

# Materials Horizons

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### Cover

See Xiaoxia Le, Tao Chen *et al.*, pp. 2856–2864.

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## EDITORIAL

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**Materials Horizons Emerging Investigator Series:**  
**Professor Francesca Santoro, Forschungszentrum Jülich and RWTH Aachen, Germany**



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**Intelligent micro/nanorobots based on biotemplates**

Ting Chen, Yuepeng Cai, Biye Ren,\*  
Beatriz Jurado Sánchez\* and Renfeng Dong\*



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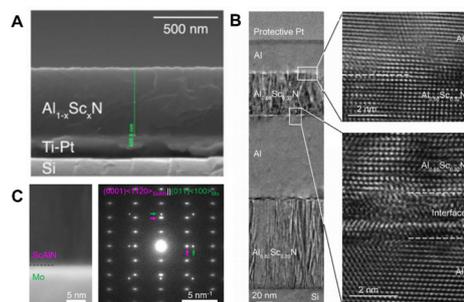
Fundamental questions  
Elemental answers

## REVIEWS

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### Emerging ferroelectric materials ScAlN: applications and prospects in memristors

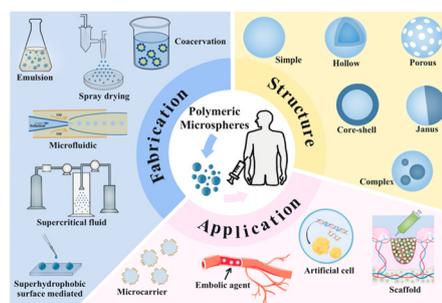
Dong-Ping Yang, Xin-Gui Tang,\* Qi-Jun Sun, Jia-Ying Chen, Yan-Ping Jiang, Dan Zhang and Hua-Feng Dong



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### Fabrication of polymeric microspheres for biomedical applications

Xuebing Li, Luohuizi Li, Dehui Wang, Jun Zhang, Kangfeng Yi, Yucai Su, Jing Luo,\* Xu Deng\* and Fei Deng\*

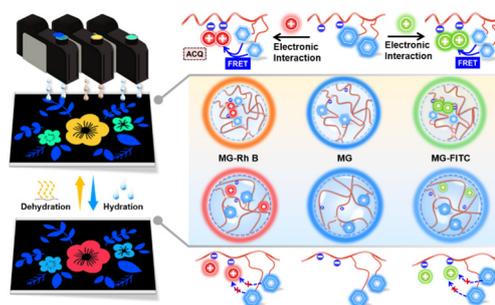


## COMMUNICATIONS

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### Water-sensitive fluorescent microgel inks to produce verifiable information for highly secured anti-counterfeiting

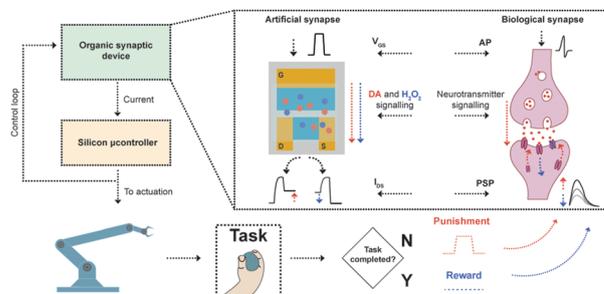
Hui Shang, Xiaoxia Le,\* Yu Sun, Shuangshuang Wu, Yu Wang, Patrick Théato and Tao Chen\*



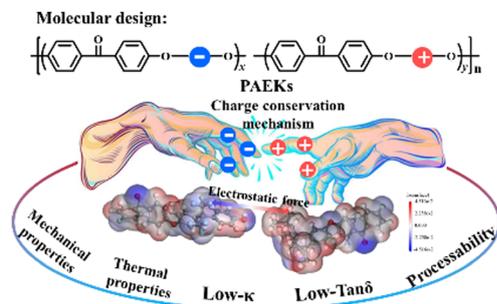
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### An organic brain-inspired platform with neurotransmitter closed-loop control, actuation and reinforcement learning

Ugo Bruno, Daniela Rana, Chiara Ausilio, Anna Mariano, Ottavia Bettucci, Simon Musall, Claudia Lubrano and Francesca Santoro\*



