

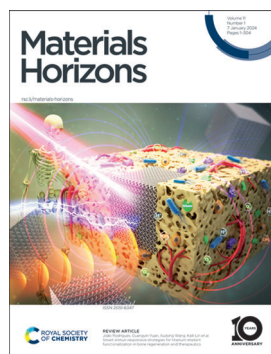
# Materials Horizons

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### Cover

See João Rodrigues, Guangyin Yuan, Xudong Wang, Kaili Lin *et al.*, pp. 12–36. Image reproduced by permission of Kaili Lin from *Mater. Horiz.*, 2024, 11, 12.



### Inside cover

See Xin Zhao, Yong Han, Baolin Guo *et al.*, pp. 37–101. Image reproduced by permission of Xin Zhao and Baolin Guo from *Mater. Horiz.*, 2024, 11, 37.

## EDITORIAL

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**Materials Horizons Emerging Investigator Series:**  
Dr Jie Xu, Argonne National Laboratory, USA

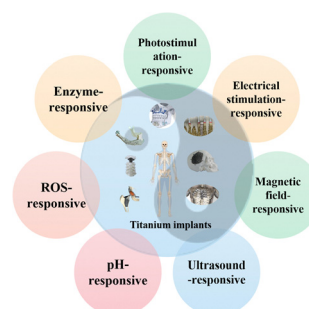


## REVIEWS

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**Smart stimuli-responsive strategies for titanium implant functionalization in bone regeneration and therapeutics**

Jinkai Zhang, Yu Zhuang, Ruilong Sheng, Helena Tomás, João Rodrigues,\* Guangyin Yuan,\* Xudong Wang\* and Kaili Lin\*



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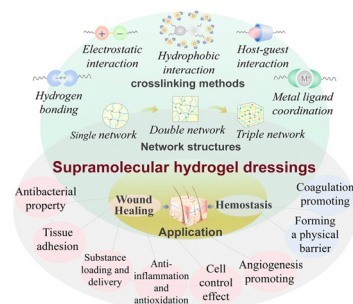


## REVIEWS

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## Supramolecular hydrogels for wound repair and hemostasis

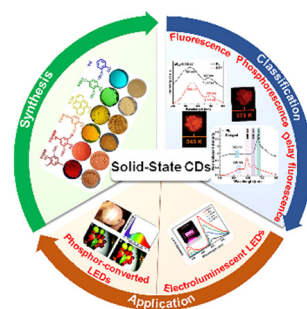
Shaowen Zhuo, Yongping Liang, Zhengying Wu, Xin Zhao,\* Yong Han\* and Baolin Guo\*



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## The emergence and prospects of carbon dots with solid-state photoluminescence for light-emitting diodes

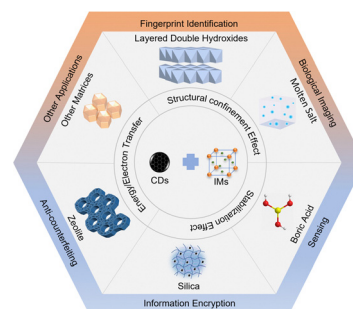
Ting Yuan, Qian Teng, Chenhao Li, Jinsui Li, Wen Su, Xianzhi Song, Yuxin Shi, Huimin Xu, Yuyi Han, Shuyan Wei, Yang Zhang, Xiaohong Li, Yunchao Li, Louzhen Fan\* and Fanglong Yuan\*



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## The afterglow of carbon dots shining in inorganic matrices

Xiaoyan He, Yihao Zheng, Chaofan Hu, Bingfu Lei, Xingcai Zhang,\* Yingliang Liu\* and Jianle Zhuang\*

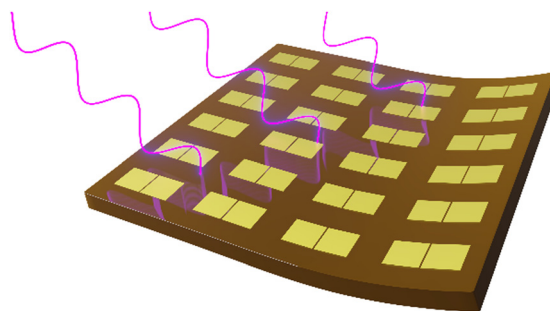


## COMMUNICATIONS

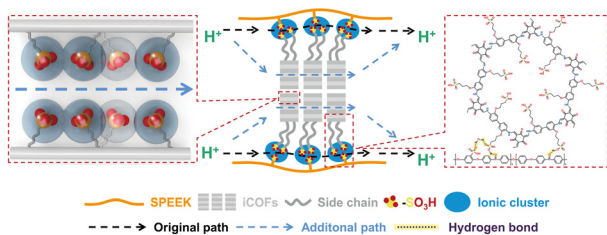
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## Understanding radiation-generated electronic traps in radiation dosimeters based on organic field-effect transistors

