

Materials Horizons

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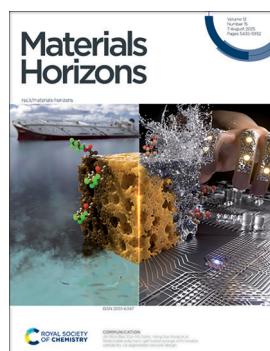
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See Honglong Hu,
Zhi-Gang Zheng et al.,
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Inside cover

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Sohn, Hong Suk Kang
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Materials Horizons Emerging Investigator Series:
Professor Lu Han, Ocean University of China, China



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Humility and grit: how can PhD students deal with eco-inadequacy?

Christian Müller,* Helen Moffett* and Frida Ben-Ami*





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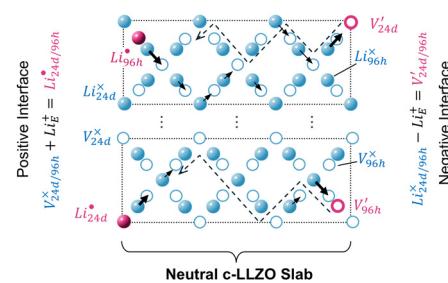
Fundamental questions
Elemental answers

OPINION

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Is the single-ion conductor cubic $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ a binary ionic electrolyte?

Peng Bai

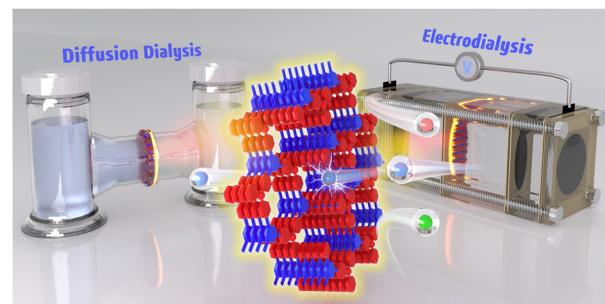
Electrochemically Generated Charged Species

REVIEWS

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Covalent organic framework membranes for lithium extraction: facilitated ion transport strategies to enhance selectivity

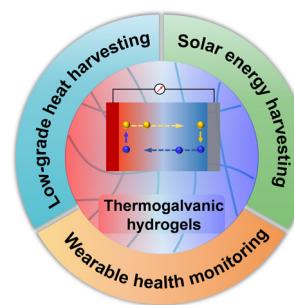
Da Lei, Yongjie Zhu, Lan-Lan Lou* and Zhong Liu*



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Thermogalvanic hydrogels for low-grade heat harvesting and health monitoring

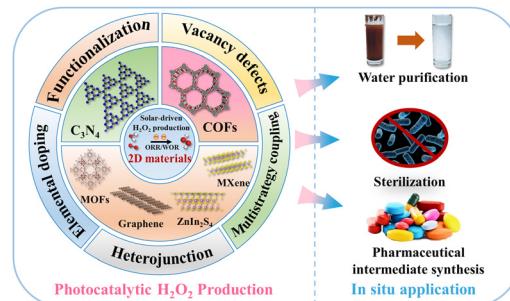
Lili Liu, Xin Guo, Ding Zhang* and Rujun Ma*



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Recent advances in photocatalytic H_2O_2 production: modification strategies of 2D materials and *in situ* application of H_2O_2

Guangyuan Chen, Chenyang Lin, Fangchong Han, Haotian Zhang, Shijian Zhou, Fu Yang, Yan Kong* and Edison Huixiang Ang*



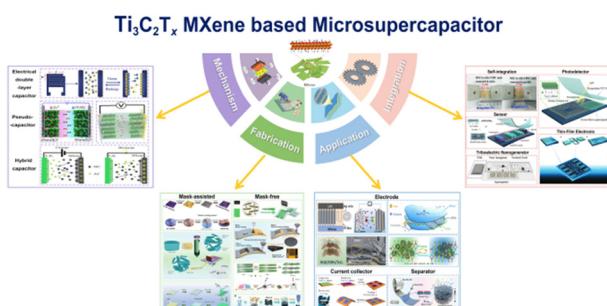
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**Silicon anode modification strategies in solid-state lithium-ion batteries**

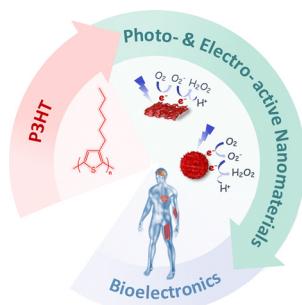
Yang Deng, Xiaohan Feng, Zhonglin Qian, Jurui Ma, Yitao Ouyang, Weijie Li and Chao Han*

