

# Journal of Materials Chemistry C

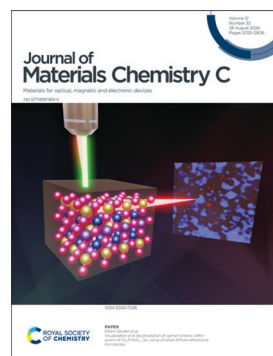
Materials for optical, magnetic and electronic devices

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## IN THIS ISSUE

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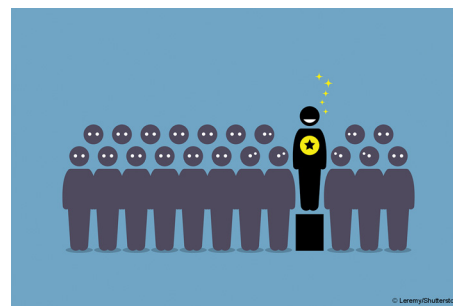
### Cover

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pp. 12254–12265.  
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*J. Mater. Chem. C*,  
2024, 12, 12254.

## EDITORIAL

12148

### Outstanding Reviewers for *Journal of Materials Chemistry C* in 2023

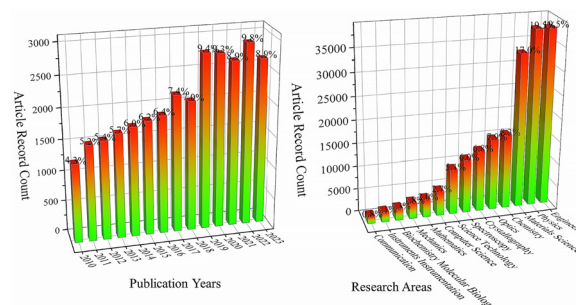


## REVIEWS

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### Recent advances in III–V nitrides: properties, applications and perspectives

Guoxin Li, Miaodong Zhu, Zhonghong Guo, Ying Yang, Hangtian Li, Jianbo Shang, Yikang Feng, Yunshu Lu, Fangliang Gao\* and Shutu Li\*



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Fundamental questions  
Elemental answers

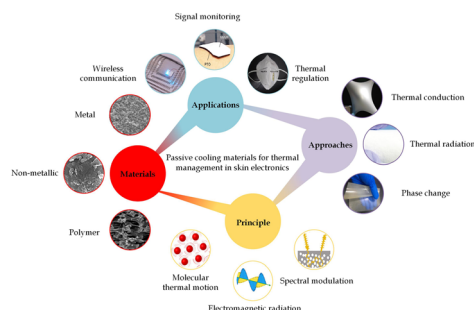


## REVIEWS

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## Recent advances in passive cooling materials for thermal management in flexible electronics

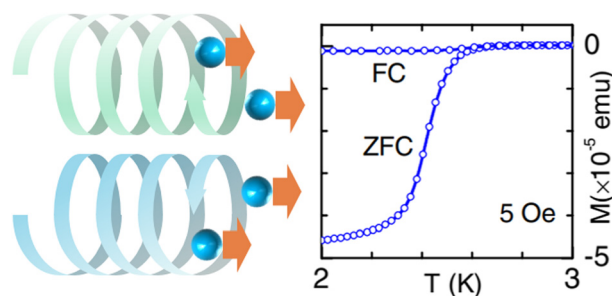
Jiyu Li, Yingying Zhou, Cancheng Jiang, Danguan Lei and Xinge Yu\*



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## Superconductors with structural chirality

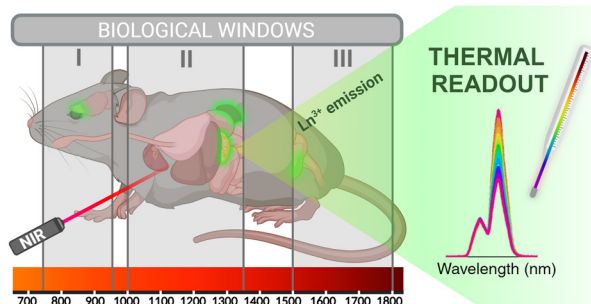
Ryota Nakajima,\* Flavia Pop and Narcis Avarvari\*



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## Lanthanide-based nanothermometers for bioapplications: excitation and temperature sensing in optical transparency windows

