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Materials Horizons

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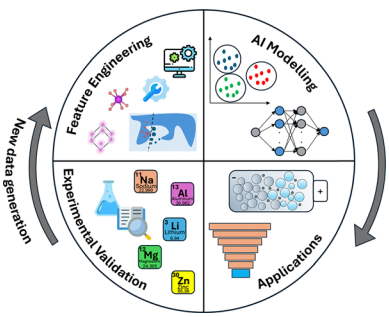
Vinamr Jain, Zhilong Wang and Fengqi You*



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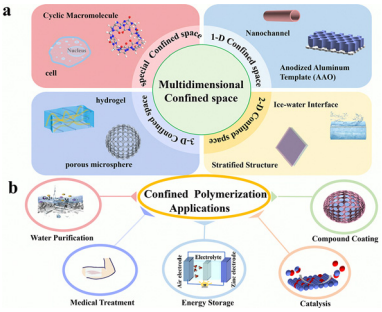
Confined polymerization: multidimensional regulation, advanced measurements and cutting-edge applications

Lushan Sun, Jian Sun,* Mingqiong Tong, Yanyan Zhao* and Xiangling Gu*



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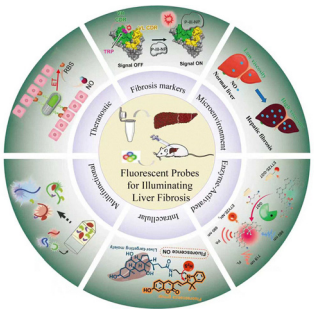
Yutong Lv, Zhe Ma, Yue Chong, Zhenlong Wang,* Li Xue* and Fu Wang*



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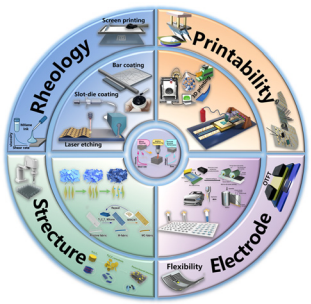
Additive manufacturing of MXene electrodes: from rheology-tunable nanoinks to size-scalable integrated electronics

Qiancheng Zhao, Hao Liu, Chuan Liu, Takeo Minari, Se Hyun Kim, Xiaowu Tang* and Xuying Liu*



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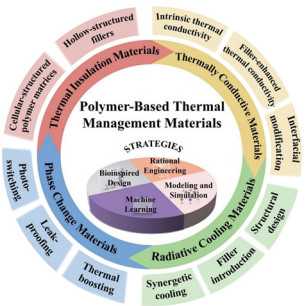
Recent advances in the thermal management performance of polymer-based composite materials

Jia Li, Mengmeng Qin* and Wei Feng*



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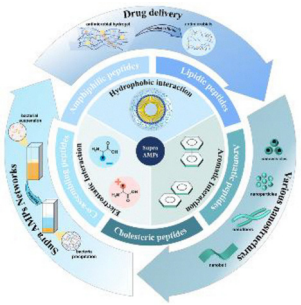

Supramolecular crafting of peptides as novel antimicrobial materials

Longjie Li, Jiale Hu, Yi Liu, Zongyuan Wang,* Hailong Tang,* Dongdong Zhou* and Hao Su*

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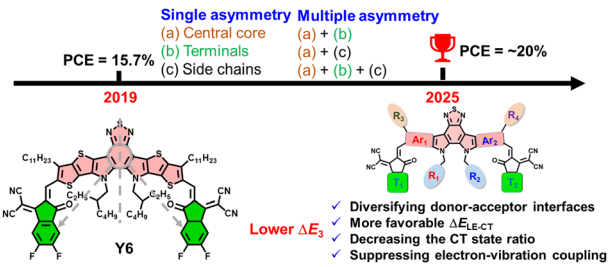

Non-radiative recombination energy losses in Y-series asymmetric acceptor-based organic solar cells

