

# Journal of Materials Chemistry C

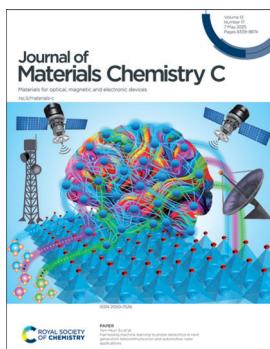
Materials for optical, magnetic and electronic devices

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## IN THIS ISSUE

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### Cover

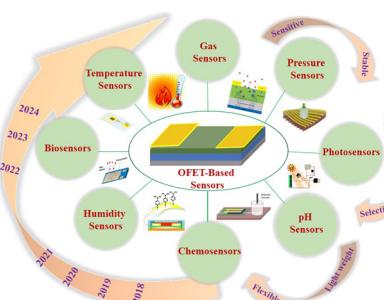
See Yen-Hsun Su *et al.*,  
pp. 8450–8460.  
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2025, 13, 8450.

## REVIEWS

8354

### Organic field-effect transistor-based sensors: recent progress, challenges and future outlook

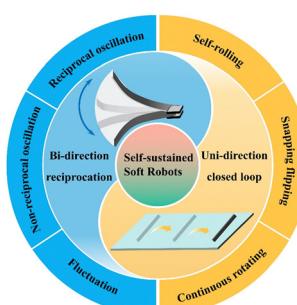
Bibi Amna\* and Turan Ozturk\*



8425

### Self-sustained soft robots based on liquid crystal elastomers

Jingli Gao, Kai Wang, Yanzhao Yang\* and Wei Feng\*





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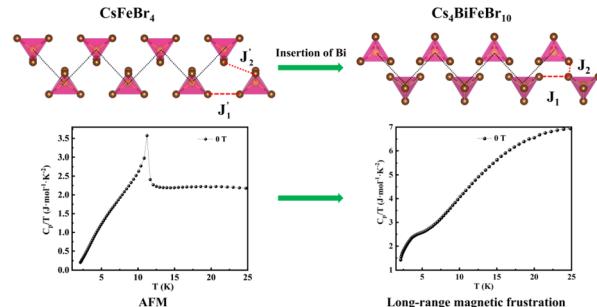


## COMMUNICATION

8443

**Possible gapless spin-liquid state in the Fe-based halide perovskite  $\text{Cs}_4\text{BiFeBr}_{10}$  derived from the antiferromagnet  $\text{CsFeBr}_4$** 

Jie Pan, Yaru Zhang, Yixin Liu, Xin Mi, Fuyang Liu, Yuqiang Fang, Binbin Zhou, Peizhi Yang, Gang Mu,\* Peng Qin\* and Fuqiang Huang\*

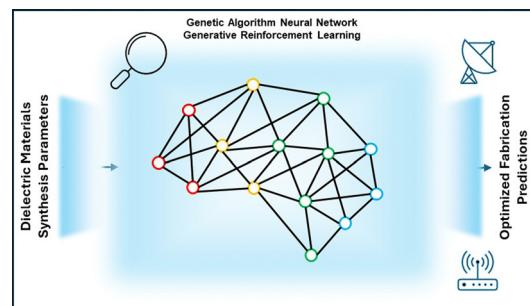


## PAPERS

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**Harnessing machine learning to probe dielectrics in next generation telecommunication and automotive radar applications**

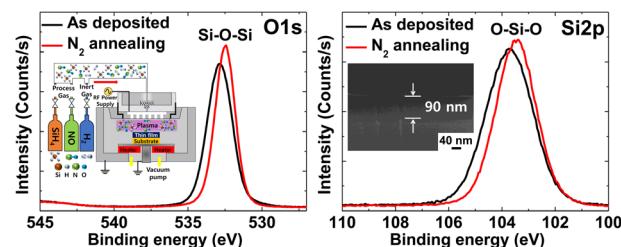
Amit Kumar Sharma, Tai-Ming Zheng, Yen-Lun Chiu, Kao-Shuo Chang, I-Ting Li, Jr-Jeng Ruan, Pin-Chao Liao, Chia-Yun Chen, Jyh-Ming Ting and Yen-Hsun Su\*



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**Enhanced dielectric properties of alternative NO-gas-based  $\text{SiO}_2$  films via plasma-enhanced chemical vapor deposition for high-performance indium–gallium–zinc oxide thin-film transistors**