Natalia Jurga, Marcin Runowski and Tomasz Grzyb\*

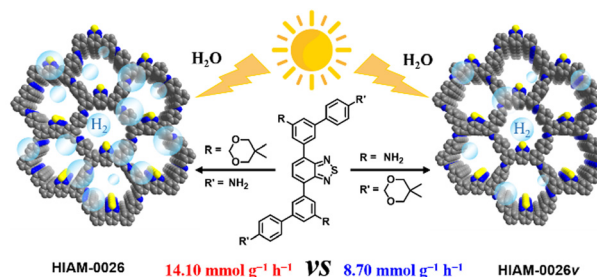


## COMMUNICATION

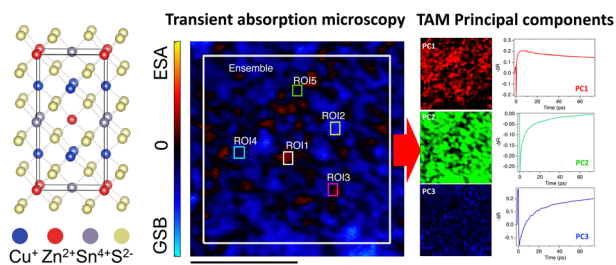
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## Impact of imine bond orientations on photocatalytic hydrogen generation of benzothiadiazole-based covalent organic frameworks constructed using "two-in-one" monomers

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



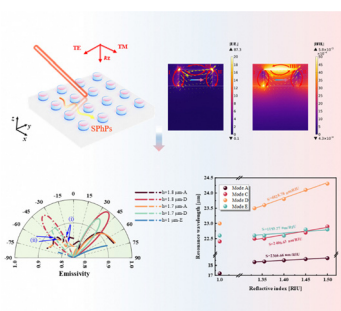
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### Visualization and deconvolution of carrier kinetics within grains of $\text{Cu}_2\text{ZnSnS}_{4-x}\text{Se}_x$ using ultrafast diffuse reflectance microscopy

Maha Sharif, Xiao Ma and Elham Ghadiri\*

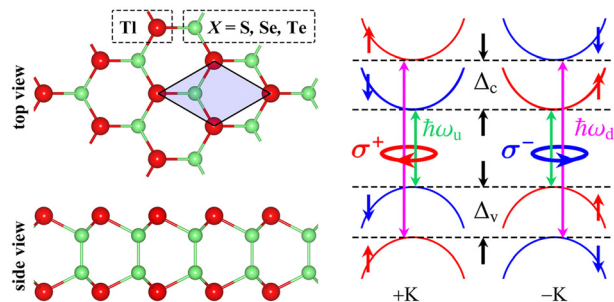
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### Leveraging surface phonon polaritons for enhanced Q-factor of mid-infrared $\text{BaTiO}_3$ nanoresonators

Tao Cheng, Huanhuan Zhao, Weiheng Kong, Linhua Liu\* and Jia-Yue Yang\*

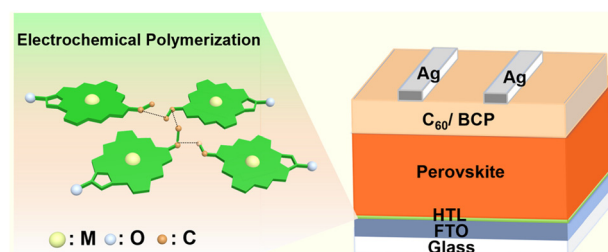
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### Robust spin-valley coupling in hexagonal monolayers of TI-based monochalcogenides

Kang Sheng and Zhi-Yong Wang\*

12282



### Efficient and stable perovskite solar cells through electrochemically polymerized porphyrin-based hole-transporting materials

Ziyan Liu, Yuting Xu, Aijun Li, Yuanlin Li, Tianfu Xiang, Yuting Sun, Hangchen Ren, Shin-ichi Sasaki, Tsutomu Miyasaka and Xiao-Feng Wang\*

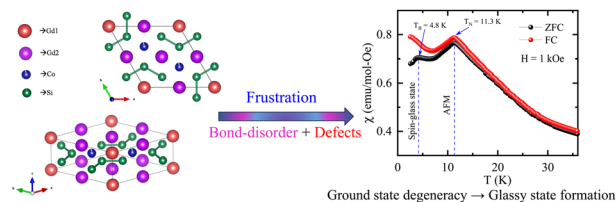




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## Defect-induced formation and frustration-driven multiple magnetic transitions in $Gd_2Co_{0.90}Si_{2.90}$