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**Recent development review of $\text{Ti}_3\text{C}_2\text{T}_x$ MXene-based microsupercapacitors: a multi-dimensional analysis spanning from underlying mechanisms to integrated applications**

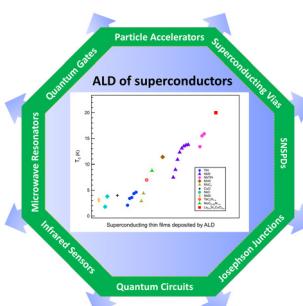
Chuqiao Hu, Yumeng Bai, Wei Wang, Peilun Qiu, Di Wu, Jianqiao Liu,* Ce Fu* and Guozhen Shen*

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**Poly(3-hexylthiophene) as a versatile semiconducting polymer for cutting-edge bioelectronics**

Ilaria Abdel Aziz, Gabriele Tullii, Maria Rosa Antognazza* and Miryam Criado-Gonzalez*

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**Recent advances in atomic layer deposition of superconducting thin films: a review**

Getnet Kacha Deyu,* Marc Wenskat, Isabel González Díaz-Palacio, Robert H. Blick, Robert Zierold and Wolfgang Hillert

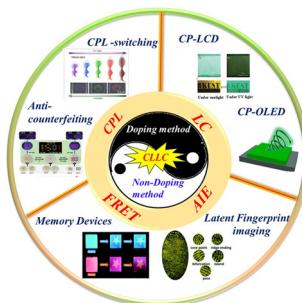


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Advances in chiral luminescent liquid crystals (CLLCs): from molecular design to applications

Parthasarathy Gayathri, Sheng-Qi Qiu* and Zhen-Qiang Yu*

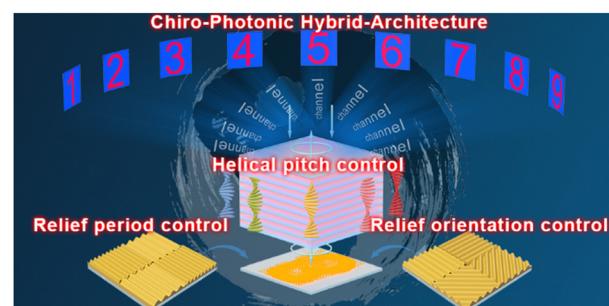


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Orthogonal three-dimensional manipulation of a chiro-photonic hybrid-architecture enabling high-order information encryption

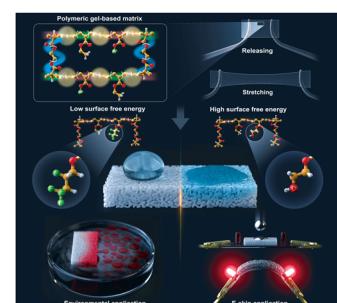
Xuan Liu, Peizhi Sun, Yifei Wang, Conglong Yuan, Honglong Hu* and Zhi-Gang Zheng*



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Stretchable polymeric-gel-based sponge with tunable wettability via segmented network design

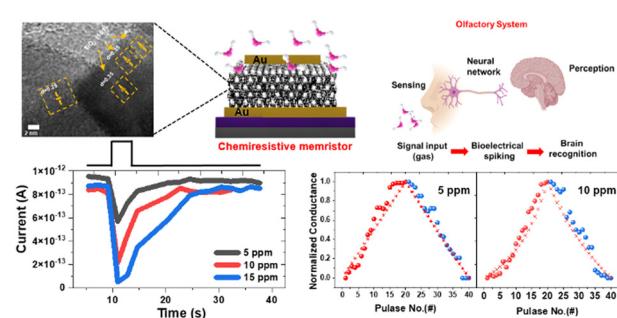
Hyebhin Yoon, Ju Hyeon Kim, Jongmin Q. Kim, Jin Woo Bae,* Eun-Ho Sohn* and Hong Suk Kang*



