

# Journal of Materials Chemistry C

Materials for optical, magnetic and electronic devices

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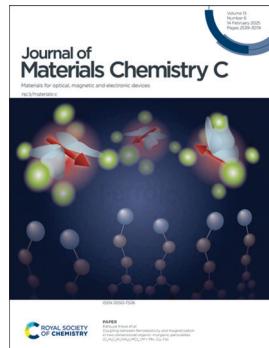
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### Inside cover

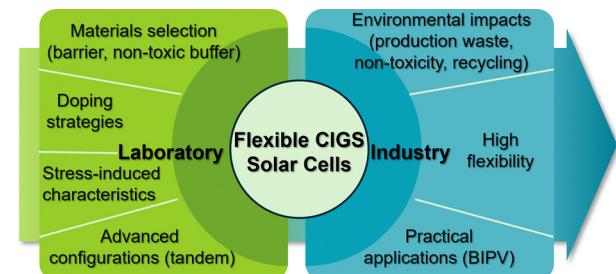
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## REVIEWS

2554

### Flexible Cu(In,Ga)Se<sub>2</sub> photovoltaics for bending applications: advances from materials to panels

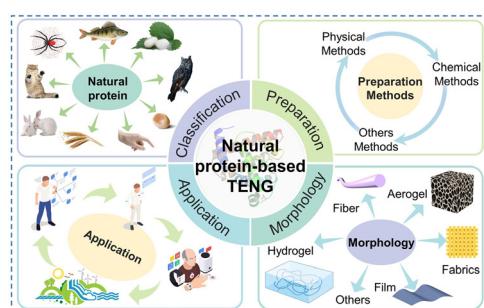
Ha Kyung Park and William Jo\*



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### Native proteins for triboelectric nanogenerators

Yuxuan Huang, Haiyan Zheng,\* Jianquan Zhang,  
Yue Shen and Xinrong Xu



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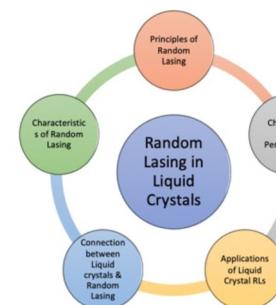


## REVIEWS

2606

**Random lasing in liquid crystals: advances, challenges, and future directions**

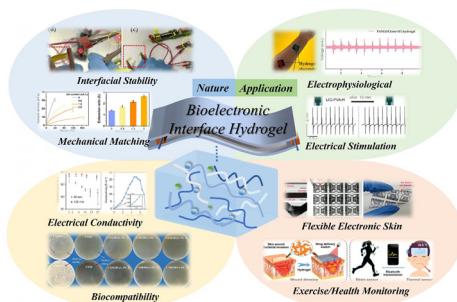
Aneela Ahmad, Haitao Dai,\* Shouzhong Feng, Zhenda Chen, Zolkefl Mohmaed, Abdul Aziz Khan, Xichen Hao, Yuhan Wang, Najam Iqbal and Darakhshan Mehwish



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**Hydrogel-based soft bioelectronic interfaces and their applications**

Caicai Jiao,\* Jiahui Liu, Shuo Yan, Zhiwei Xu, Zhaoru Hou and Wenlong Xu\*

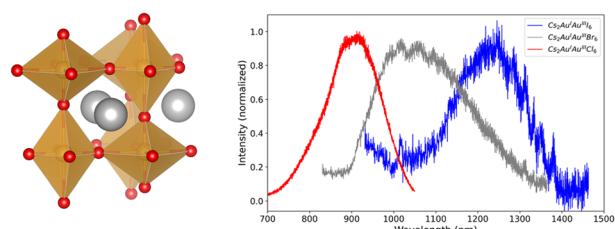


## COMMUNICATION

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**Low-temperature synthesis of mixed valence gold halide perovskites and exploration of their photoluminescence properties**

Alexandre Py-Renaudie, Ange B. Chambissie Kameni, Paul-Alexis Pavard, Nathanaelle Schneider, Géraud Delpot, Pallavi Singh, Damien Aureau, Mathieu Frégnaux, David Cahen, Jean-François Guillemoles and Philip Schulz\*

