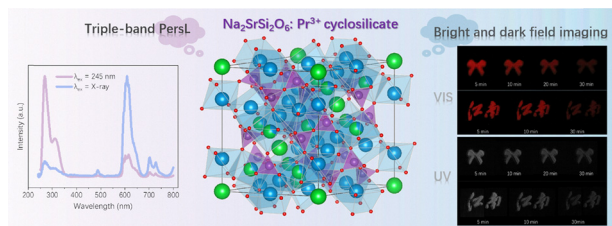
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Galactosylated iron oxide nanoplateforms for targeted imaging and ferroptosis-enhanced glioblastoma therapy via immune modulation

Yu-Cheng Chin, Ying-Tzu Chen, Yi-Chun Chiu, Shang Rung Wu, Li-Chan Chang, Li-Xing Yang, Hua-Shan Liu, Guan-Chun Wu, Ching-Ching Yu, Dai-Cheng Dong, I-Tsang Chiang, Yu-Chang Liu, Wen-Pin Su, Fei-Ting Hsu* and Chih-Chia Huang*

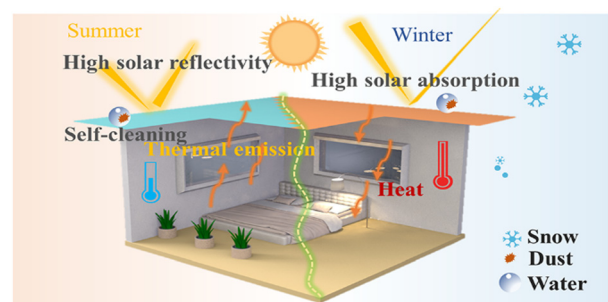
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Unlocking triple-band persistent luminescence: invisible UVC–UVB and visible red emission through structural modulation of $\text{Na}_2\text{SrSi}_2\text{O}_6:\text{Pr}^{3+}$ cyclosilicate

Yi Wang, Jiaren Du,* Hengwei Lin, Dirk Poelman and Eugeniusz Zych

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A dual-mode self-cleaning film for durable passive radiative cooling and solar heating

Tingni Wu, Kai Yin,* Yuchun He, Lingxiao Wang, Jianqiang Xiao, Haonan Yu, Hua Wang and Yin Huang

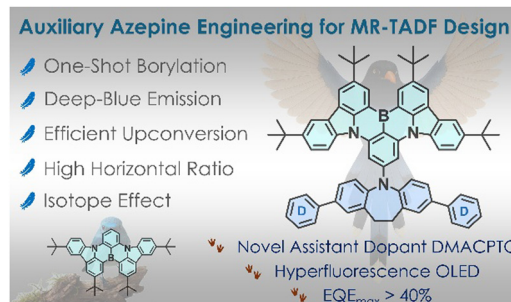


COMMUNICATIONS

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Strategic azepine engineering realizes highly efficient and stable blue narrowband light-emitting diodes

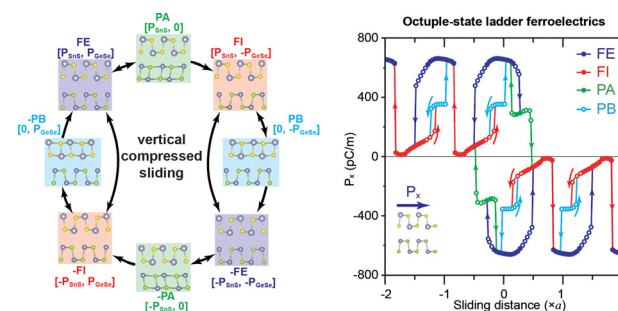
Yi-Kuan Chen, Jian Lei, Yu-Chieh Chao, Yu-Cheng Kung, Wen-Yi Hung, Liang-Yan Hsu and Tien-Lin Wu*



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Octuple-state sliding ladder ferroelectrics in bilayer van der Waals GeSe/SnS heterostructures

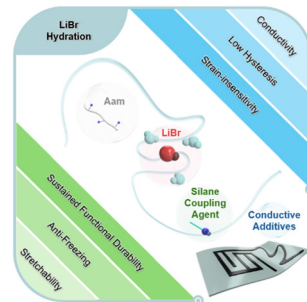
Bo Xu, Junkai Deng,* Xiangdong Ding, Jun Sun and Jefferson Zhe Liu*



9758

A synergistically designed strain-insensitive conductive hydrogel with humidity-adaptivity supporting sustained functional durability

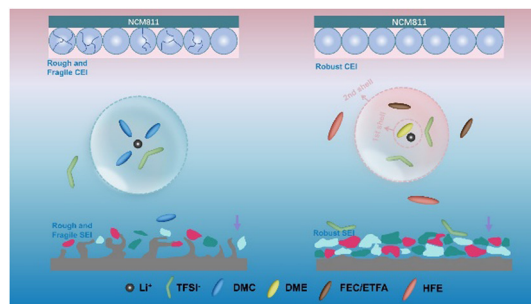
Zhenyu Li,* Yaping Wang, Zekun Zhang, Jianxin Zhou, Yaoming Wang, Feiran Li, Zhuang Hao and Hui Sun