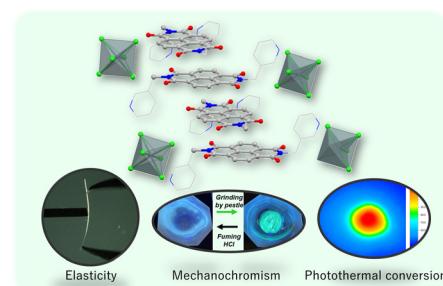
Se-Ryong Park, Eun-Ha Kim, Yunhui Jang, Youngjin Kang, Yong-Hoon Kim,\* Junsin Yi\* and Tae-Jun Ha\*



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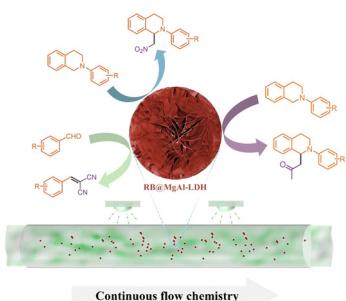
**Flexible organic–inorganic hybrid crystals of tin(IV) chloride and naphthalenediimide: exploring elasticity, mechanochromism, and photothermal conversion**

Sotaro Kusumoto,\* Shunya Masuda, Ryo Suzuki, Masaru Tachibana, Masaya Shimabukuro, Mamiko Kobayashi, Naoki Ogiwara, Sayaka Uchida, Tomoya Fukui, Yuta Tsuji, Masaya Okamura, Shiro Hikichi, Yang Kim and Yoshihiro Koide\*



## PAPERS

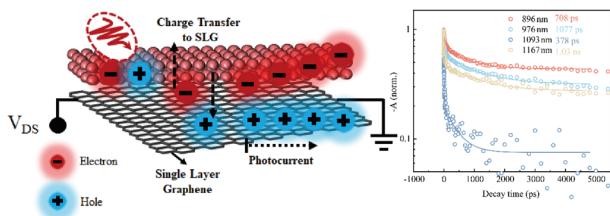
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### Three-dimensional flower-like organic-dye-intercalated layered double hydroxide composite for efficient photocatalysis in heterogeneous flow chemistry

Yuxing Huang,\* Jinpeng Guo, Yuanfa He, Runtao Jia, Jianya Kou, Jiachao Liu, Troels Skrydstrup\* and Zhuo Xin\*

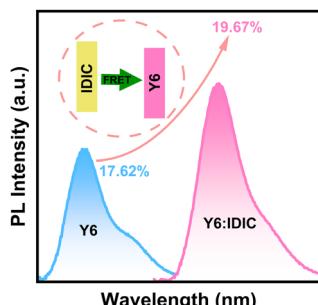
8485



### Metal chalcogenide complex ligands enhance the photoresponse in hybrid graphene/PbS quantum dot photodetectors

Tian Jia, Lin Pan, Yuanze Hong, Xiaowei Gu and Xuechao Yu\*

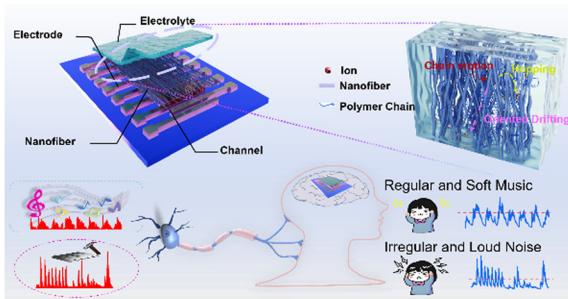
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### Regulating Förster resonance energy transfer and cascade energy offset achieves 19.6% efficiency in ternary organic solar cells

Jinghao Zhang, Anhai Liang,\* Chaofeng Zhu, Silu Huang, Sein Chung, Hojun Ji, Jiyeong Shin, Kilwon Cho, Lijun Li\* and Zhipeng Kan

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### Ordered fiber ionic pathways for wide-frequency regulation in electrolyte-gated transistors for bio-signal perception

Jun Li,\* Jupeng Wu, Lian Cheng, Dong Li, Giyosiddin Khaydarovich Mavlonov, Sobirjon Isamov, Yuxing Lei and Jianhua Zhang

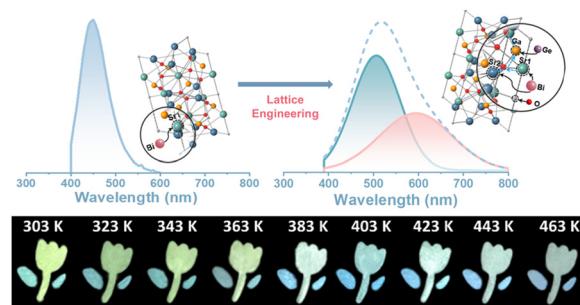


## PAPERS

8514

**Multi-mode tunable luminescence in  $\text{Bi}^{3+}$ -activated oxyfluoride phosphors for multi-level anti-counterfeiting applications**