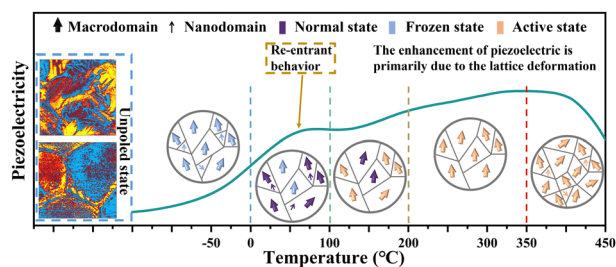
Mily Kundu, Santanu Pakhira,\* Shuvankar Gupta, Renu Choudhary, Sourav Sarkar, N. Lakshminarasimhan, R. Ranganathan, Kalyan Mandal, Duane D. Johnson and Chandan Mazumdar



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## Decoding the domain dynamics of polycrystalline $0.7BiFeO_3-0.3BaTiO_3$

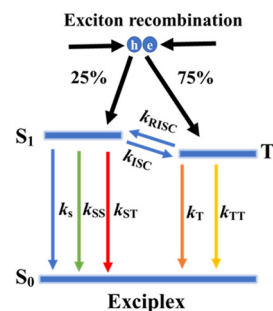
Lixu Xie, Neamul H. Khansur, Mingyue Mo, Ahmed Gadelmawla, Jie Xing, Zhi Tan, Jianguo Zhu\* and Kyle G. Webber



12317

## Exciton dynamics of the efficiency roll-off of exciplex-based OLEDs and low efficiency roll-off phosphorescence OLEDs based on an exciplex as the host

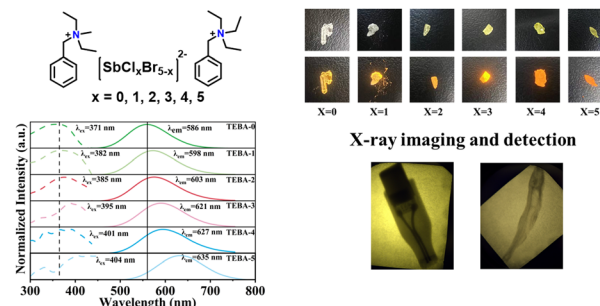
Wei Liu, Jianhui Pan, Qian Sun, Yanfeng Dai,\* Dezhi Yang, Xianfeng Qiao and Dongge Ma\*



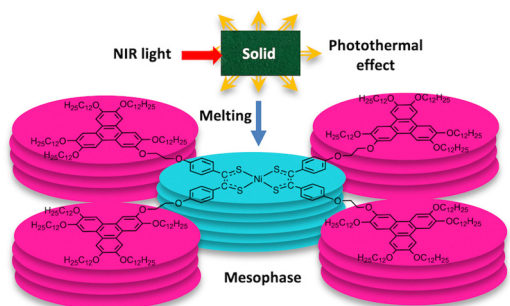
12325

## Highly luminescent antimony-based organic-inorganic hybrid halides for X-ray imaging and detection

Huiyu Chen, Haixia Cui, Tianxiang Jiang, Zhe Feng, Yurou Yan, Shujuan Liu\* and Qiang Zhao\*



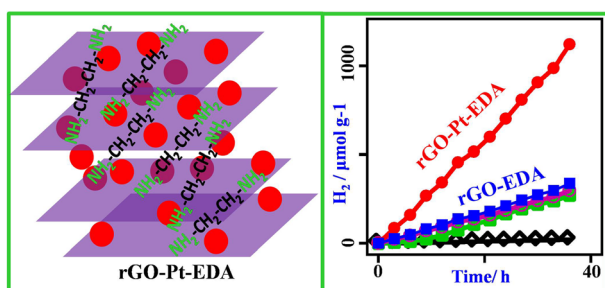
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### Columnar liquid crystalline triphenylene-bis(dithiolen)nickel complexes. Soft photothermal materials

Silvia Cobos, Gregorio García, César L. Folcia, Josu Ortega, Jesús Etxebarria,\* Gabriel López-Peña, Dirk H. Ortgies, Emma Martín Rodríguez and Silverio Coco\*

