

Materials Horizons

rsc.li/materials-horizons

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

IN THIS ISSUE

ISSN 2051-6347 CODEN MHAOAL 11(14) 3191-3452 (2024)



Cover

See Kang-Nan Wang, Zhiqiang Liu, Xiaoqiang Yu, Bin Liu *et al.*, pp. 3287–3297. Image reproduced by permission of Kang-Nan Wang from *Mater. Horiz.*, 2024, **11**, 3287.



Inside cover

See Jingcheng Hao, Lu Xu *et al.*, pp. 3298–3306. Image reproduced by permission of Lu Xu from *Mater. Horiz.*, 2024, **11**, 3298.

EDITORIALS

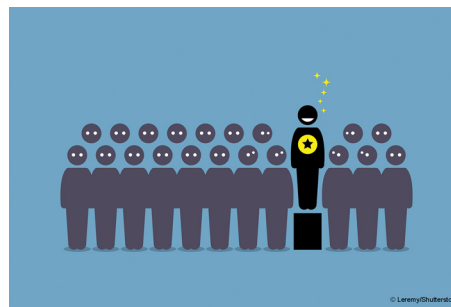
3200

Materials Horizons Emerging Investigator Series:
Professor Edison Huixiang Ang, National Institute of Education/Nanyang Technological University, Singapore



3202

Outstanding Reviewers for Materials Horizons in 2023



Industrial Chemistry & Materials



Focus on industrial chemistry
Advance material innovations
Highlight interdisciplinary feature



Innovative.
Interdisciplinary.
Problem solving

APCs currently waived

Learn more about ICM
Submit your high-quality article

 [@IndChemMater](#)

 [@IndChemMater](#)

rsc.li/icm

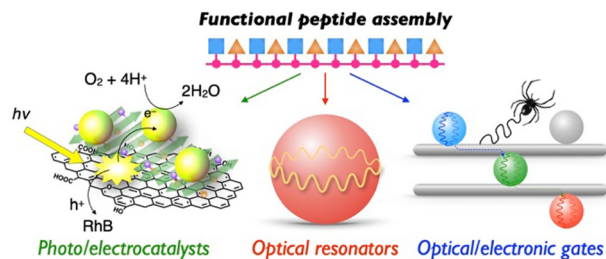


REVIEWS

3203

Functional oligo- and polypeptide assemblies for photochemical, optical and electronic applications

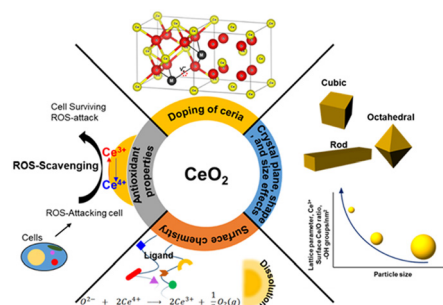
Yohei Yamamoto,* Wey Yih Heah and Kentaro Tashiro*



3213

Two decades of ceria nanoparticle research: structure, properties and emerging applications

Ali Othman, Akshay Gowda, Daniel Andreescu, Mohamed H. Hassan, S. V. Babu, Jihoon Seo* and Silvana Andreescu*

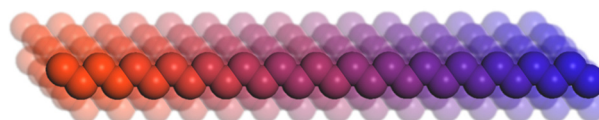


3267

Intrinsically thermally conductive polymers

Rupam Roy, Kaden C. Stevens, Kiana A. Treaster, Brent S. Sumerlin, Alan J. H. McGaughey, Jonathan A. Malen and Austin M. Evans*