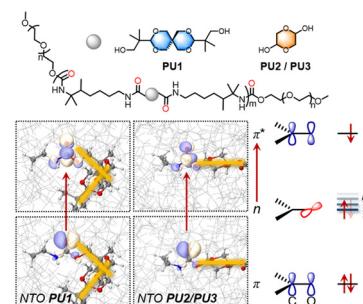
Huijuan Yuan, Pengcheng Wu, Fangyi Zhao,\* Heyi Yang, Yang Ding, Qinan Mao, Meijiao Liu and Jiasong Zhong\*



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**The role of ring-type structures in nonconventional luminescent polyurethane derivatives**

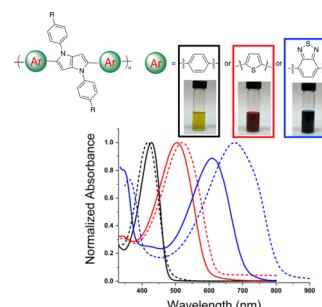
Chang-Yi Zhu, Ya-Jie Meng, Yan-Hong Xu, Chun-Qiu Xia, Nan Jiang,\* Jia-Wei Xu\* and Martin R. Bryce\*



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**Diversifying peripheral aromatic units of pyrrolo[3,2-*b*]pyrrole-containing conjugated polymers and the resulting optoelectronic properties**

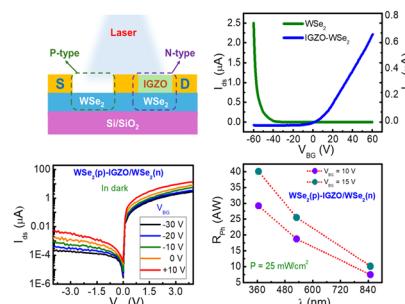
Graham S. Collier,\* Julien T. Layton, Perry Skiouris, Kenneth-John J. Bell, Ethan W. Wagner, Vanessa Phan, Sarah G. Fraser and Aimée L. Tomlinson



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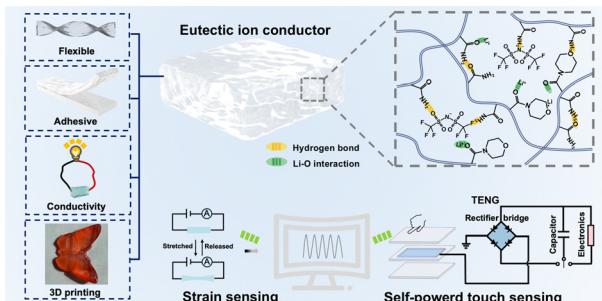
**UV to NIR photodetection in lateral homojunction PN diode of  $\text{WSe}_2$  achieved via IGZO sputtering**

Muhammad Abubakr, Muhammad Hamza Pervez, Arslan Rehmat, Muhammad Asghar Khan, Ehsan Elahi, Muhammad Asim, Muhammad Rabeel, Muhammad Nasim, Zeesham Abbas, Malik Abdul Rehman, Aize Hao, Jonghwa Eom, Shania Rehman\* and Muhammad Farooq Khan\*



## PAPERS

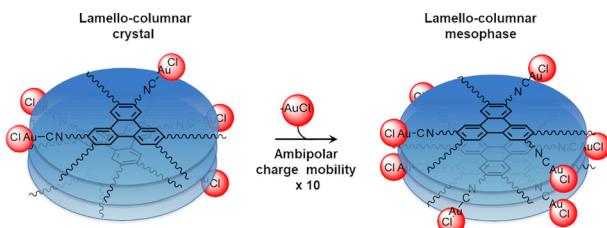
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### Highly stretchable, adhesive and 3D-printable eutectic ion conductor for wearable electronics and self-powered sensors

Xiaohu Li, Xuhang Zhang, Zhisen Zhu, Wenling Zhang and Yingdan Liu\*

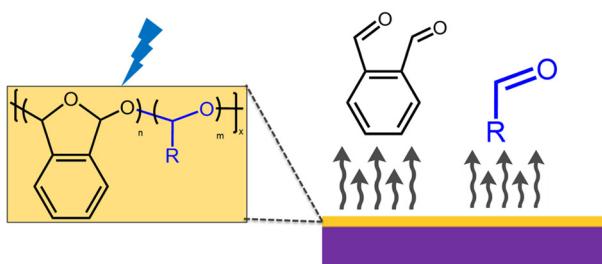
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### Self-assembly and ambipolar charge transport in columnar phases of polynuclear gold isocyano–triphenylene complexes

Estela de Domingo, Gregorio García, Emiliano Tritto, Bertrand Donnio,\* Asmita Shah, Dharmendra Pratap Singh\* and Silverio Coco\*