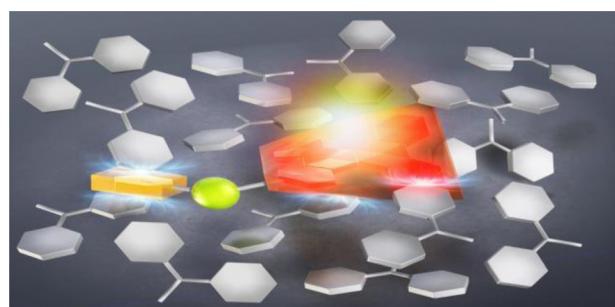


## PAPERS

2654

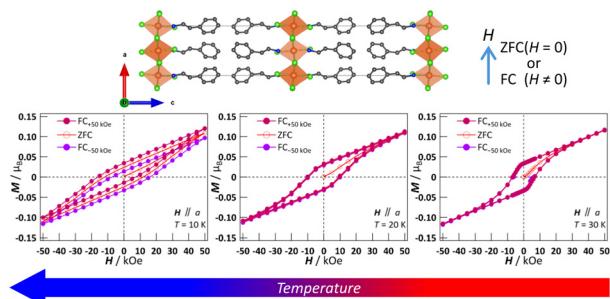
**Deciphering carbon–sulfur rotational distribution in a crystalline host for enhanced red persistent organic phosphorescence**

Sakuya Ueda, Kazuki Fujita, Bahadur Sk and Shuzo Hirata\*



## PAPERS

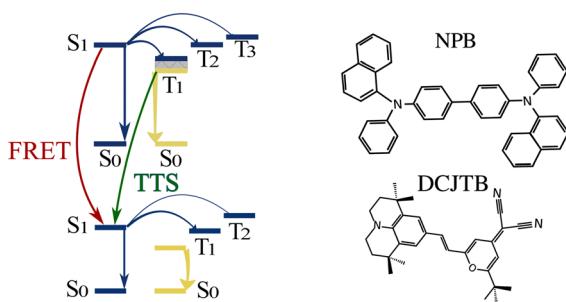
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## Coupling between ferroelasticity and magnetization in two-dimensional organic–inorganic perovskites $(C_6H_5C_2H_4NH_3)_2MCl_4$ ( $M = Mn, Cu, Fe$ )

Naoto Tsuchiya, Saya Aoki, Yuki Nakayama, Goulven Cosquer, Sadafumi Nishihara, Miguel Pardo-Sainz, José Alberto Rodríguez-Velamazán, Javier Campo and Katsuya Inoue\*

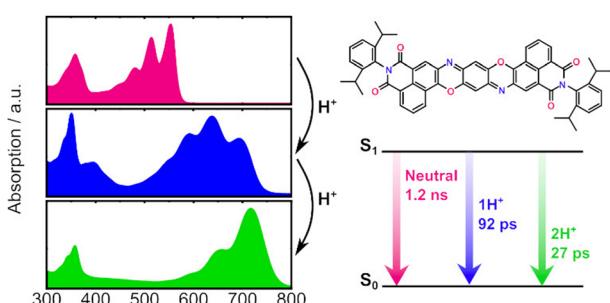
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## Exploring the triplet-to-singlet conversion mechanism in persistent luminescence: insights from a host–guest system

Fernando Teixeira Bueno, Tiago de Sousa Araújo Cassiano, Piotr de Silva, Pedro Henrique de Oliveira Neto and Leonardo Evaristo de Sousa\*

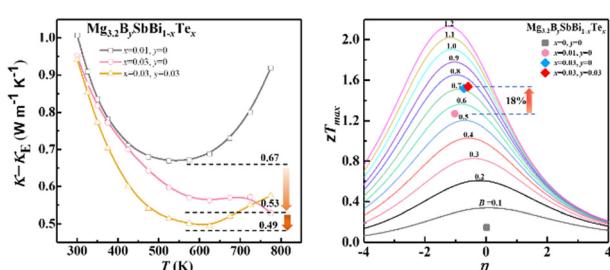
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## Controlling optoelectronic properties through protonation with $\pi$ -extended triphenodioxazine diimides

Rhea Kumar, Mario Taddei, Vasilis Petropoulos, Mattia Russo, Federico Vernuccio, Giulio Cerullo, Dario Polli, Artur Nenov, Nicola Demitri, Maurizio Prato,\* Margherita Maiuri\* and Jacopo Dosso\*

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## Enhanced thermoelectric performance of $Mg_3Sb_2$ -based materials by codoping with B and Te

Lijun Zhai, Jian Wang, Lin Cheng, Minghao Lv, Lu Gao, Zhongyuan Yang, Yanli Li, Yan Zhang, Hongxia Liu\* and Zhigang Sun\*