Yongjie Cui, Zhaohan Chai, Shenbo Zhu, Zihua Wu, Huaqing Xie and Huawei Hu*

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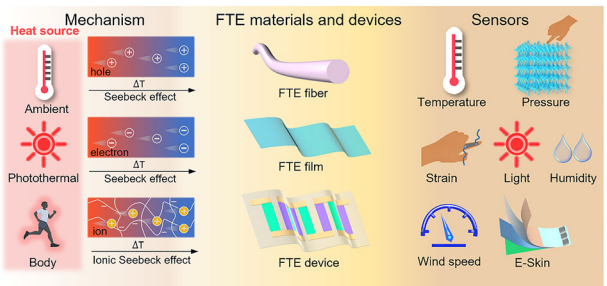

Flexible thermoelectric materials and devices for sensing applications

Hongju Zhou, Xuezhong Zhang, Zhibo Luo, Xin Wei* and Hua Deng*

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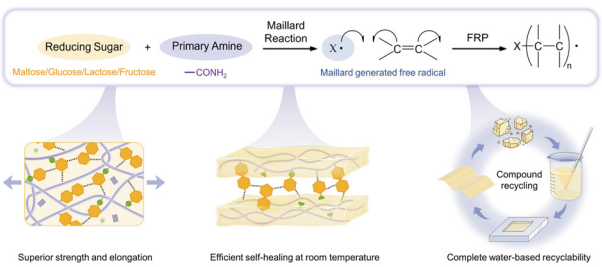

A water-recyclable, robust, and self-healing sugar-based supramolecular network enabled by Maillard-analogous initialization of polymerization

Siyang Li, Tow-Jie Lok, Shi-Han Ngo, Yaoting Xue, Zhikun Miao, Tao Feng, Lei Wang, Jie-Wei Wong, Jiatee Low, Kai-Yi Lim, Min-Rou Woon, Axel T. Neffe, Tuck-Whye Wong,* Tiefeng Li,* Xuxu Yang* and Wei Yang

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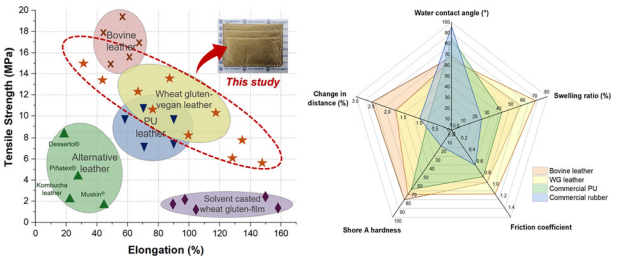
Physically programmed vegan leather emulating the mechanical and sensory characteristics of animal leather from once-discarded gluten

Soyeon Kim, Jimin Choi, Somyong Lee, Dong Soo Hwang, Giyoung Shin, Jeyoung Park* and Dongyeop X. Oh*



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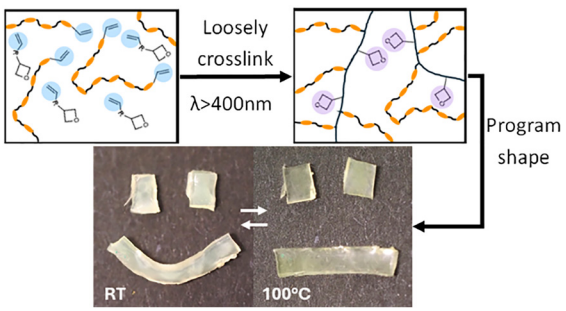
Shape programming of liquid crystal elastomers by two-stage wavelength-selective photopolymerization

Tom Bruining, Daniela R. Tomé and Danqing Liu*



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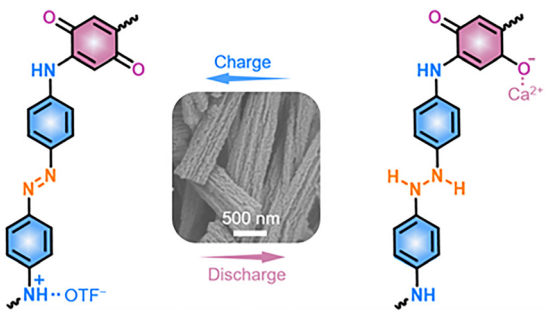
Low-activation-energy bipolar organic nanostructures for high-capacity and ultralong-life aqueous calcium-ion batteries