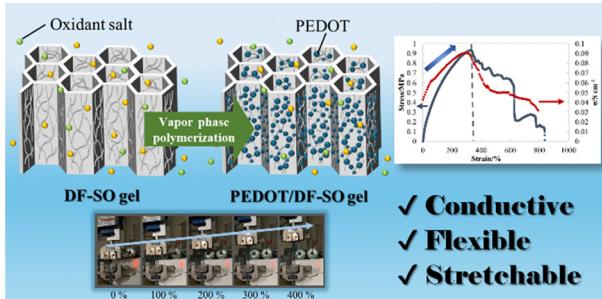
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### Analysis of EUV induced depolymerization and side reactions of polyphthalaldehydes for dry develop EUV resist applications

Bilal A. Naqvi,\* Jared Schwartz, Anthony Engler, Paul A. Kohl, Stefan De Gendt and Danilo De Simone

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### Hierarchically structured conducting polymer hydrogels with enhanced stretchability and conductivity via freeze-casting and salting-out with oxidant salts

Junko Shigenaga, Keisuke Shimamura, Shinji Kanematsu, Hiromu Saito and Takeshi Shimomura\*

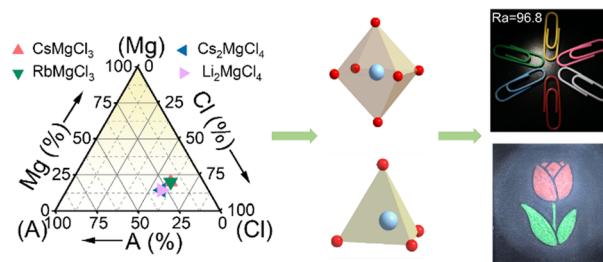


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**Magnesium halides as a lead-free family with unique optoelectronic properties**

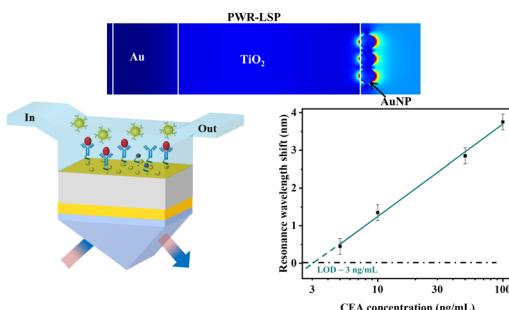
Tingting Ye, Yunluo Wang, Shihao Ge, Tianrui Zhou, Jianghua Wu, Zesen Gao, Ruirong Liu, Zesheng Pan, Meiling Zhu, Jingshan Hou, Minghui Wang, Lianjun Wang,\* Haijie Chen\* and Wan Jiang



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**Highly sensitive biosensors with resonant coupling of plasmon-waveguide resonance to localized surface plasmons**

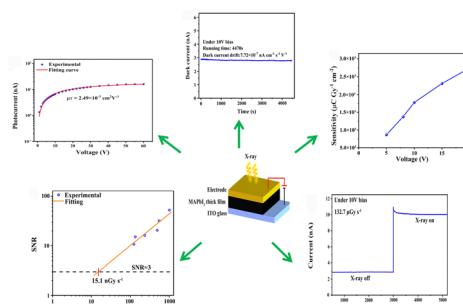
Huimin Wang, Enze Lv, Tao Wang,\* Xinzhou Yue, Jinwei Zeng, Wenyu Zhao\* and Jian Wang\*



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**High-quality blade-coated CH<sub>3</sub>NH<sub>3</sub>PbI<sub>3</sub> perovskite thick films for high-performance X-ray detection**

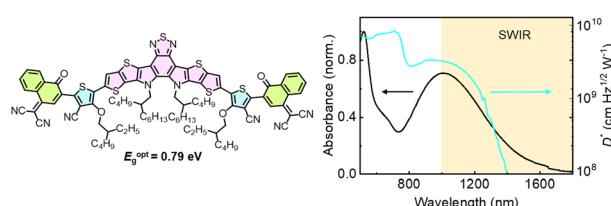
Ji Yu, Yinxian Luo, Ning Tian,\* Zhou Yang,\* Yufu Deng, Lin Li, Ruoning Zheng, Chengyuan Wang and Shengzhong (Frank) Liu\*



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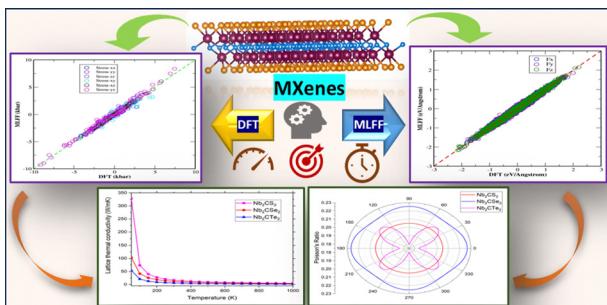
**A molecular acceptor with absorption wavelength of >1400 nm for short-wavelength infrared organic photodetectors**