Thermally Conductive Macromolecules

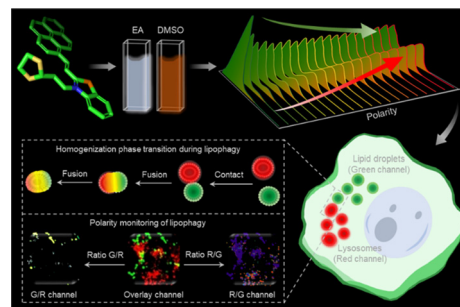


COMMUNICATIONS

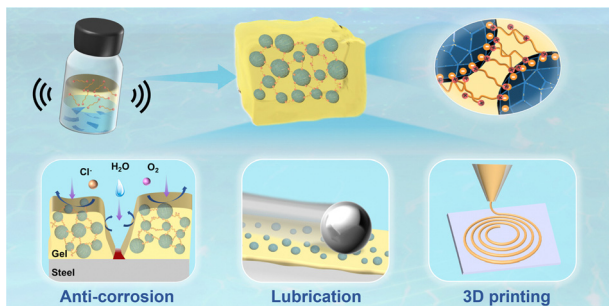
3287

Dual-targeted fluorescent probe for tracking polarity and phase transition processes during lipophagy

Yang Liu, Xiao-Ting Gong, Kang-Nan Wang,* Simeng He, Yumeng Wang, Qiaowen Lin, Zhiqiang Liu,* Xiaoqiang Yu* and Bin Liu*



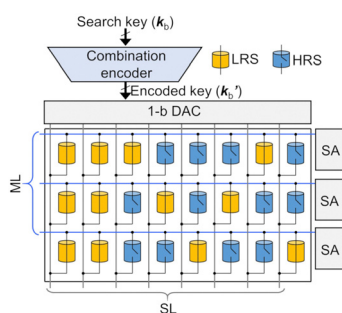
3298



Versatile Pickering emulsion gel lubricants stabilized by cooperative interfacial graphene oxide-polymer assemblies

Weiyang Yu, Zhongying Ji, Yang Lyu, Xudong Sui, Jingcheng Hao* and Lu Xu*

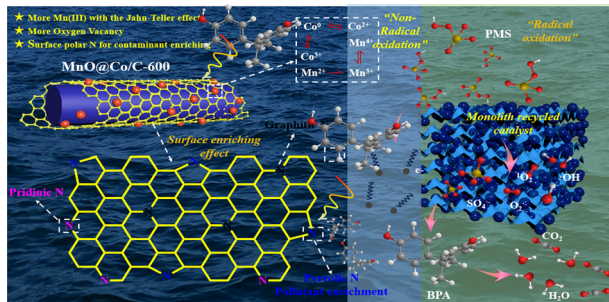
3307



Experimental demonstration of combination-encoding content-addressable memory of 0.75 bits per switch utilizing Hf–Zr–O ferroelectric tunnel junctions

Manh-Cuong Nguyen, Jiwon You, Yonguk Sim, Rino Choi,* Doo Seok Jeong* and Daewoong Kwon*

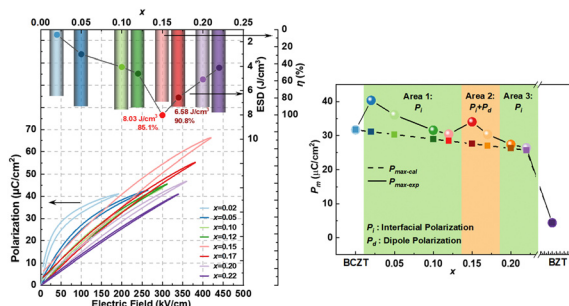
3316



Construction of phase-separated Co/MnO synergistic catalysts and integration onto sponge for rapid removal of multiple contaminants

Mengting Liu, Wanyu Zhang, Ruiting Ni, Zhenxiao Wang, Hongyao Zhao, Xiu Zhong, Yanyun Wang, Danhong Shang, Zengjing Guo, Edison Huixiang Ang* and Fu Yang*

3330



A polarization double-enhancement strategy to achieve super low energy consumption with ultra-high energy storage capacity in BCZT-based relaxor ferroelectrics

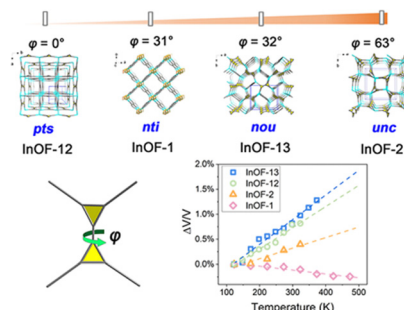
Zixiong Sun,* Yuhan Bai, Hongmei Jing,* Tianyi Hu, Kang Du, Qing Guo, Pan Gao, Ye Tian, Chunrui Ma, Ming Liu* and Yongping Pu*