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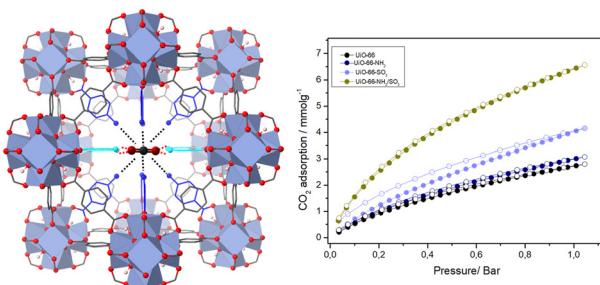
Chemically configurable analogue memristors, via the chemiresistive response of oxidized MXene

Somnath S. Kundale, Muhammad Abubakr, Jihye Park, Fernando Ordóñez Morales, I Ketut Gary Devara, Windy Ayu Lestari, Riya Chatterjee, Sang Yong Nam* and Jun Hong Park*



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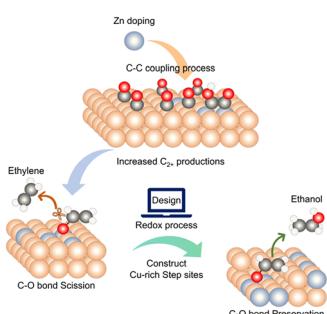
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Multivariate modulation of Zr₆ UiO-66 for enhanced cooperative CO₂ adsorption through defect multi-functionalisation

Carmen Rosales-Martinez, Sousa Javan Nikkhah, Marcileia Zanatta, Juan Carlos Martinez, Matthias Vandichel* and Isabel Abánades Lázaro*

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Xiao Ma, Gong Zhang, Jie Du, Xiaoyun Lin, Shiyu Zhen, Dongfang Cheng, Chaoxi Wang, Xin Chang, Shican Wu, Xiangcheng Shi, Lyudmila Moskaleva, Peng Zhang, Zhi-Jian Zhao* and Jinlong Gong*

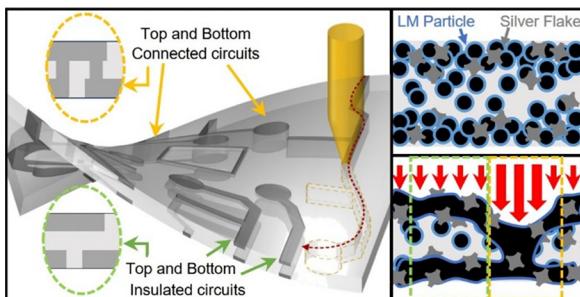
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Structural amine-induced interfacial electrical double layers for efficient photocatalytic H₂ evolution

Jing Deng, Xinyu Xu, Bo Su, Minghui Liu,* Xiahui Lin, Wandong Xing,* Xue Feng Lu, Zhian Lan, Guigang Zhang and Sibo Wang*

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Reconfigurable double-sided smart textile circuit with liquid metal

Chanho Jeong, Ki Yoon Kwon, Di Wu, Yibo Fu, Yeong-sinn Ye, Sang Gil Lee, Beomchan Kang, Lining Yao, Tae-il Kim* and Carmel Majidi*

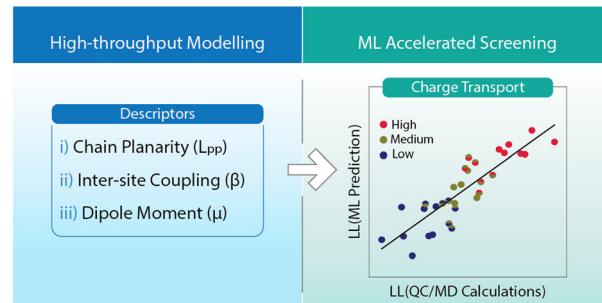


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Mapping the structure-function landscape of semiconducting polymers

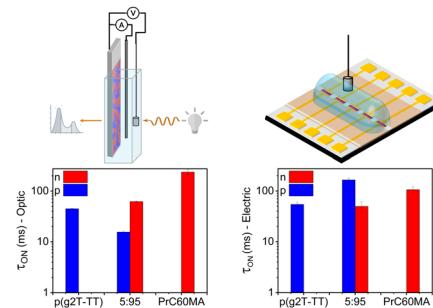
Hesam Makki,* Colm Burke, Christian B. Nielsen and Alessandro Troisi*



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Synergistic effects in ambipolar blends of mixed ionic–electronic conductors