Tingting Yuan, Wenliang Chen, Junhui Miao\* and Jun Liu\*



## PAPERS

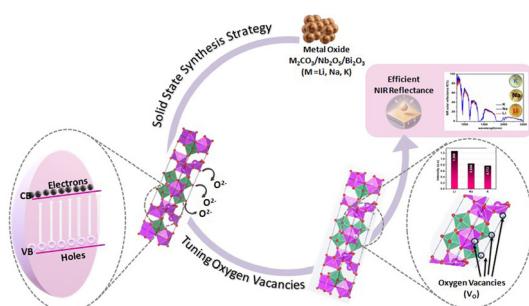
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## Machine learning-guided discovery of multifunctional $\text{Nb}_2\text{CX}_2$ MXenes ( $\text{X} = \text{S}, \text{Se}, \text{Te}$ ): insights into mechanical properties and thermal conductivity

Sourav Kanti Jana, Thanasee Thanasarnsurapong and Adisak Boonchun\*

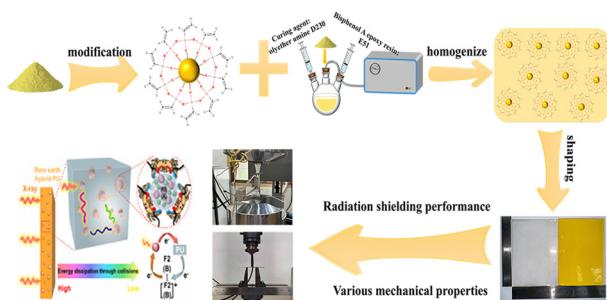
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## Tuning of oxygen vacancies to control color and electron dynamics in alkali metal substituted bismuth layered oxides for energy-efficient coatings

Omanakuttan Sreelakshmi, Saithathul Fathima Sameera, Mohammed Aysha Shafna, Vabin Lal Nayakom Mini Ancy Mini, Nadukkandi Muhammed Muzzammil, Najiya Nasirin and Sheik Muhammadhu Aboobakar Shibli\*

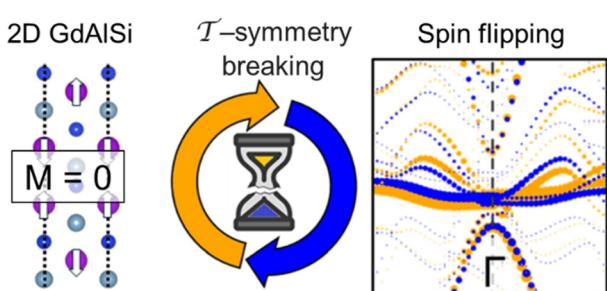
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## Surface modification of $\text{Bi}_2\text{O}_3$ and preparation of $\text{Bi}_2\text{O}_3@\text{Epoxy}$ resin composites: structure, properties and application in $\gamma$ -ray shielding

Yifan Li, Kun Liu,\* Jun Li, Caiping Fu, Zi He\* and Shengming Jin\*

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## Trace of altermagnetism in GdAlSi films: towards the 2D limit

Konstantin V. Larionov\* and Pavel B. Sorokin

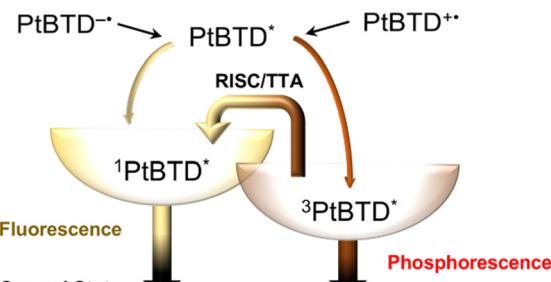


## PAPERS

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## Synergistic effects of triplet-triplet annihilation and reverse intersystem crossing in a platinum-based electrochemiluminescent metallopolymer emitter

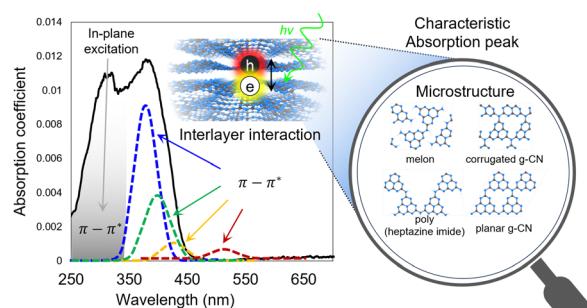
Chun Hong Mak, Yaojia Ai, Chunyan Tan, Wenxin Niu, Kuan-Chen Cheng, Chang-Wei Hsieh, Hsin-Hui Shen, Zheng Hu, Yanqing Tian, Xueqing Xu, Guizheng Zou,\* Duu-Jong Lee\* and Hsien-Yi Hsu\*