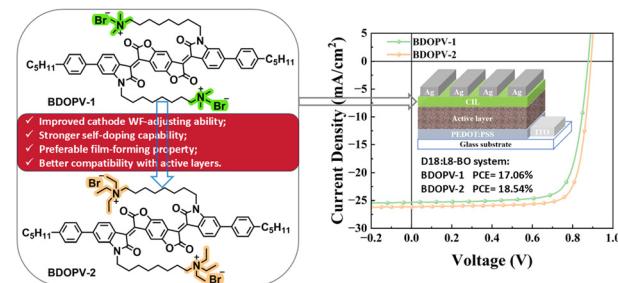


## PAPERS

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## Imide-free electron-deficient electrolytes with adjustable cathode-modifying capabilities achieved by side chain engineering for efficient organic solar cells

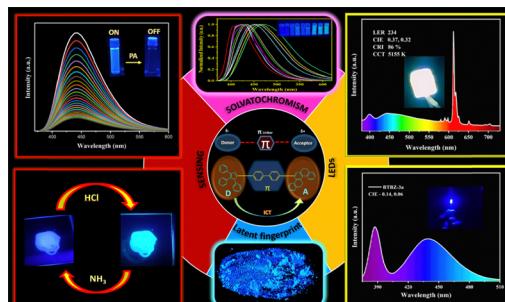
Guiting Chen,\* Long Wang, Hongli Wu, Long Li, Baitian He,\* Chuanbo Dai and Zhicai He\*



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## Benzil-imidazole blue fluorophores and their applications in blue/white light-emitting diodes, sensing and anticounterfeiting

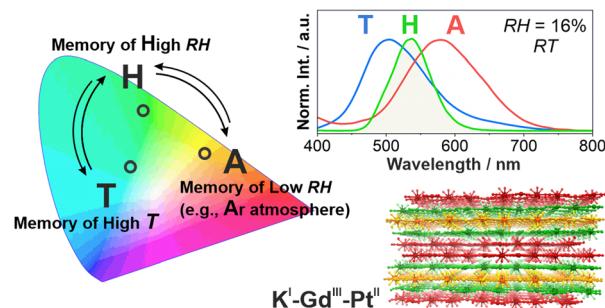
Bhabana Priyadarshini Debata,  
Manojkumar Dhanthala Thiagarajan, Prathap R.,  
Jaipal Devesing Girase, Sathiyanarayanan Kulathu Iyer,  
Sabita Patel\* and Sivakumar Vaidyanathan\*



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## Optical memory effect in a dynamic gadolinium-tetracyanoplatinate coordination polymer for sensing deviations in temperature and humidity

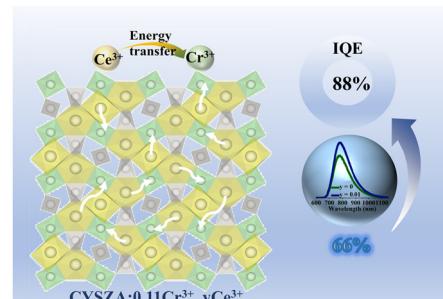
Maciej Wyczesany, Michał Heczko, Mateusz Reczyński, Barbara Sieklucka and Szymon Chorazy\*



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## Multi-site occupancy high-efficient $\text{CaY}_2\text{ScZrAl}_3\text{O}_{12}:\text{Cr}^{3+},\text{Ce}^{3+}$ phosphors for application in broadband NIR pc-LEDs

Xiaole Xing, Xiaobin Wei, Yining Wang, Lingkang Yu and Mengmeng Shang\*



## PAPERS

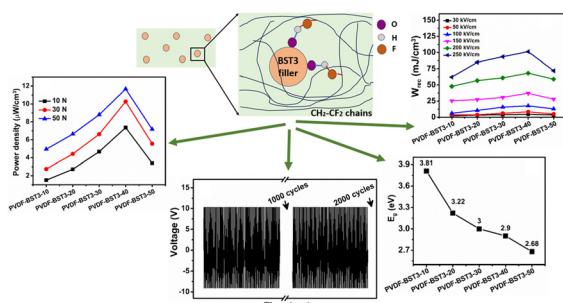
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## Chemical conversion of recovered carbon black (rCB) from end-of-life tires (ELTs) pyrolysis to reduced graphene oxide (rGO): from waste to advanced materials

Bartosz Dziejarski,\* Jarosław Serafin,\* Diego Felipe Hernández-Barreto, Juan Carlos Moreno-Piraján, Liliana Giraldo, Narcis Hom, Renata Krzyżyska, Klas Andersson and Pavleta Knutsson