3345

Biphenyl tetracarboxylic acid-based metal–organic frameworks: a case of topology-dependent thermal expansion

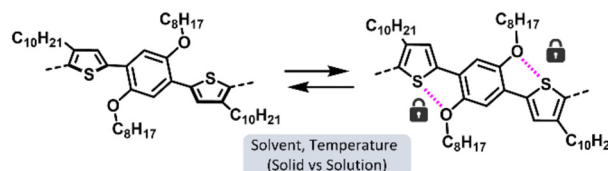
Zhanning Liu,* Chengyong Xing, Shaowen Wu, Min Ma and Jian Tian



3352

Non-covalent planarizing interactions yield highly ordered and thermotropic liquid crystalline conjugated polymers

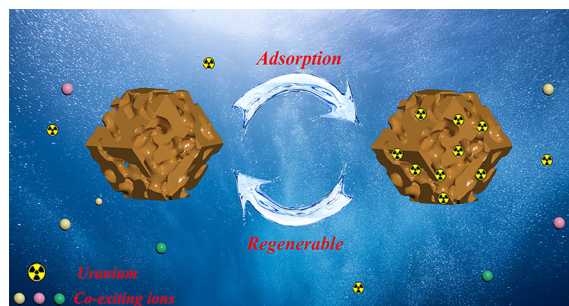
Sina Sabury, Zhuang Xu, Shamil Saiev, Daniel Davies, Anna M. Österholm, Joshua M. Rinehart, Motahhare Mirhosseini, Benedict Tong, Sanggyun Kim, Juan-Pablo Correa-Baena, Veaceslav Coropceanu, Oana D. Jurchescu, Jean-Luc Brédas, Ying Diao and John R. Reynolds*



3364

Construction of hierarchical porous and polydopamine/salicylaldehyde functionalized zeolitic imidazolate framework-8 via controlled etching for uranium adsorption

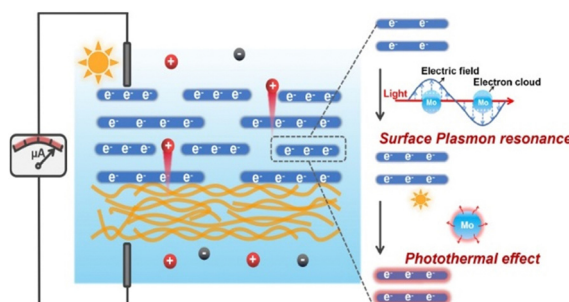
Kai Tuo, Jin Li, Yi Li, Chuyao Liang, Cuicui Shao, Weifeng Hou, Zhijian Li,* Shouzhi Pu* and Chunhui Deng*



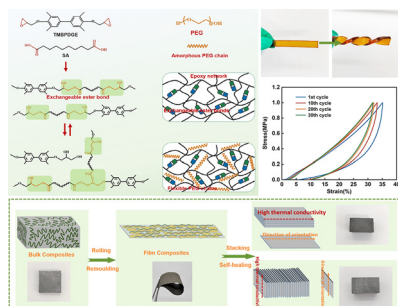
3375

Heterogeneous CNF/MoO₃ nanofluidic membranes with tunable surface plasmon resonances for solar-osmotic energy conversion

Mengmeng Zheng, Pei Liu,* Pengfei Yan, Teng Zhou, Xiangbin Lin, Xin Li, Liping Wen* and Qun Xu*



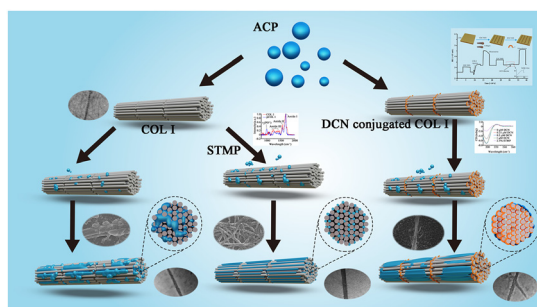
3386



Recyclable and elastic highly thermally conductive epoxy-based composites with covalent–noncovalent interpenetrating networks