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## Unraveling the optical signatures of polymeric carbon nitrides: insights into stacking-induced excitonic transitions

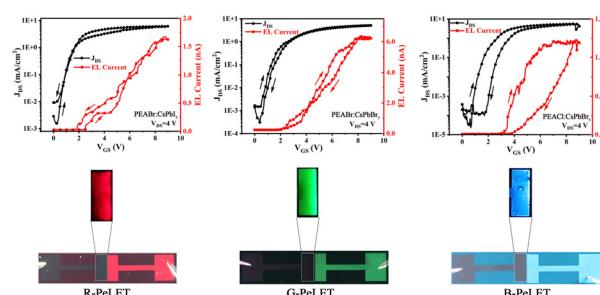
Changbin Im, Mohamed M. Elnagar, Björn Kirchhoff, Dariusz Mitoraj, Igor Krivtsov, Attila Farkas, Radim Beranek and Timo Jacob\*



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## Low-voltage perovskite light-emitting transistors: a novel approach utilizing solution-processed high- $k$ inorganic dielectrics for full-color emission

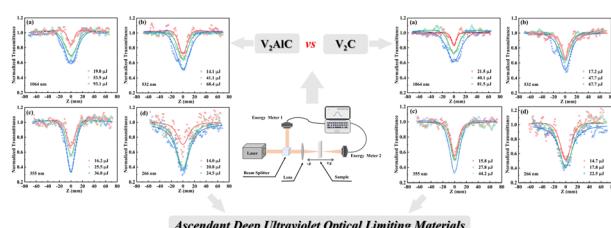
Xingyu Zhang, Min Guo, Jia Li, Tingting Dai, Zihong Yang, Zhidong Lou, Yanbing Hou, Feng Teng\* and Yufeng Hu\*



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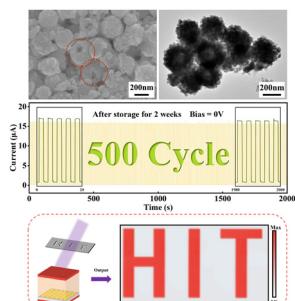
## 2D $V_2C$ and $V_2AlC$ layers: ascendant deep ultraviolet optical limiting materials

Junjie Yuan, Houwen Yang, Zhengping Wang and Wenyong Cheng\*



## PAPERS

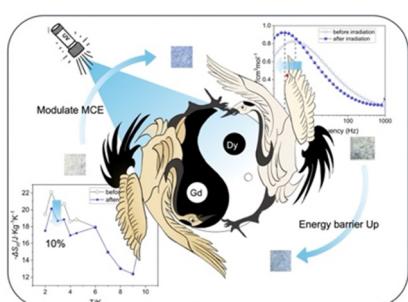
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### A high-performance self-powered UV imaging photodetector based on litchi-like $\text{WO}_3$ hollow spheres

Qicheng Zhou, Shiyong Gao,\* Yu Sun, Mingyi Zhang, Qiong Gao, Jinlong Bai, Haitao Fang, Shujie Jiao, Yong Zhang and Jinzhong Wang

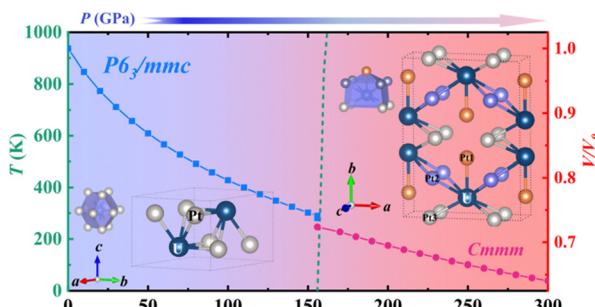
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### Light- and radical-induced modification of magnetic and magnetocaloric effects in viologen-based lanthanide materials

Hao Wang, Tian-Tian Wang, Zhao-Bo Hu, Sui-Jun Liu\* and Wen-Bin Sun\*

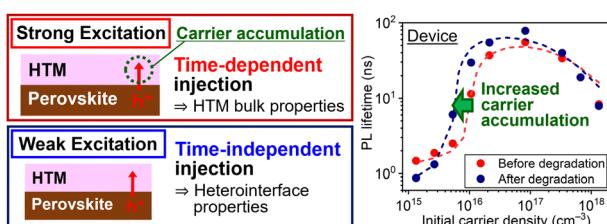
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### Structural phase transition, mechanics, and thermodynamics of heavy fermion metal $\text{UPt}_3$ under pressure