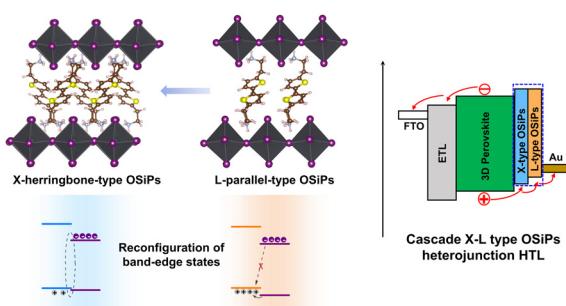
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## Multifunctional piezoelectric PVDF–Ba<sub>0.97</sub>Sr<sub>0.03</sub>TiO<sub>3</sub> composite films for electrostatic energy storage, bio/force sensing, and optical applications

P. Elorika,\* Sharmistha Anwar and Shahid Anwar\*

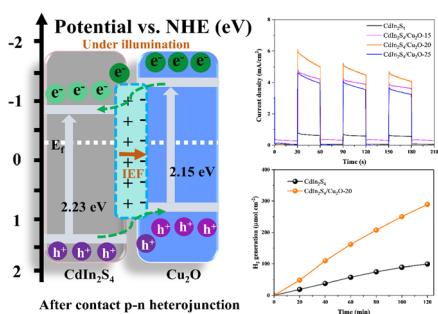
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## Reconfiguration of band-edge states via intermolecular packing in organic semiconductor-incorporated perovskites

Jia Xu, Zhun Liu,\* Xieli Wei, Junqiang Lu, Qifeng Liang and Jijun Zhao

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## A highly efficient 3D/0D CdIn<sub>2</sub>S<sub>4</sub>/Cu<sub>2</sub>O photoanode with a p-n type heterojunction for boosted photoelectrochemical water splitting under visible light irradiation

Qi Wang, Chengwei Hu,\* Lanlan Zhang, Yuanhu Lei, Zonghan Hu, Zihang Wang, Yupei Qiao and Bing Lv\*

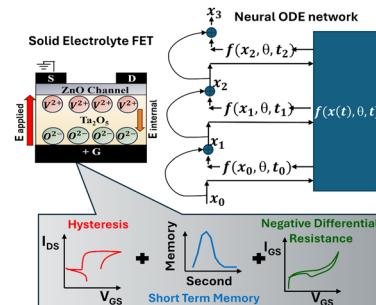


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## Neural ordinary differential equations for predicting the temporal dynamics of a ZnO solid electrolyte FET

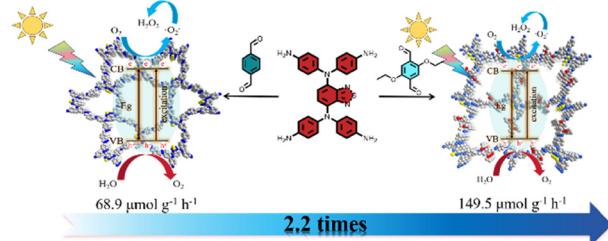
Ankit Gaurav, Xiaoyao Song, Sanjeev Kumar Manhas and Maria Merlyne De Souza\*



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## Side-chain regulated topology of 2D covalent organic frameworks and its impact on photocatalytic synthesis of H<sub>2</sub>O<sub>2</sub>

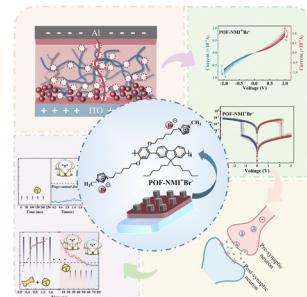
Shuai Sun, Chao-Qin Han,\* Jia-Xin Guo, Lei Wang, Ze-Yang Wang, Gonghao Lu\* and Xiao-Yuan Liu\*



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## Conjugated polyelectrolyte with a backbone integrated by benzene and fluorene for mimicking neural synapses and associative learning

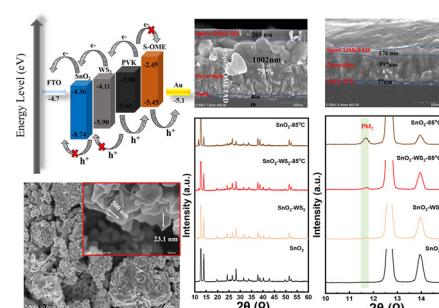
Jiaxuan Liu, Kexin Wang, Kejia Zhao, Qian Chen, Haidong He,\* Xinzhu Wang\* and Yu Chen\*