Decheng Zhao, Qi Huang, Yaokang Lv, Ziyang Song,* Lihua Gan* and Mingxian Liu*



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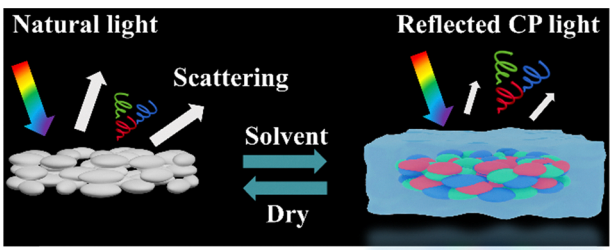
Solvent-triggered off-to-on circular polarization activation *via* scattering modulation in polymer-based chiral photonic particles for encryption and authentication

Fang Zeng, Honghan Ji, Zhi-Wang Luo, Jiannan Xiao, Xuefeng Yang, Jiang Huang, Qianming Wang* and Pengfei Duan*



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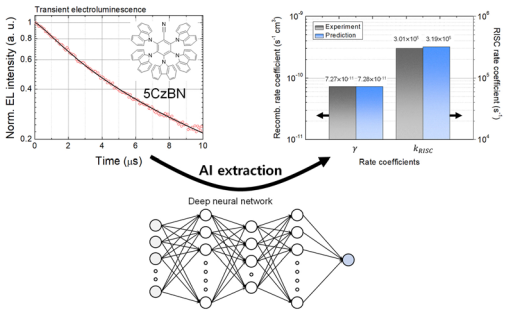

A deep learning model for inferring the reverse intersystem crossing rate of TADF organic light-emitting diodes, overcoming the uncertainty of recombination dynamics

Junseop Lim, Seungwon Han, Jae-Min Kim* and Jun Yeob Lee*

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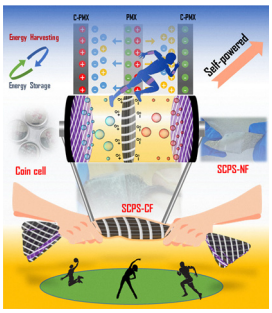

PAN/MXene: a potent piezo-gen and cogent piezoelectric separator for self-chargeable supercapacitors

Jayashree Chandrasekar, Manikandan Venkatesan, Chen-Wei Fan, Hao-Yuna Chen, Yung-Chi Hsu, Wei-Wen Chen, Ming-An Chung, Mei-Wan Chung, Wen-Ya Lee, Ja-Hon Lin,* Ye Zhou* and Chi-Ching Kuo*

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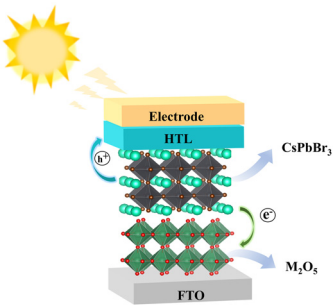

Unraveling atomic-scale origins of interfacial properties in $CsPbBr_3/M_2O_5$ (M = Nb, Ta) heterojunctions: a combined first-principles and experimental approach

Menglong Gao, Yao Guo,* Shiding Zhang, Yinghui Xue, Jianxin Li, Shuaishuai Hu, Haixiang Song, Kaidi Wu, Miaomiao Li, Huihui Zhao, Zhongyuan Zhou* and Qing Shen*

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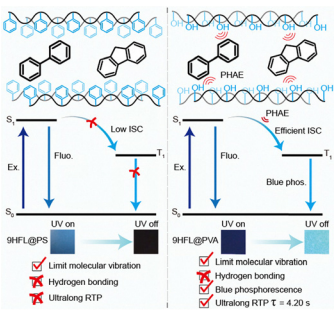