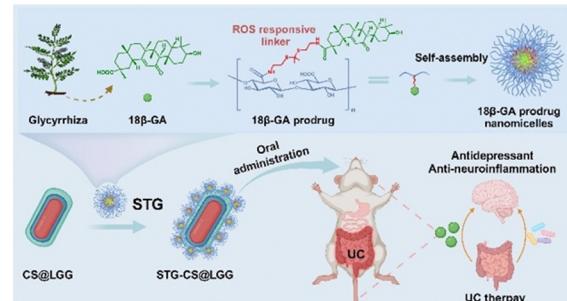
Eyal Stein, Sasha Simotko, Yogesh Yadav, Priscila Cavassini, Iain McCulloch, Natalie Banerji and Gitti L. Frey*



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Reactive oxygen species-responsive prodrug nanomicelle-functionalized *Lactobacillus rhamnosus* probiotics for amplified therapy of ulcerative colitis

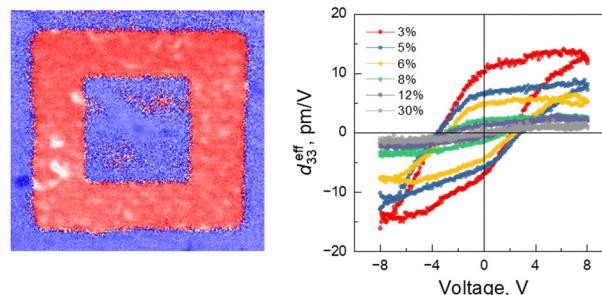
Xinyue Zhang, Shuyun Liu, Rui Xin, Wenxiu Hu, Qiqi Zhang, Qian Lu* and Lu Han*



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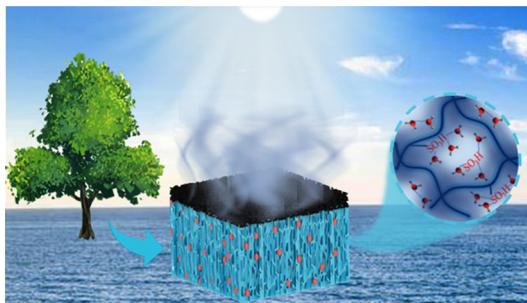
Humidity-driven modulation of ferroelectricity in hafnia–zirconia membranes

Haoze Zhang, Yufan Shen, Pankaj Sharma, Lei Wang, Dawei Zhang, Kousuke Ooe, Shunsuke Kobayashi, Yuichi Shimakawa, Daisuke Kan* and Jan Seidel*



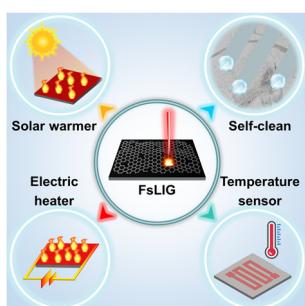
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**Natural wood with optimal capillary water content and evaporation enthalpy for efficient interfacial solar steam generation**

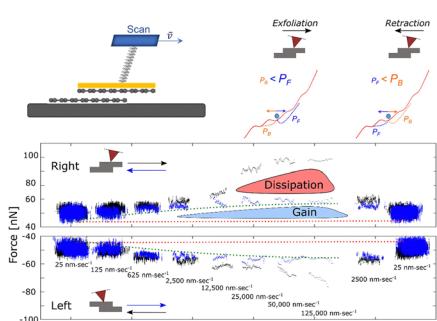
Maosong Tian, Junbo Chen, Jingfu Tian, Zhihao Liang and Yuanpeng Xie*

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***In situ* construction of multifunctional femtosecond laser-induced graphene on arbitrary substrates**

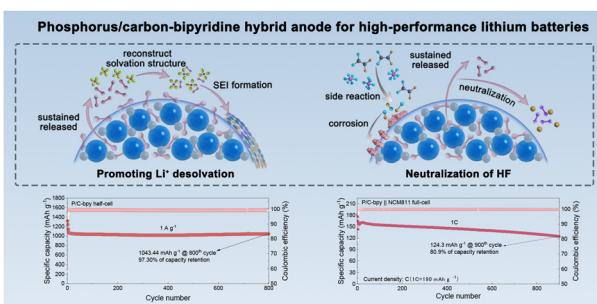
Lingxiao Wang, Kai Yin,* Xun Li, Xiaolong Liu, Jianqiang Xiao, Jiaqing Pei and Xinghao Song

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**Mesoscale superlubric Brownian machine based on 2D graphitic interfaces**

Keren Stein, Gautham Vijayan, Ron Bessler and Elad Koren*

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**Enhancing stable and high-rate lithium ion storage through multifunctional molecular release in a phosphorus/carbon-bipyridine hybrid anode**