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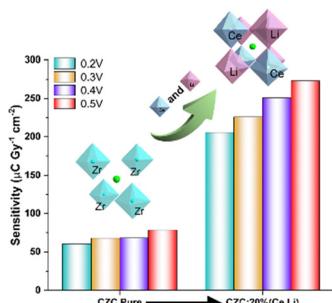
## High-efficiency self-powered perovskite photodetector with an electron-enhancing SnO<sub>2</sub>/WS<sub>2</sub> double electron transport layer

Vo Pham Hoang Huy and Chung Wung Bark\*



## PAPERS

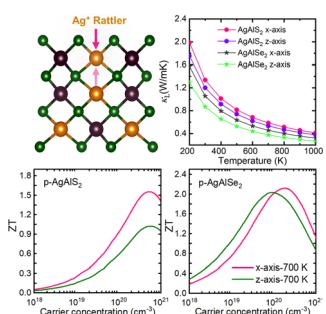
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### A novel co-substitution strategy for the design, growth, and optoelectronic performance optimization of $\text{Cs}_2\text{ZrCl}_6:\text{Ce},\text{Li}$ single crystals

Xinhui Jia, Hechun Jiang, Xi Chong, Weirui Ju, Ting Feng, Zhiwei Zhao, Hao Wei, Jing Li,\* Shibo Cheng\* and Jiyang Wang

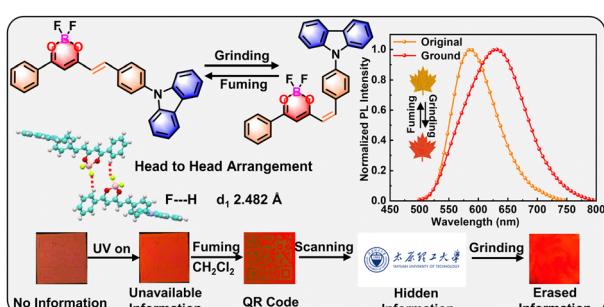
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### Ultralow lattice thermal conductivity and superior thermoelectric performance in AgAlS<sub>2</sub> and AgAlSe<sub>2</sub>

Muhammad Faizan,\* Shaojie Li, Zhongwei Liu, Zewei Li, Jiahao Xie, Kun Zhou, Yuhao Fu\* and Lijun Zhang\*

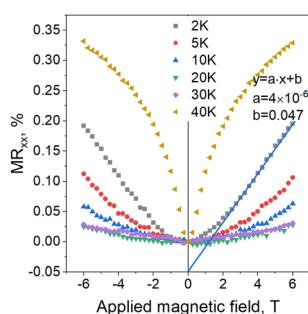
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### $\text{C}=\text{C}$ bond enables difluorideboron $\beta$ -diketonate derivatives with high contrast mechanoresponsive luminescence for reversible writing and information encryption

Yan Xia, Geng Li, Xiangkai Yin, Jie Li,\* Juemin Zhao, Kunpeng Guo,\* Yaxing Tang and Hua Wang\*

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### Ultra-thin and thin CrSi films on Si(111): II. Transport and magnetic properties

Nikolay G. Galkin,\* Evgenii Yu. Subbotin, Konstantin N. Galkin, Dmitrii L. Goroshko, Olga A. Goroshko, Dmitri B. Migas, Andrew B. Filonov, Ivan A. Tkachenko and Aleksei Yu. Samardak

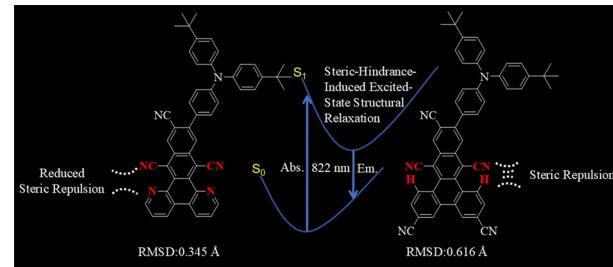


## PAPERS

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**Pentacarbonitrile-based efficient near-infrared thermally activated delayed fluorescence OLEDs via suppressing excited-state structural relaxation**

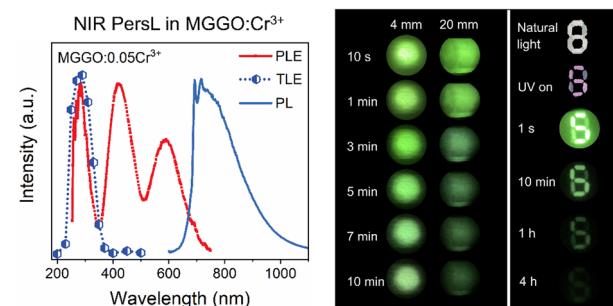
Shengkai Hu, Yang Li, Kai Zhang,\* Dong-Ying Zhou,\* Liang-Sheng Liao and Jian Fan\*