Quasi-heavy atom effect for room-temperature phosphorescence

Zuoan Liu, Bingli Jiang, Xiaofeng Zhang, Linlin Du, Anna Qin, Tingting Zhu, Guanxing Lao, Linmin Zou, Yongyang Gong* and Wang Zhang Yuan*

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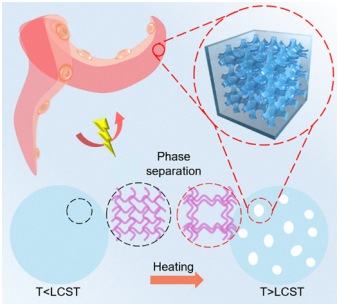
LCST-phase-separated porous liquid metal-filled hydrogel actuators with fast electro-response, enhanced strength, and low electric field

Qingtian Zhang, Zhen Jiang,* Hongda Lu, Xiangbo Zhou, Yipu Guo, Jialu Wang, Liping Gong, Shi-Yang Tang, Haiping Du and Weihua Li*



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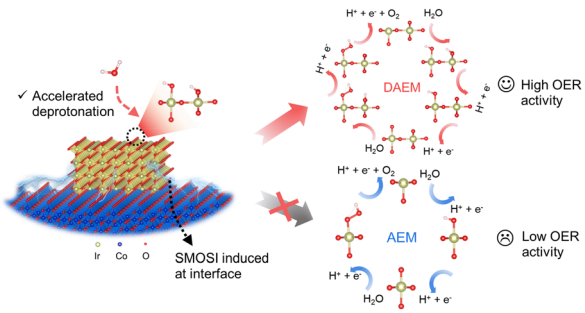
Cobalt oxide–supported iridium oxide nanoparticles with strong metal oxide–support interaction for efficient acidic oxygen evolution reaction

Hao Deng, Chung-Li Dong, Ta Thi Thuy Nga, Miao Wang, Yiduo Wang, Yiqing Wang and Shaohua Shen*



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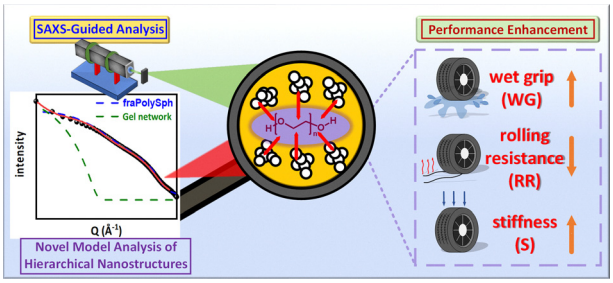
Hierarchical morphology and interfacial dynamics in silane-free rubber nanocomposites: a SAXS-guided approach toward sustainable high-performance tire materials

Cheng-Ti Hu, Heng-Yi Lin, Po-Hsun Chiu, Heng-Yan Dai, Lucy Liberman, Jhih-Min Lin, U-Ser Jeng, Cheng-Si Tsao,* Chih-Chen Hsieh* and Chi-An Dai*



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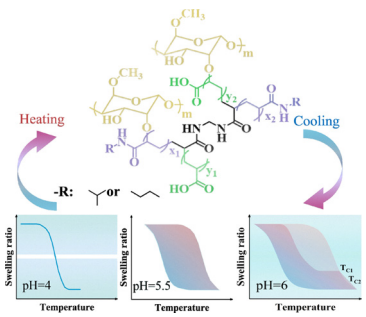
Adaptive memory of hydrogels with tunable hysteresis

Zichao Wang, Xuan Zhang,* Xuehua Zhou, Mingze Liu, Xuefeng Zhu, Mingchao Zhang, Xuzi Yang, Yinglai Hou,* Yuzhang Du and Jie Kong*



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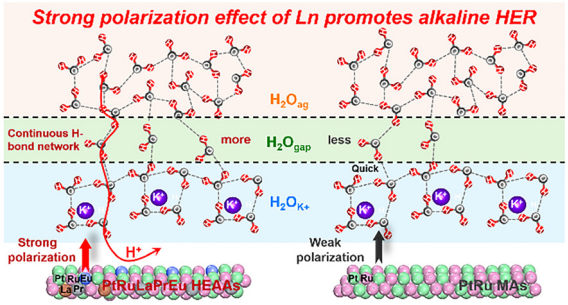