Derek Dremann, Evan J. Kumar, Karl J. Thorley, Edgar Gutiérrez-Fernández, James D. Ververs, J. Daniel Bourland, John E. Anthony, Ajay Ram Srimath Kandada and Oana D. Jurchescu\*



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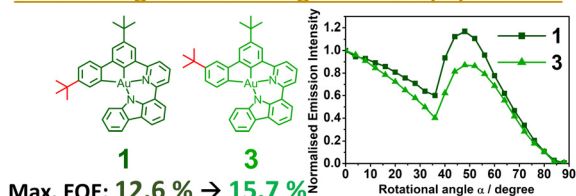


### Covalent organic frameworks with flexible side chains in hybrid PEMs enable highly efficient proton conductivity

Ziwen Liu, Xiao Pang, Benbing Shi, Na Xing, Yawei Liu, Bohui Lyu, Leilang Zhang, Yan Kong, Sijia Wang, Zhong Gao, Rou Xue, Tianyu Jing, Changkun Liu, Qinhuaidan Bai, Hong Wu\* and Zhongyi Jiang\*

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### C<sup>∧</sup>C<sup>∧</sup>N<sup>∧</sup>N<sup>∧</sup> ligand-containing TADF Gold(III) Emitters



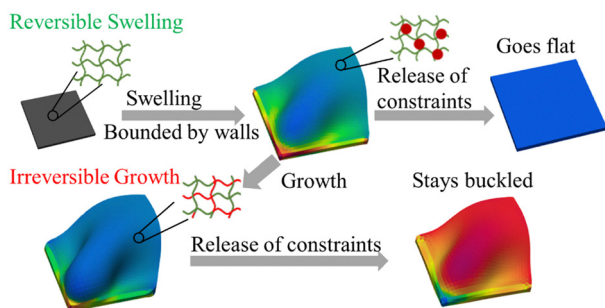
Max. EQE: 12.6 % → 15.7 %

- ✓ TADF with  $\Delta E_{(S_1-T_1)}$  of 0.16–0.18 eV
- ✓ Preferential horizontal molecular orientations
- ✓ Improvement in  $\eta_{out}$  by 30 %

### Thermally activated delayed fluorescence tetradentate ligand-containing gold(III) complexes with preferential molecular orientation and their application in organic light-emitting devices

Cathay Chai Au-Yeung, Ming-Yi Leung, Shiu-Lun Lai, Shun-Cheung Cheng, Lok-Kwan Li, Man-Chung Tang, Wing-Kei Kwok, Chi-Chiu Ko, Mei-Yee Chan\* and Vivian Wing-Wah Yam\*

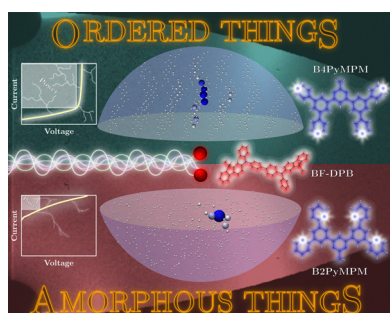
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Santidan Biswas, Victor V. Yashin and Anna C. Balazs\*

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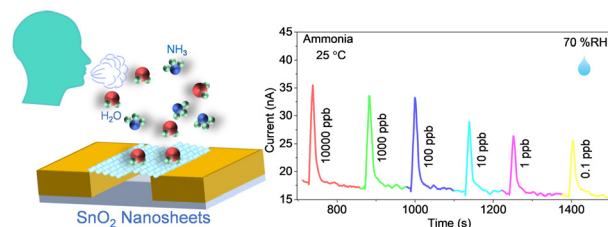
Xiangkun Jia, Lorenzo Soprani, Giacomo Londi, Seyed Mehrdad Hosseini, Felix Talnack, Stefan Mannsfeld, Safa Shoaee, Dieter Neher, Sebastian Reineke, Luca Muccioli, Gabriele D'Avino, Koen Vandewal,\* David Beljonne\* and Donato Spoltore\*