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**Ultralong near-infrared persistent luminescence in a Cr<sup>3+</sup>-doped gallogermanate for multifunctional applications**

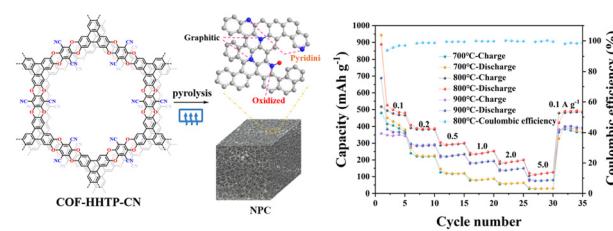
Fangyi Zhao, Yuhe Shao, Qinan Mao, Yiwen Zhu, Heyi Yang, Yang Ding, Quanlin Liu\* and Jiasong Zhong\*



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**Introduction of sidewall C≡N: a high-temperature-resistant COF for lithium-ion storage**

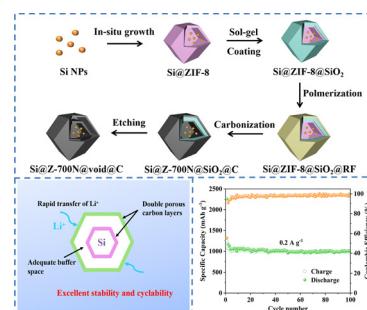
Jiahui Yuan, Zhenyu Zhang, Yajie Feng, Fuzhou Chen, Wei Ding, Yizi Zhang, Hongxing Jia\* and Zhengrong Gu\*



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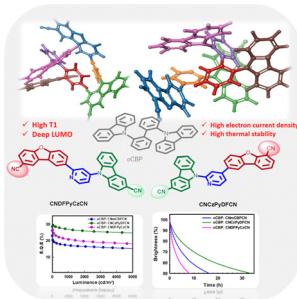
**Yolk-double shell structured bread-like Si@Z-700N@void@C nanocomposites as high stability anodes for lithium-ion batteries**

Weixiao Dong, Xiaojie Sun, Tuo Zhang and Ping Chen\*



## PAPERS

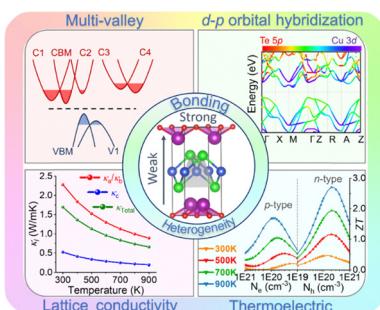
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## Unveiling a pyridine-based exciplex host for efficient stable blue phosphorescent organic light-emitting diodes

Subramanian Muruganantham, Young Hun Jung, Hye Rin Kim, Jung Ho Ham, Ramanaskanda Braventh, Kenkera Rayappa Naveen, Mi Young Chae\* and Jang Hyuk Kwon\*

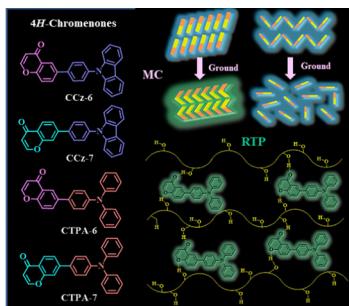
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## Antibonding Cu (d)-Te (p) states and bonding inhomogeneity in inducing low lattice thermal conductivity and extraordinary thermoelectric properties of the layered heteroanionic NdCuOTe material: a first-principles study

Shuwei Tang,\* Wanrong Guo, Da Wan, Xiaodong Li, Tuo Zheng, Hao Wang, Qingshun Li, Xiuling Qi and Shulin Bai\*

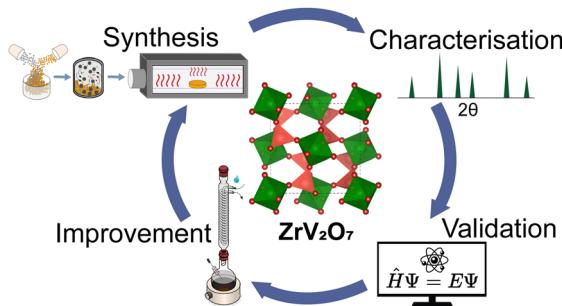
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## Solid-state emissions of 4H-chromenones with simple structures: mechanochromism and polymer-based doped ultralong room-temperature phosphorescence