The strong polarization effect of lanthanide metals for efficient alkaline hydrogen evolution

Yajun Wang, Siyi Wang, Mingrui Guo, Tianjun Zhang,* Ning Wang* and Shuxing Bai*

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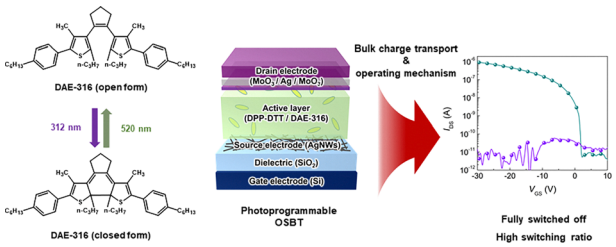

Molecular-switch-embedded organic Schottky barrier transistors for a high switching ratio

Hye Ryun Sim, Syed Zahid Hassan, Sangjun Lee, Jieun Kwon, Geon-Hee Nam, Seyeon Baek, Chan So, Young Gyoung Lee and Dae Sung Chung*

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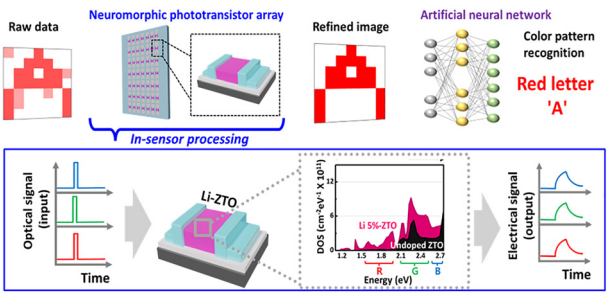

Defect-induced subgap state engineering in neuromorphic metal-oxide phototransistors for in-sensor color processing

Eun Chong Ju, Dong Hwan Byeon, Jong Min Lee, Yu-Jung Cha, Hyung Gon Shin, Seongil Im, Jeong-Wan Jo, Yong-Hoon Kim,* Sung Kyu Park* and Sung Woon Cho*

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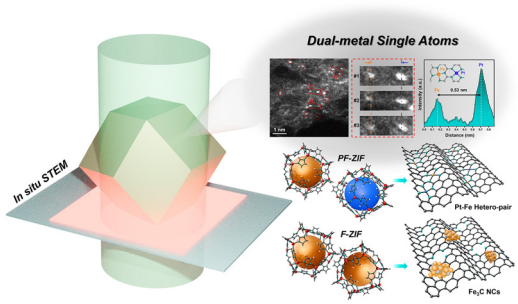

Stabilizing Pt–Fe dual-metal single atoms in ZIFs: a pathway to form heterogeneous catalysts

Kai-Yuan Hsiao, Yi-Dong Lin, Yu-Ru Lin, Ching-Wei Chin, Chun-Hui Lin, Ruei-Hong Cyu, Dun-Jie Jhan, Yan-Gu Lin, Yu-Lun Chueh and Ming-Yen Lu*

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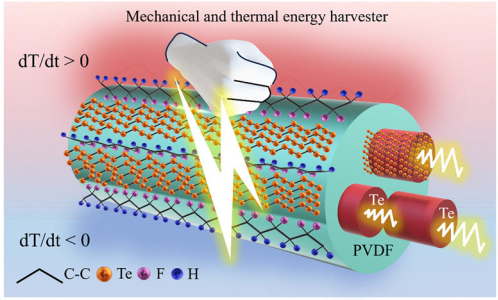
Ferroelectric nanofibers with nanoconfined tellurium nanobeams for mechanical and thermal energy harvesting and wearable healthcare