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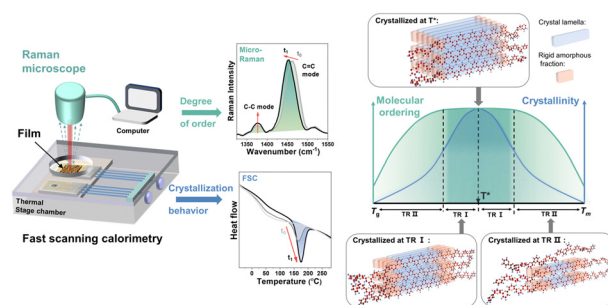
Mohit Verma, Gaurav Bahuguna, Sukhwinder Singh, Ankita Kumari, Dibyajyoti Ghosh, Hossam Haick and Ritu Gupta\*



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### Real-time correlation of crystallization and segmental order in conjugated polymers

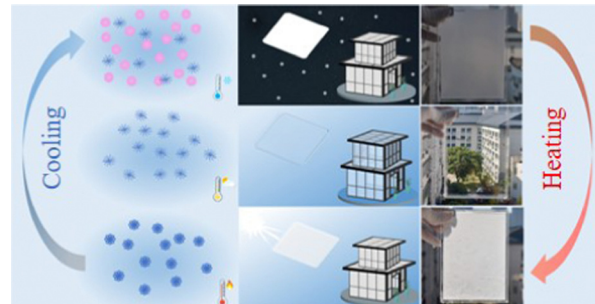
Shaochuan Luo, Yukun Li, Nan Li, Zhiqiang Cao, Song Zhang, Michael U. Ocheje, Xiaodan Gu, Simon Rondeau-Gagné, Gi Xue, Sihong Wang, Dongshan Zhou\* and Jie Xu\*



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### Bidirectional optical response hydrogel with adjustable human comfort temperature for smart windows

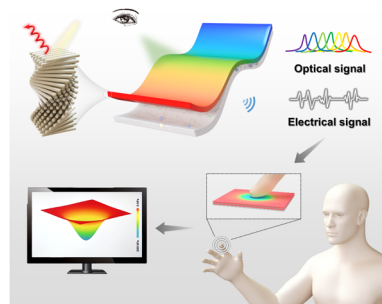
Zhenkun Yu, Yulin Ma, Linhan Mao, Yue Lian, Yanwen Xiao, Zhaoxia Chen\* and Yuhong Zhang\*



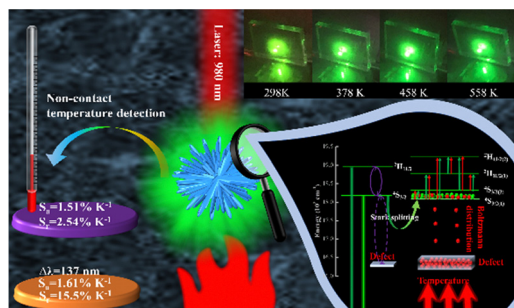
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### Mechanochromic and ionic conductive cholesteric liquid crystal elastomers for biomechanical monitoring and human-machine interaction

Jiazhe Ma, Yanzhao Yang, Xuan Zhang, Pan Xue, Cristian Valenzuela, Yuan Liu, Ling Wang\* and Wei Feng\*



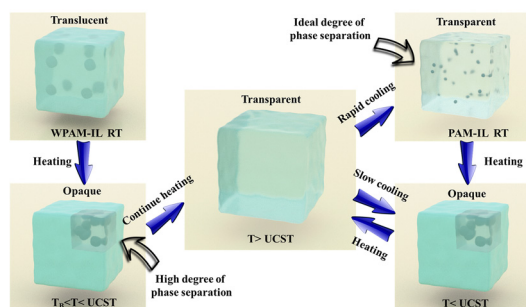
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### Anomalous thermal activation of green upconversion luminescence in Yb/Er/ZnGdO self-assembled microflowers for high-sensitivity temperature detection