Gengchang Lai, Zhilin Huo, Haoyu Wang, Zihui Liu, Zunbin Duan, Xiaoxiao Feng, Xiaoyi Zhang, Xin Fan, Xingchen He,* Xue-Feng Yu and Jiahong Wang*

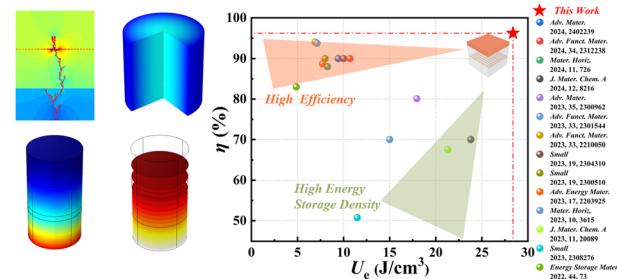


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Ultrahigh energy storage density and efficiency in facile dual-layered PVDF/PEI-based nanocomposites via an electrical/thermal synergistic effect

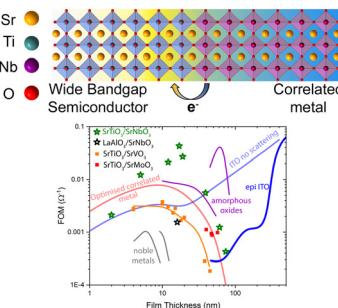
Yanlong Ma, Ying Lin,* Yongjing Zhang, Yongzhen Ma, Binglong Zheng, Zhener Dang, Qibin Yuan* and Haibo Yang*



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Enhanced performance in transparent conducting materials at the interface of a wide band gap semiconductor and a correlated metal

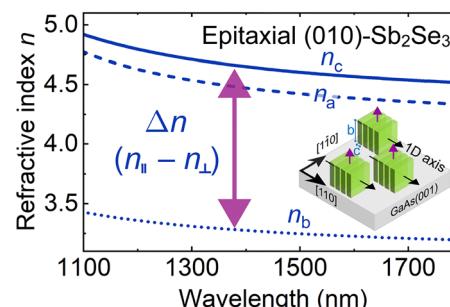
Jessica L. Stoner, Maria Batuk, Troy D. Manning, Matthew S. Dyer, Joke Hadermann, Matthew J. Rosseinsky* and Jonathan Alaria*



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Heteroepitaxial growth of highly anisotropic Sb_2Se_3 films on GaAs

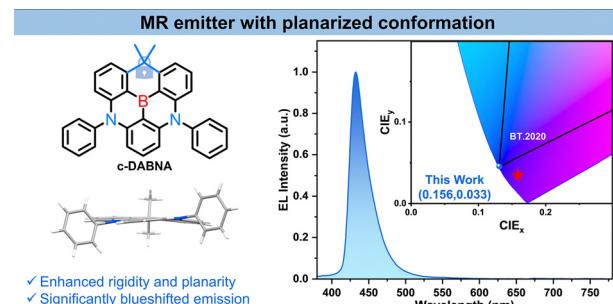
Kelly Xiao, Virat Tara, Pooja D. Reddy, Jarod E. Meyer, Alec M. Skipper, Rui Chen, Leland J. Nordin, Arka Majumdar and Kunal Mukherjee*



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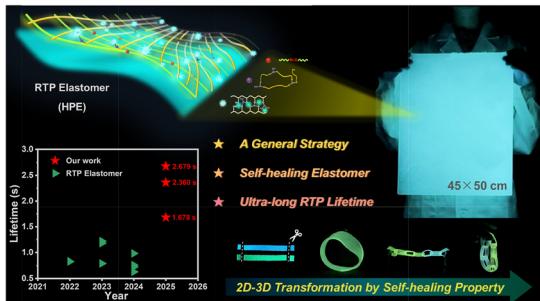
Geometric control of multi-resonance backbone DABNA for narrowband deep-blue electroluminescence

Hao Wu, Yi-Zhong Shi,* Mo-Yuan Li, Xiao-Chun Fan, Hui Wang, Tong-Yuan Zhang, Jia Yu,* Kai Wang* and Xiao-Hong Zhang*