Utsa Sarkar, Hari Krishna Mishra, Ajay Kumar, Shanker Ram* and Dipankar Mandal*



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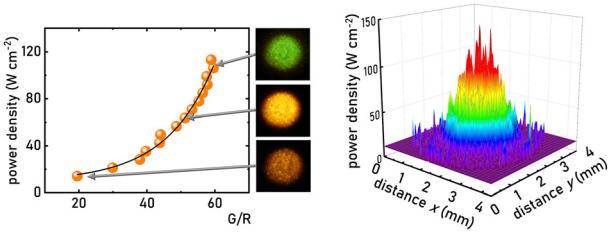
From the up-converting multimodal luminescent thermometer to ratiometric visual power density meter based on Er^{3+},Yb^{3+} emission

Anam Javaid, Maja Szymczak* and Lukasz Marciniak*



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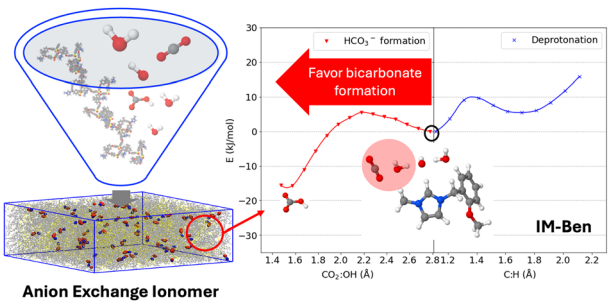
Molecular insights into CO_2-to-bicarbonate transformation in functionalized anion exchange ionomers for electrochemical separations

Shi Li, Tianyue Gao, Yupo Lin, Christopher G. Arges* and Rajeev Surendran Assary*



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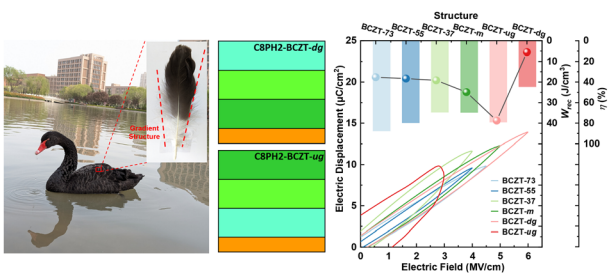
Bioinspired, compositionally graded cellulose-based dielectrics with Schottky-engineered interfaces for high-performance and sustainable energy storage

Zixiong Sun, Yao Li, Haoyang Xin, Liming Diwu, Zhanhua Wang, Pan Gao, Ye Tian, Hongmei Jing and Zhuo Wang*



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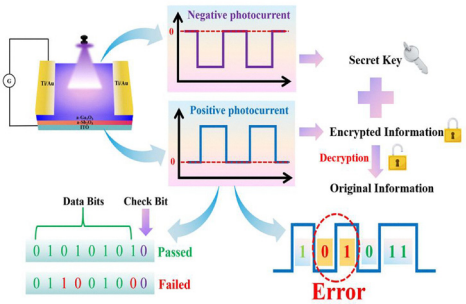

A bipolar response deep ultraviolet photodetector for encryption and anti-interference communication based on an a-Sb_2O_5/a-Ga_2O_3 heterojunction

Cheng Wu, Peiwen Lv,* Zhaojie Zhu, Yizhi Huang, Chaoyang Tu, Chenlong Chen, G. Lakshminarayana and Yan Wang*

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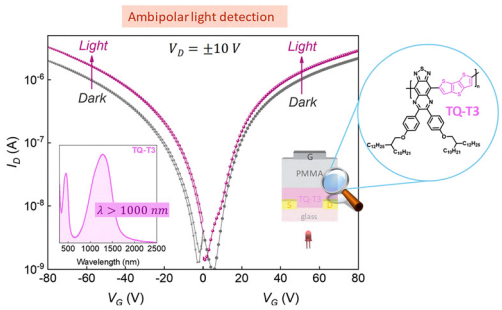

Novel ambipolar polymers for detection beyond 1000 nm with organic phototransistors