Hao Quan, Li Li, Jiang-Jiang Ma, Wei-Dong Li and Bao-Tian Wang\*

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### Differentiation between bulk and interfacial properties: analysis of time-dependent carrier injection in perovskite solar cells

Naoyuki Nishimura,\* Ranjan Kumar Behera, Daisuke Kubota, Hiroyuki Kanda, Kohei Yamamoto, Hiroyuki Yaguchi, Takuro N. Murakami and Hiroyuki Matsuzaki\*

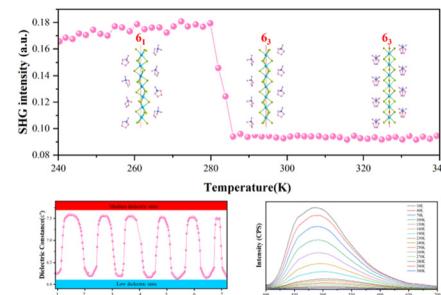


## PAPERS

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## Dual switching of dielectric and SHG triggered by thermal driven helical axis transformation with fluorescence characteristics

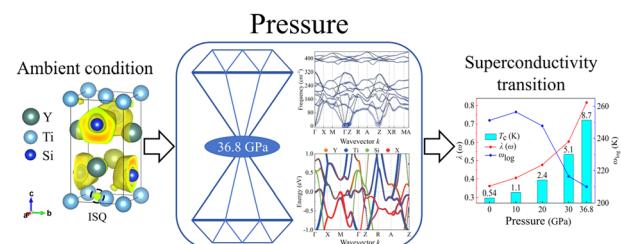
Yang Zhu, Bo-Wen Deng, Ji Jin, Yu-Hua Wu, Yu-Jun Zhao, Xin Chen, Xiu-Ni Hua\* and Hai-Bao Duan\*



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## Phonon softening enhanced superconductivity in the YTiSi electrode under pressure

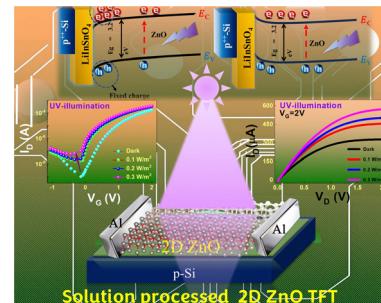
Zihao Xu, Jiaxiang Li, Peng-Fei Liu, Rui Xiong, Zhou Cui, Cuilian Wen,\* Bao-Tian Wang\* and Baisheng Sa\*



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## Fabrication of a solution-processed low voltage TFT by using colloid 2D ZnO nanosheets and its application as a UV photodetector

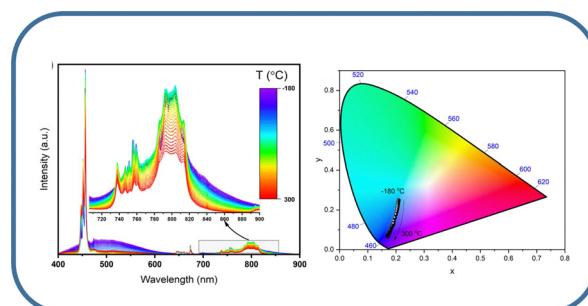
Abhik Bhuin, Akhilesh Kumar Yadav, Utkarsh Pandey, Debdyuti Mukherjee, Vivek Kumar Agrahari, Caroline Ponraj, Subha Sadhu,\* Bhola Nath Pal\* and Sujoy Sarkar\*



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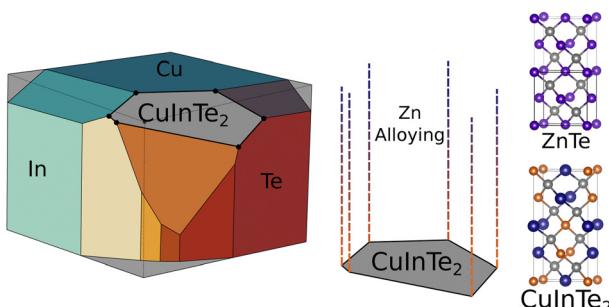
## High-sensitivity optical thermometer based on the luminescence of divalent and trivalent thulium ions in CaAl<sub>4</sub>O<sub>7</sub>:Tm<sup>2+/3+</sup> operating in cryogenic and high temperature ranges