Fubin Luo,* Wenqi Cui, Yingbing Zou, Hongzhou Li, Qingrong Qian and Qinghua Chen

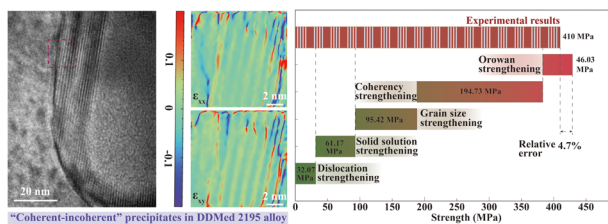
3396



Decorin in the spatial control of collagen mineralization

Yuming Bai, Peng Wu, Qiufang Zhang, Feng Lin, Ling Hu, Zhisheng Zhang, Wenxia Huang, Yin Xiao* and Qiliang Zuo*

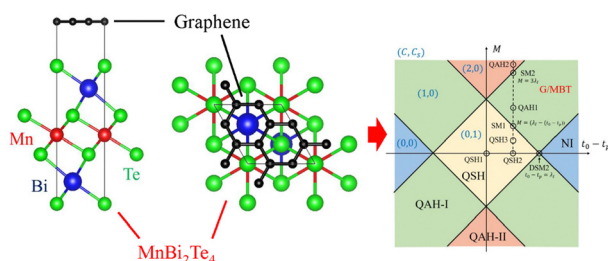
3408



Strength–ductility materials by engineering a coherent interface at incoherent precipitates

Dongxin Mao, Yuming Xie, Xiangchen Meng, Xiaotian Ma, Zeyu Zhang, Xiuwen Sun, Long Wan, Korzhyk Volodymyr and Yongxian Huang*

3420



Atomic scale quantum anomalous hall effect in monolayer graphene/MnBi₂Te₄ heterostructure

Yueh-Ting Yao, Su-Yang Xu* and Tay-Rong Chang*

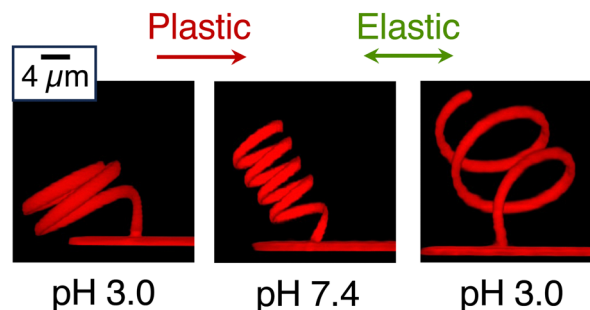


COMMUNICATIONS

3427

Elasto-plastic effects on shape-shifting electron-beam-patterned gel-based micro-helices

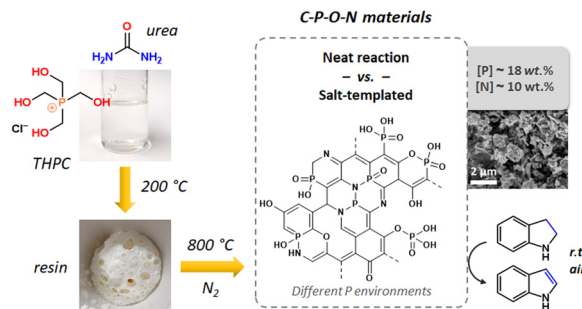
Xinpei Wu, Feiyue Teng, Emre Firlar, Teng Zhang and Matthew Libera*



3437

Revisiting the phosphonium salt chemistry for P-doped carbon synthesis: toward high phosphorus contents and beyond the phosphate environment

Rémi F. André,* Christel Gervais, Hannes Zschiesche, Teodor Jianu, Nieves López-Salas, Markus Antonietti* and Mateusz Odziomek*



CORRECTION

3450

Correction: Preventing lead leakage in perovskite solar cells and modules with a low-cost and stable chemisorption coating

Zongxu Zhang, Yating Shi, Jiujiang Chen, Peng Shen, Hongshi Li, Mengjin Yang, Shirong Wang, Xianggao Li and Fei Zhang*