Kaiyang Wei, Davide Nodari, Xabier Rodríguez-Martínez, Leonidas Tsetseris, Alkmini D. Nega, Antonia Dimitrakopoulou-Strauss, Martina Rimmele, Nikos Hastas, Yijia Li, Flurin Eisner, Manolis Matzapetakis, Jaime Martin, Vasilis G. Gregoriou, Nicola Gasparini, Christos L. Chochos and Julianna Panidi*

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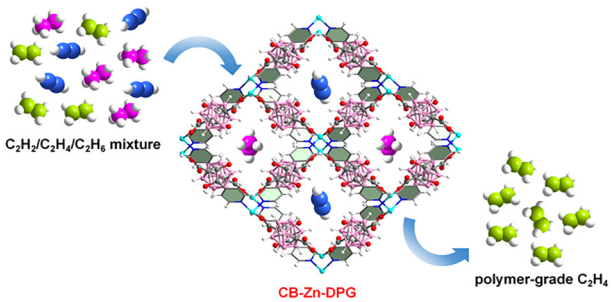

Moderately polarized carborane-MOF with inverse C_2 selectivity for one-step polymer-grade ethylene purification

Changhong Liu, Guangzu Xiong, Yuzhe Wang, Wenlei Yang, Yiwen Yuan, Hui Wang, Lingyao Wang* and Yuanbin Zhang*

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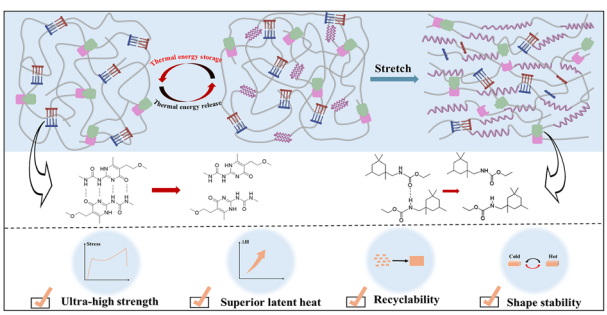

Mechanically robust and high latent heat solid–solid phase change materials *via* a H-bonding collaborative strategy for energy storage and conversion

Zhiqiang Li, Chunhua Ge,* Daming Feng, Xinyue Zhang, Lixue Zhou and Xiangdong Zhang*

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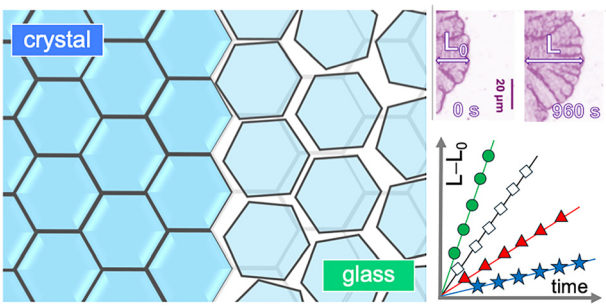
Predicting how fast crystals grow at the free surface of molecular glasses

Federico Caporaletti,* Martín Eduardo Villanueva, Sascha Molitor, Biao Zuo and Simone Napolitano*



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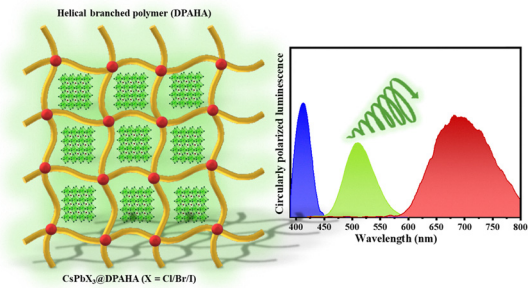
Photopolymerized helical acrylate networks enable stable and full-color circularly polarized luminescence in perovskite nanocrystals

Atanu Jana,* Deblina Das, Sourav Mal, Tarak Nath Mandal, Youngsin Park* and Sangeun Cho*



CORRECTION

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Correction: Shape programming of liquid crystal elastomers by two-stage wavelength-selective photopolymerization

Tom Bruining, Daniela R. Tomé and Danqing Liu*