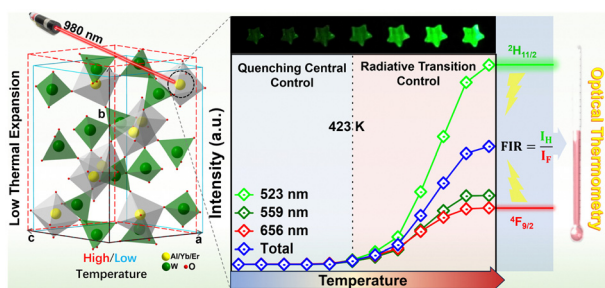
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### Enhancing the water splitting performance of a reduced graphene oxide–platinum nanoparticle hybrid using an intercalating ethylenediamine polar space group

Mohammad Razaul Karim,\* Guljar Ahmed, Jehan Y. Al-Humaidi, Neamot Hossain, Mohammad Shahadat Hussain Chowdhury, Md. Nizam Uddin, M. Nuruzzaman Khan and Mohammed M. Rahman

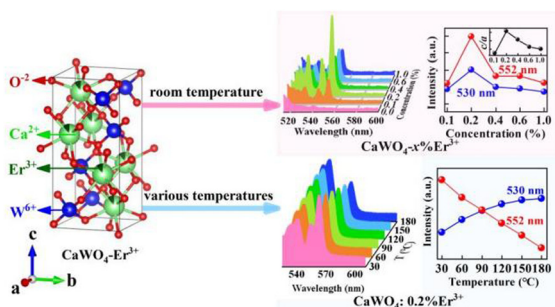
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### Simultaneous negative thermal quenching luminescence of upconversion and downshifting processes in $\text{Al}_2(\text{WO}_4)_3:\text{Yb}/\text{Er}$ phosphors with low thermal expansion

Haokun Yan, Renfu Li, Liuzhen Feng, Yiqi Yu, Guoliang Gong, Haiping Huang, He-Rui Wen and Jinsheng Liao\*

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### Effect of phase structure on the photoluminescence properties of $\text{Er}^{3+}$ -doped $\text{CaWO}_4$ mineral materials

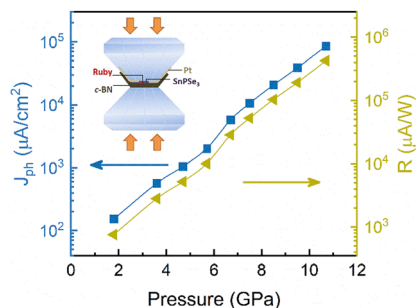
Yixiao Zhang, Guichen Meng, Pengfei Guan, Haotian Wang, Xiaolong Zhu, Jian Yang, Jingshan Hou and Ming Zheng\*



12372

### Pressure-enhanced optoelectronic properties in the two-dimensional metal phosphorus trichalcogenide semiconductor SnPSe<sub>3</sub>

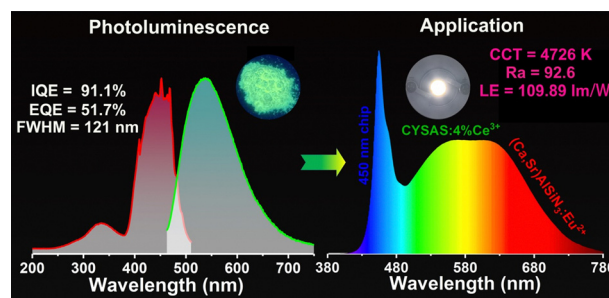
Mengyao Qi, Meiyang Ye, Shuailing Ma,\* Junming Feng, Mingyang Du, Hongyu Huang, Hao Song and Tian Cui\*



12378

### High-performance green-emitting Ca<sub>2</sub>YScAl<sub>2</sub>Si<sub>2</sub>O<sub>12</sub>:Ce<sup>3+</sup> garnet phosphors and their applications in high-quality blue-chip-pumped white LEDs

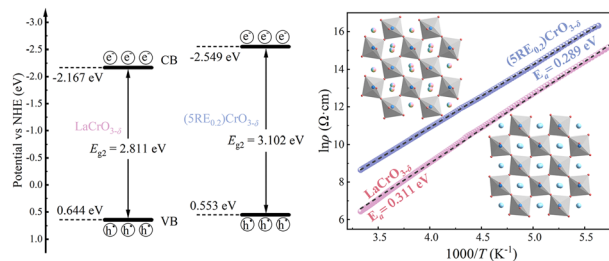
Cheng Xian, Xiaoyuan Chen and Xiaoyong Huang\*