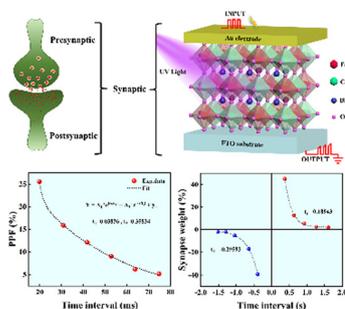
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### Facile strategy for intrinsic low- $\kappa$ dielectric polymers: molecular design based on space charge conservation

Wei Ren, Haoning Li, Xiao Huang, Xiujing Xing, Guangming Yan,\* Jie Yang and Gang Zhang\*

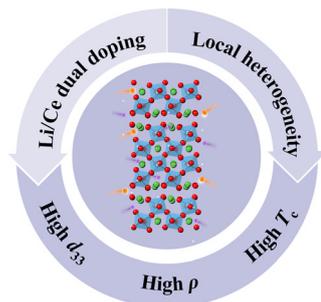
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### An adjustable multistage resistance switching behavior of a photoelectric artificial synaptic device with a ferroelectric diode effect for neuromorphic computing

Xi-Cai Lai, Zhenhua Tang,\* Junlin Fang, Leyan Feng, Di-Jie Yao, Li Zhang, Yan-Ping Jiang, Qiu-Xiang Liu, Xin-Gui Tang, Yi-Chun Zhou, Jie Shang, Gao-Kuo Zhong and Ju Gao

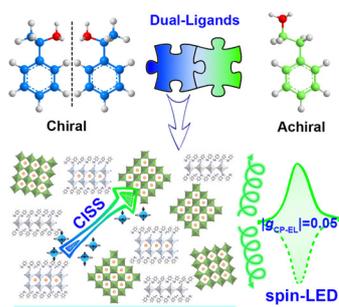
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### Ultra-high piezoelectric properties and ultra-high Curie temperature of Li/Ce-doped $\text{La}_2\text{Ti}_2\text{O}_7$ ceramics

Manjing Tang, Zhi Tan,\* Jie Xing, Hao Chen, Xinji Yang, Hongjiang Li, Wen Zhang and Jianguo Zhu\*

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### Dual-ligand quasi-2D perovskites with chiral-induced spin selectivity for room temperature spin-LEDs

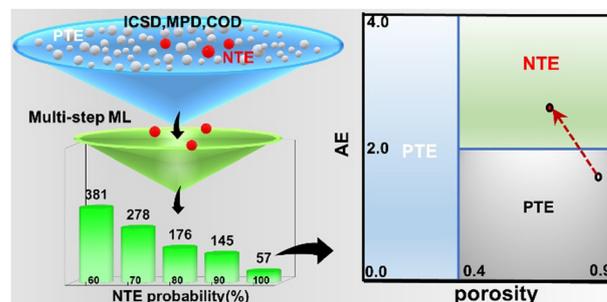
Haotian Gao, Yu Chen, Ruxi Zhang, Rui Cao, Yong Wang,\* Yunfei Tian\* and Yin Xiao\*



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### Exploring negative thermal expansion materials with bulk framework structures and their relevant scaling relationships through multi-step machine learning

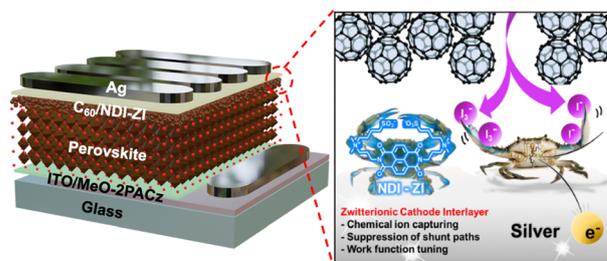
Yu Cai, Chunyan Wang, Huanli Yuan, Yuan Guo, Jun-Hyung Cho, Xianran Xing\* and Yu Jia\*



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### Improved photovoltaic performance and stability of perovskite solar cells by adoption of an n-type zwitterionic cathode interlayer