Huaiying Huang, Miaochang Liu, Xiaoyu Qiu, Jiayin Qian, Wenbo Dai, Yunxiang Lei,\* Qiuping Ding, Huayue Wu\* and Xiaobo Huang\*

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## Synthesis and phase purity of the negative thermal expansion material ZrV<sub>2</sub>O<sub>7</sub>

Aistė Miliūtė, Joana Bustamante, Stephanos Karafilidis, Moritz Zöllner, Mustapha Eddah, Franziska Emmerling, Björn Mieller,\* Janine George\* and Tomasz M. Stawski\*

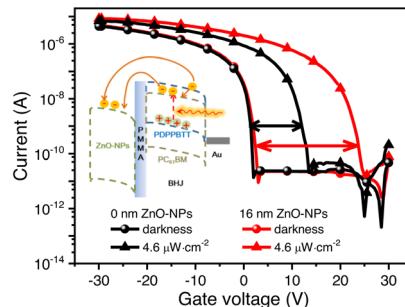


## PAPERS

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## Ultrahigh detectivity of near-infrared organic phototransistor assisted by additional electron trap sites in a dielectric layer

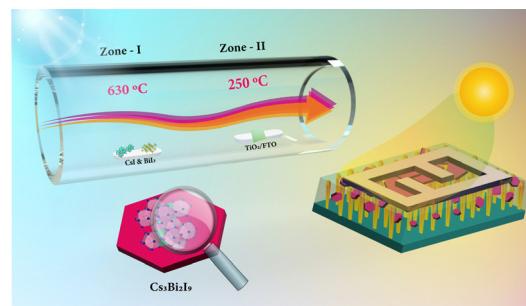
Meihua Shou,\* Jiaxin Zheng, Xingpeng Liu, Jiadong Zhou, Zengqi Xie, Qing Liao,\* Haiou Li\* and Linlin Liu\*



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## Layered $\text{Cs}_3\text{Bi}_2\text{I}_9$ perovskite nanosheets on $\text{TiO}_2$ nanorods for high-performance heterostructure photodetectors

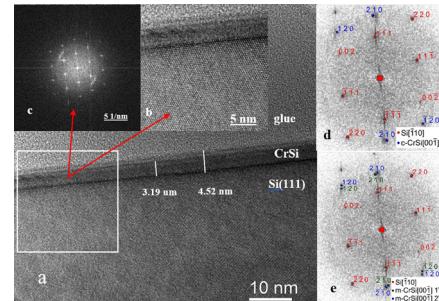
Gunasekaran Ashokan, Sadhasivam Subramani, Gowthambabu Vellingiri, Anbarasan Nallathambi and Jeganathan Kulandaivel\*



2987

## Ultra-thin and thin CrSi films on Si(111): I. Formation and crystal structure

Nikolay G. Galkin,\* Konstantin N. Galkin, Oleg V. Kropachev, Sergey A. Dotsenko, Dmitrii L. Goroshko, Dmitrii B. Migas, Andrew B. Filonov, Natalia V. Skorodumova, Andrey V. Gerasimenko and Anton K. Gutakovskii



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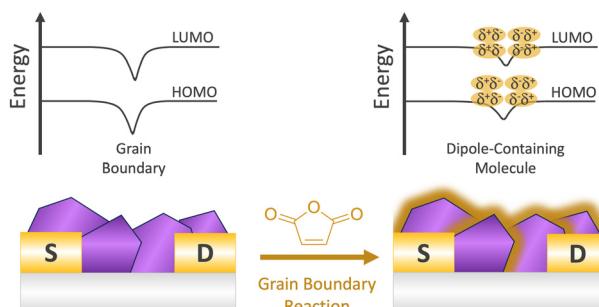
## Nanoporous and morphology-transforming g-CNNPs for trace-level detection of mefenamic acid in urine samples and *in vitro* protein denaturation inhibition

Anusree S. Gangadharan, Daniel T. Thangadurai,\* Nandhakumar Manjubaashini and Devaraj Nataraj