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### Enhancement in the linear electrical properties and thermal stability of chromite perovskites through entropy engineering

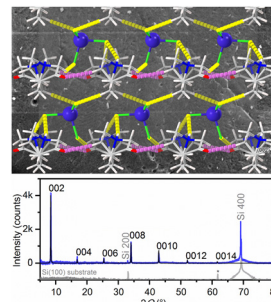
Yunfei Wang, Hao Sun, Yang Zhou, Ruifeng Wu, Yafei Liu, Lili Zhi, Aimin Chang and Bo Zhang\*



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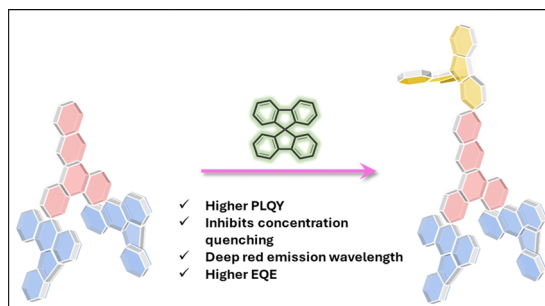
### Humidity and temperature driven transformations in ferroelectric quinuclidine-based chlorocobaltate(II) complex salt: bulk and thin films with preferred orientation

Mia Mesić, Marko Dunatov, Andreas Puškarić, Zoran Štefanić and Lidija Androš Dubraja\*





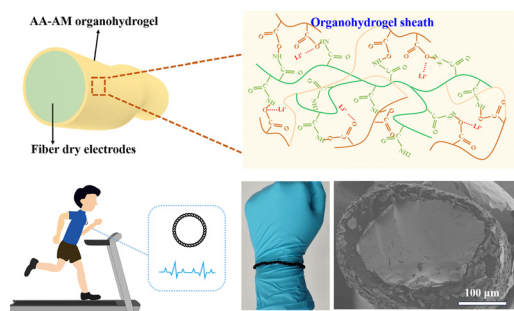
12405



### Designing solution-processed thermally activated delayed fluorescence emitters via introducing bulky steric hindrance groups for pure red OLEDs

Shuo Li, Liang Chen, Maoqiu Li, Taoyi Zhang,\*  
Shouke Yan and Zhongjie Ren\*

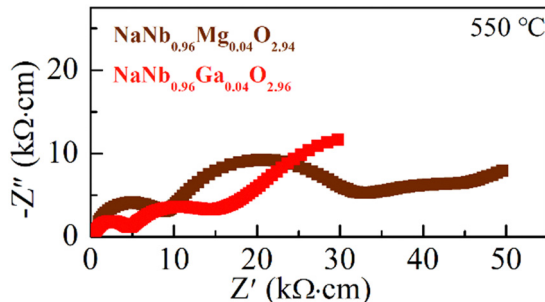
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### A high-performance composite fiber with an organohydrogel sheath for electrocardiogram monitoring

Boya Chang, Jiabei Luo, Juan Liu, Bin Zhang, Ming Zhu,  
kerui Li, Yaogang Li, Qinghong Zhang, Guoying Shi\* and  
Chengyi Hou\*

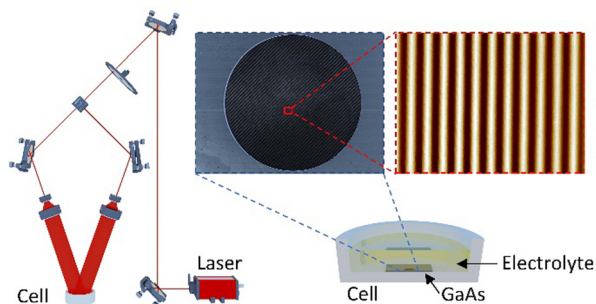
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### Enhanced oxide ion conductivity in sodium niobate-based ceramics

Pengrong Ren,\* Luting Lu, Ming Li and Xin Wang

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### Laser-induced photoelectrochemical lithography