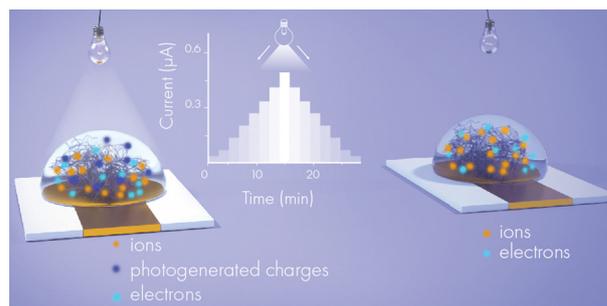
Young Wook Noh, Jung Min Ha, Jung Geon Son, Jongmin Han, Heunjeong Lee, Dae Woo Kim, Min Hun Jee, Woo Gyeong Shin, Shinuk Cho, Jin Young Kim, Myoung Hoon Song\* and Han Young Woo\*



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### N-Type polymeric mixed conductors for all-in-one aqueous electrolyte gated photoelectrochemical transistors

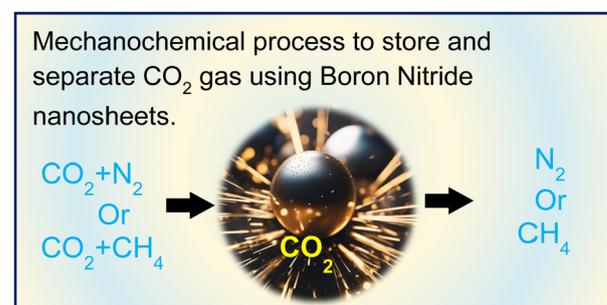
Latifah Almulla, Victor Druet, Christopher E. Petoukhoff, Wentao Shan, Nisreen Alshehri, Sophie Griggs, Yazhou Wang, Maryam Alsufyani, Wan Yue, Iain McCulloch, Frédéric Laquai and Sahika Inal\*



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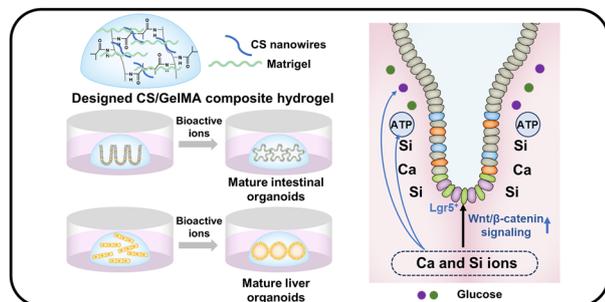
### A mechanochemical process to capture and separate carbon dioxide from natural gas using boron nitride nanosheets

Srikanth Mateti,\* Ying (Ian) Chen,\* Gautham Sathikumar, Qi Han, Shiva Prasad, Reza Ghandehari Ferdowsi and Amrito Battacharjee



## COMMUNICATIONS

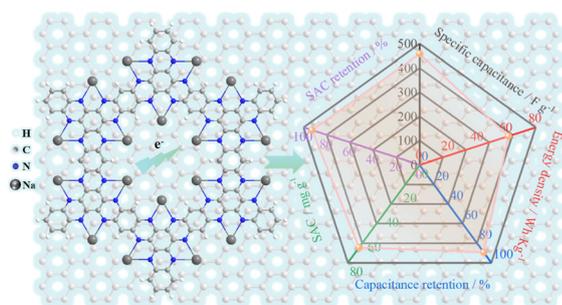
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### A bioactive calcium silicate nanowire-containing hydrogel for organoid formation and functionalization

Wenping Ma, Yi Zheng, Guangzhen Yang, Hongjian Zhang, Mingxia Lu, Hongshi Ma, Chengtie Wu\* and Hongxu Lu\*

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### Heterointerface regulation of covalent organic framework-anchored graphene via a solvent-free strategy for high-performance supercapacitor and hybrid capacitive deionization electrodes

Liming Xu, Yong Liu,\* Xiaoyang Xuan,\* Xingtao Xu, Yuquan Li, Ting Lu and Likun Pan\*

## CORRECTION

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### Correction: Intelligent micro/nanorobots based on biotemplates

Ting Chen, Yuepeng Cai, Biye Ren,\* Beatriz Jurado Sánchez\* and Renfeng Dong\*