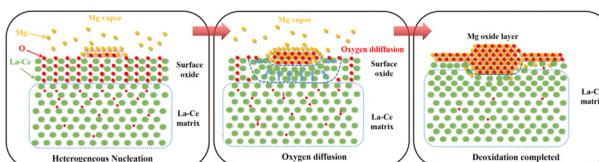
## PAPERS

3011

**Selective reaction at grain boundaries addressing organic field effect transistor trap states**

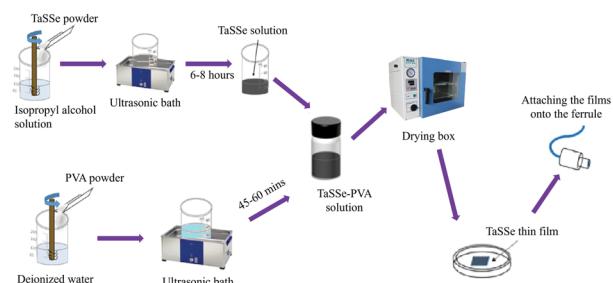
Feifei Li, Matthew C. Williams, Matthew Waldrip, Colin Tyznik, Tharushi D. Ambagaspitiya, Derek Dremann, Katherine Leslee Asetre Cimatu, Oana D. Jurchescu and Jacob W. Ciszek\*

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**Magnesium vapor-assisted deoxidation of La–Ce alloys through micro-alloying**

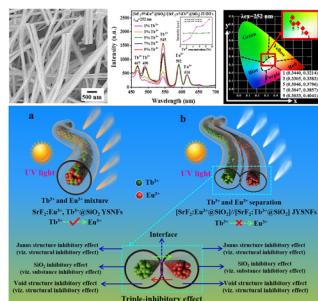
Wenxia Xie, Congli Lu, Xuechen Ren, Baoqiang Xu, Bin Yang and Fei Wang\*

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**Optical nonlinearity of Janus material TaSSe and its applications in fiber lasers**

Huiran Yang, Chenhao Lu, Yiqing Xie, Shengyue Gu, Xupeng Li, Mengting Qi, Dongdong Han, Pu Wang and Lu Li\*

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**A facile neoteric technique to achieve [SrF<sub>2</sub>:Eu<sup>3+</sup>@SiO<sub>2</sub>]/[SrF<sub>2</sub>:Tb<sup>3+</sup>@SiO<sub>2</sub>] Janus yolk–shell nanofibers with ideal white-light emission via triple-inhibiting energy transfer between Tb<sup>3+</sup> and Eu<sup>3+</sup> ions**

Ning Li, Hong Shao,\* Xiaohan Liu, Haina Qi, Dan Li, Wensheng Yu, Guixia Liu, Xiangting Dong\* and Xuejian Zhang\*

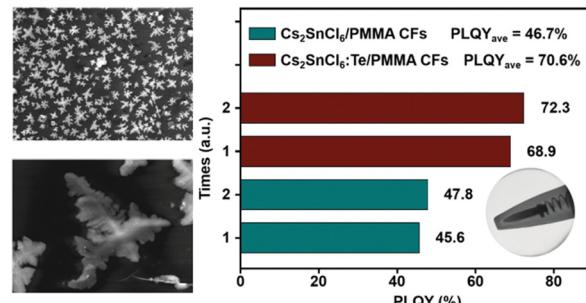


## PAPERS

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***In situ* growth of Te-doped Cs<sub>2</sub>SnCl<sub>6</sub> scintillator composite films for X-ray imaging**

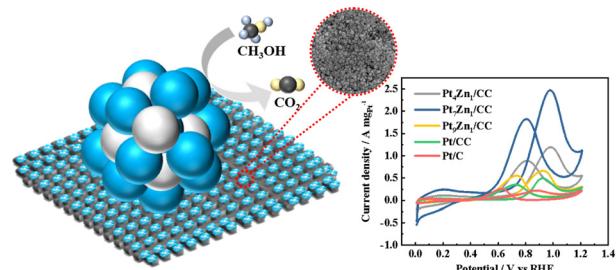
Junnan Wang, Zeyu Wang,\* Nikolai V. Gaponenko, Jindou Shi, Zheyuan Da, Chen Zhang, Yongqiang Ji, Qing Yao, Youlong Xu and Minqiang Wang



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**Ultra-high activity methanol oxidation electrocatalyzed by a flexible integrated Pt–Zn array electrode**

Yulan Liu, Yu Zhang, Xiaoyu Tian, He Wang and Lili Huo\*



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**A high-efficiency blue-LED-excitable broadband Cr<sup>3+</sup>/Ni<sup>2+</sup> co-doped garnet phosphor toward next-generation spectroscopy applications**

Lucheng Liu, Yuanhong Liu, Tongyu Gao, Guantong Chen, Ronghui Liu\* and Xiaodong Li\*