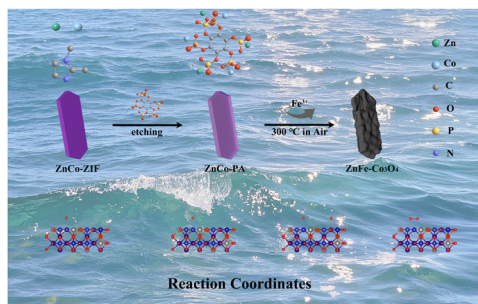
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Spatially decoupled fluorinated-ether-ester electrolytes for extreme-condition lithium metal batteries

Maolan Li, Xinyu Zheng, Weikang Dong, Jiajie Wu, Huilin Lan, Kangwei Song, Zheyuan Liu,* Qian Wang,* Ruiwen Shao* and Chengkai Yang*



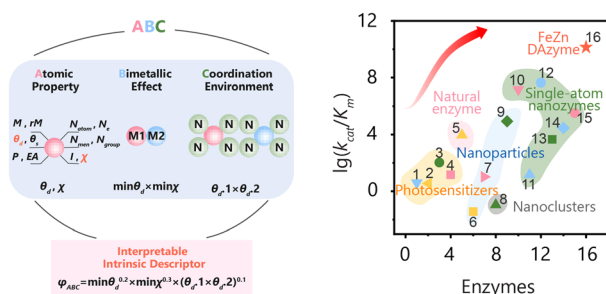
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Enhancing oxygen evolution reaction performance via Zn/Fe co-doping in a Co_3O_4 nanostructure: mechanistic insights and surface reconstruction dynamics

Qianwen Chen, Yanbing Huang, Wanshun Duan, Qijia Su, Yilong Wang, Fuxi Bao, Junjun Zhang* and Wen Guo*

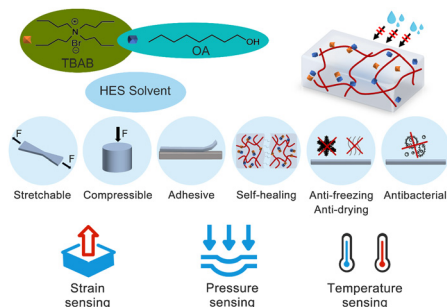
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Rational design of dual-atom nanozymes for deep infection healing guided by an interpretable intrinsic descriptor

Cong Xia, Qianshi Zhang,* Zongheng Wang, Xiaojiang Li, Zhiwei Sun, Yinan Zhang and Shuangyi Ren*

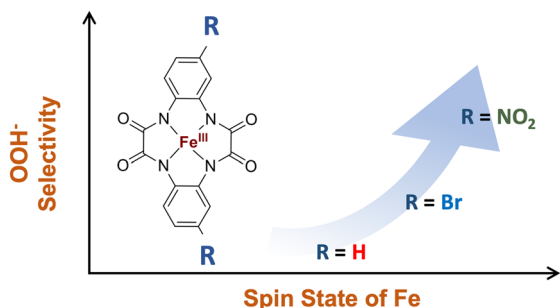
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Hydrophobic deep eutectic solvent-based eutectogels for long-term humidity resistance and multifunctional sensing

Qianwen Lu, Hengfeng Li,* Changyong Cai* and Zhijian Tan*

9808



Medium spin Fe^{III} regulating the peroxide selectivity in the heterogeneous oxygen reduction reaction of spin-polarized Fe-TAML complexes

Cheng-Han Tso, Chih-Hung Hsu, Jiali Wang, Po-Yi Lin, Huang-Teng Lin, Nozomu Hiraoka, Ming-Kang Tsai,* Chih-Hsin Chen* and Hao Ming Chen*

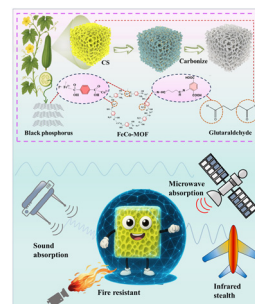


COMMUNICATIONS

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Bionic fire-resistant chitosan aerogels with the triple stealth functionality: microwaves, infrared and sound

Xiuhong Sun, Jinhu Hu, Jin Cao, Lei Chen, Tinglu Song, Xing Su, Pingan Song, Yang Li, Shengchao Huang, Ye-Tang Pan,* Mingliang Ma* and Congling Shi

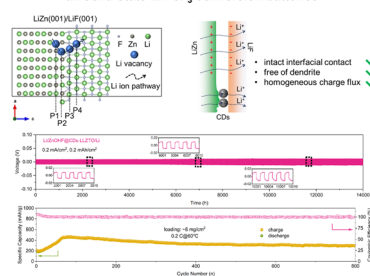


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Synergistic effects of carbon dots and heterojunctions to enable Li–Fe–F all-solid-state ceramic batteries with high cathode loading and cumulative capacity

Hailong Wu, Jiulin Hu* and Chilin Li*

High cumulative capacity and cathode loading all-solid-state Li-FeF₃ conversion batteries



CORRECTION

9851

Correction: Self-generating electricity system driven by aqueous humor flow and trabecular meshwork contraction motion activated BKCa for glaucoma intraocular pressure treatment

Ruiqi Wang, Haiying Wei,* Yuying Shi, Cao Wang, Zhenqiang Yu, Yijian Zhang, Yifan Lai, Jingwei Chen, Guangfu Wang and Weiming Tian*