Rajashree Panda, Mitrabhanu Behera, Mahesha Hegde, R. Arun Kumar,\* Gunasekaran Venugopal, Przemysław Woźny, Kevin Soler-Carracedo and Marcin Runowski



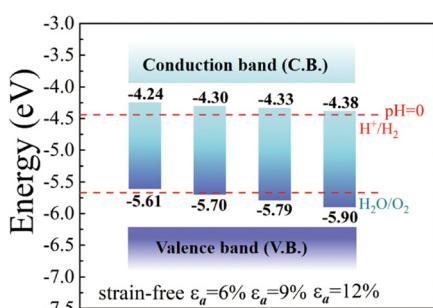
## PAPERS

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**Amphoteric doping and thermoelectric transport in the CuInTe<sub>2</sub>-ZnTe solid solution**

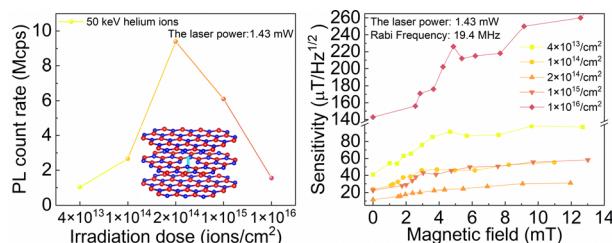
Vanessa Meschke, Angela Pak, Jesse M. Adamczyk, Lidia C. Gomes, Samantha Baumann, Grace Rome, Claire Porter, Kamil Ciesielski, Elif Ertekin and Eric Toberer\*

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**Efficient photocatalytic overall water-splitting characteristics driven by strain engineering in two-dimensional β-AuTe**

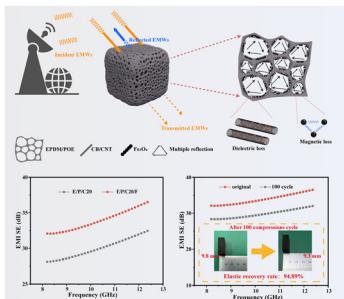
Xiong-Fei Zhang, Fei-Jie Huang, Yang Huang, Ju-Qi Ruan, Yi-Fen Zhao, Kai Xiong, Yao He and Qing-Yuan Chen\*

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**Optimization of sensing sensitivity and coherence properties of spin defects in hexagonal boron nitride**

Fei Ren, Yiyuan Wu,\* Zongwei Xu\* and Neng Wan

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**Lightweight composite foams for electromagnetic interference shielding with high absorption and excellent mechanical properties**

Yuqi Wang, Wei Zhao, Mingpu Li, Qing Zhuo, Yuanyuan Li, Yingru Li, Hangyu Dong, Shaofei Zhang and Linli Tan\*

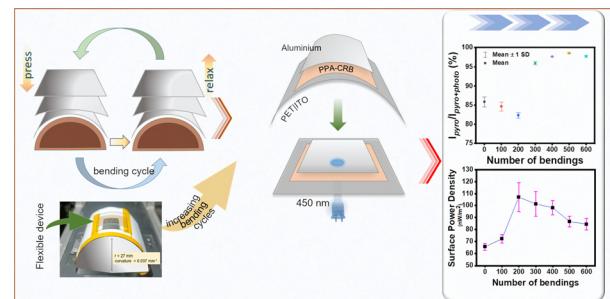


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**A flexible pyro-phototronic nanogenerator based on the surface-polarization effect**

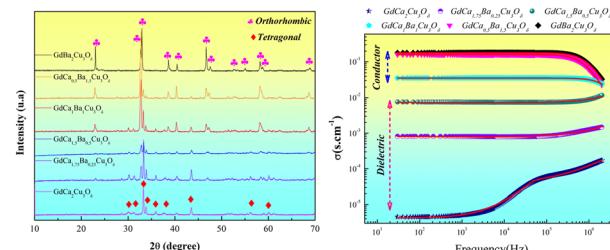
Shakya Deep Bora, Jyotisman Bora,  
Khomdram Bijoykumar Singh, Bablu Basumatary,  
Deepshikha Gogoi and Arup Ratan Pal\*



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**Barium substitution effects induced structural transitions, negative dielectric permittivity, and electrical conductivity behaviors in the  $\text{GdCa}_{2-x}\text{Ba}_x\text{Cu}_3\text{O}_\delta$  ( $0 \leq x \leq 2$ ) structure**

Khouloud Moualhi\* and Mouldi Zouaoui\*



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**Angular dependence and proximity effect of dense arrays of cobalt nanowires as rare-earth-free permanent magnets**

Zhi Yang,\* Jie Zhang, Yuanyuan Chen, Yatao Wang, Qiong Wu, Hongguo Zhang, Weiqiang Liu and Ming Yue\*