Wei Zheng, Aifeng He, Hong Ma, Jianhua Chen, Bo Jing, Yan Li, Xiaogang Yu, Chunqiang Cao and Baoyu Sun\*

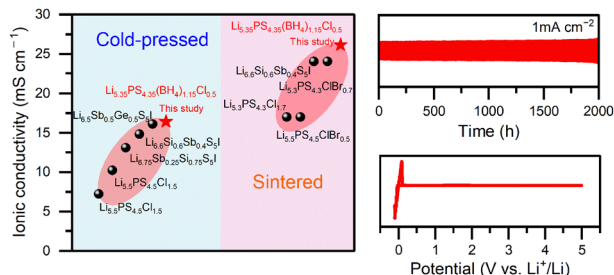
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### Preparation of tough and stiff ionogels via phase separation

Jinliang Xie, Xiaoqian Li, Zhongjie He, Ling Fan, Dongdong Yao\* and Yaping Zheng\*

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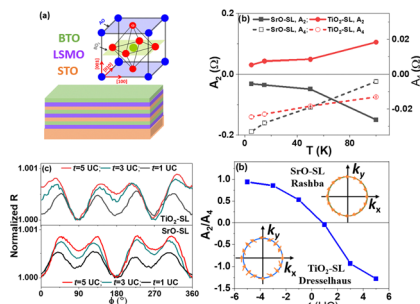


High Ionic Conductivity and Electrochemical Stability against Lithium Metal

### Borohydride and halide dual-substituted lithium argyrodites

Ji-Hoon Han, Do Kyung Kim, Young Joo Lee, Young-Su Lee,\* Kyung-Woo Yi and Young Whan Cho\*

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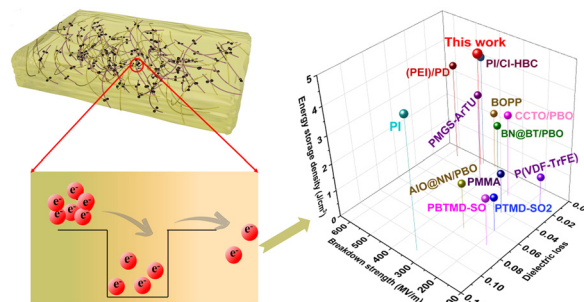
Bangmin Zhang,\* Chunhua Tang, Ping Yang and Jingsheng Chen\*



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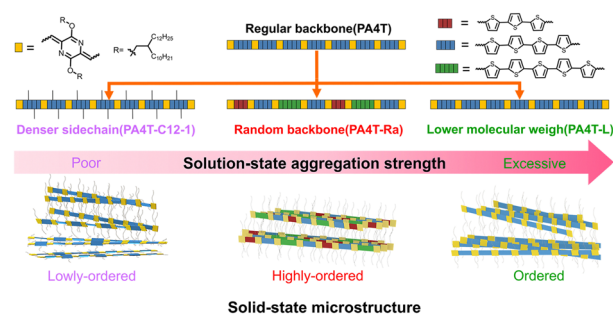
Peiyuan Zuo, Jinpeng Li, Donglin Chen, Lingzhi Nie, Liang Gao, Jingyu Lin and Qixin Zhuang\*



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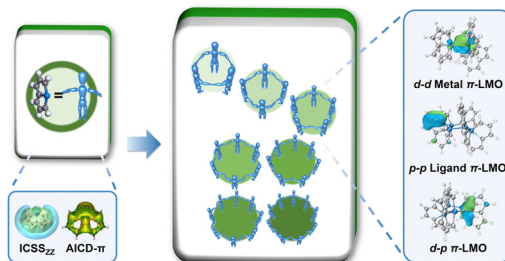
Quanfeng Zhou, Cheng Liu, Jinlun Li, Runze Xie, Guoxiang Zhang, Xiang Ge, Zesheng Zhang, Lianjie Zhang, Junwu Chen, Xiu Gong, Chen Yang, Yuanyu Wang,\* Yi Liu\* and Xuncheng Liu\*



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### Designed metal-organic $\pi$ -clusters combining the aromaticity of the metal cluster and ligands for a third-order nonlinear optical response

Zirui Wang, Yayu Yan, Jiali Chen, Qiao-Hong Li\* and Jian Zhang\*



*Metal core  $\pi$  + Ligand  $\pi$  = Metal-organic  $\pi$ -cluster*