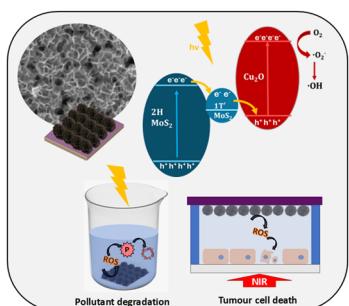


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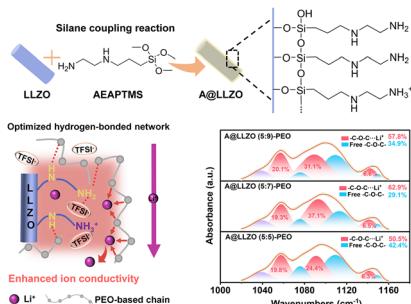
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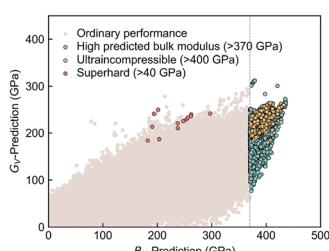
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A general strategy for self-healing elastomers with ultralong room-temperature phosphorescence

Nan Li, Shiyu Gu, Qi Wu* and Jinrong Wu*

2D MoS₂/Cu₂O on 3D mesoporous silica as visible-NIR nanophotocatalysts for environmental and biomedical applications

Gubakhanim Shahnazarova, Jessica C. Ramirez,
Nour Al Hoda Al Bast, Jordi Fraxedas, Aritz Lafuente,
Cristina Vaca, Marianna Sledzinska, Valentin Novikov,
Carme Nogues, Josep Nogues, Albert Serra,
Boria Sepulveda* and Maria J. Esplandiu*

Precise regulation of hydrogen bond networks for rapid ion transport in PEO-based composite solid electrolytes

Fei Wang, Kai Chen, Xiaoxiao Li, Yan Fang, Mingjia Lu,
Chao Zhang, Yue-E Miao* and Tianxi Liu*

Accelerated discovery of ultraincompressible, superhard materials via physics-enhanced active learning

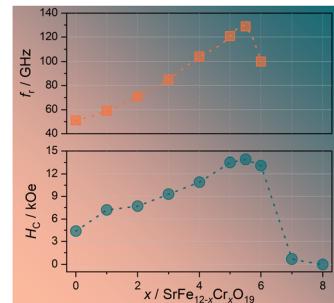
Xiaoang Yuan, Bo Zhu, Chunbo Zhang, Qifan Zheng,
Enlai Gao* and Qian Shao*

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Submicron particles of Cr-substituted strontium hexaferrite: anomalous X-ray diffraction studies, hard magnetic properties, millimeter-wave absorption, and research prospects

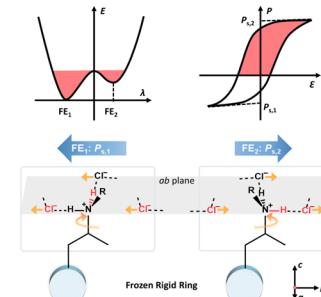
Evgeny A. Gorbachev,* Vasily A. Lebedev, Ekaterina S. Kozlyakova, Liudmila N. Alyabyeva, Antonio Cervellino, Ilya V. Roslyakov, Iana S. Soboleva, Alexey V. Sobolev and Lev A. Trusov*



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Complex phase transition and asymmetric ferroelectricity of homochiral secondary ammonium salts

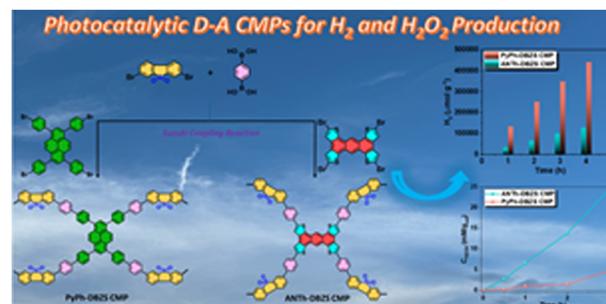
Jie Bie, Dai-Bei Yang, Wei Fa* and Shuang Chen*



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Molecular engineering of donor–acceptor-type conjugated microporous polymers for dual effective photocatalytic production of hydrogen and hydrogen peroxide

Mohamed Gamal Mohamed,* Islam M. A. Mekhemer, Ahmed F. H. Selim, Andreas Katsamitros, Dimitrios Tasis,* Abdul Basit, Ho-Hsiu Chou* and Shiao-Wei Kuo*



CORRECTION

5929

Correction: Is the single-ion conductor cubic Li₇La₃Zr₂O₁₂ a binary ionic electrolyte?

Peng Bai