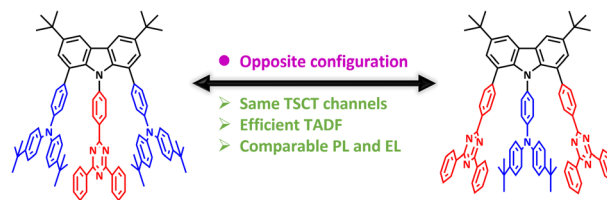
Bingqian Du, Lianhuan Han,\* Chengxin Guo,  
Dongping Zhan and Zhao-Wu Tian



12444

### Efficient thermally activated delayed fluorescence carbazole derivatives with a cofacial acceptor/donor/acceptor chromophore: comparable luminescent properties to their counterparts with the opposite configuration of donor/acceptor/donor

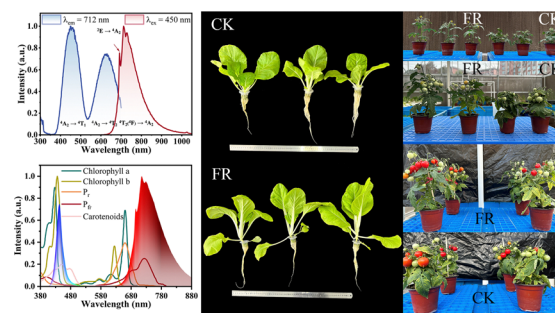
Kunkun Dou, Kuofei Li, Mei Chen, Bolin Zhao, Yuannan Chen, Hao Deng, Xuejing Liu, Chenyang Zhao, Hongmei Zhan, Yuwei Zhang,\* Chuanjiang Qin and Yanxiang Cheng\*



12451

### Towards promoting plant growth and fruit maturation: a highly efficient and thermally stable Cr<sup>3+</sup> doped far-red phosphor

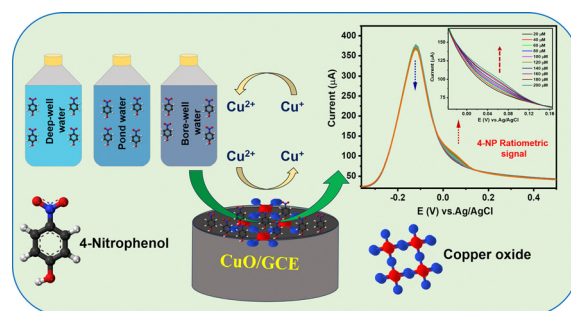
Chaowei Yang, Xikun Zou, Mengqi Lyu, Mingkai Wei, Ziyi Wang, Xiaoyu Shuang, Xuejie Zhang, Bin Dong, Xinming Li, Yan Cong,\* Mingtao Zheng, Maxim S. Molokeev and Bingfu Lei\*



12458

### Ratiometric strategy assisted electrochemical detection of 4-nitrophenol in water samples using nanostructured CuO

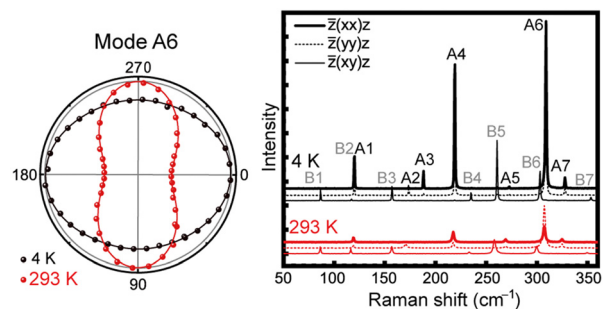
Sampathkumar Prakasam, Dilip Kumar Latha Chellamuthu, Giribabu Krishnan and Suresh Chinnathambi\*



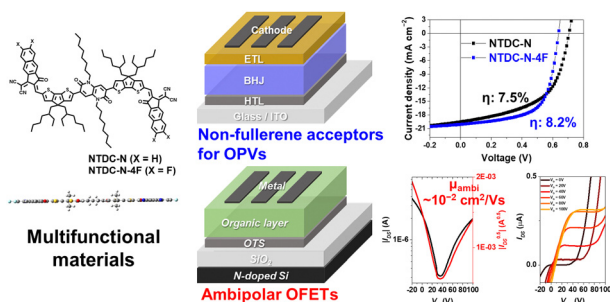
12468

### Temperature dependent Raman study of antiferromagnetic CrPS<sub>4</sub>

Manh Hong Nguyen, Suhan Son, Giung Park, Woongki Na, Je-Geun Park\* and Hyeonsik Cheong\*



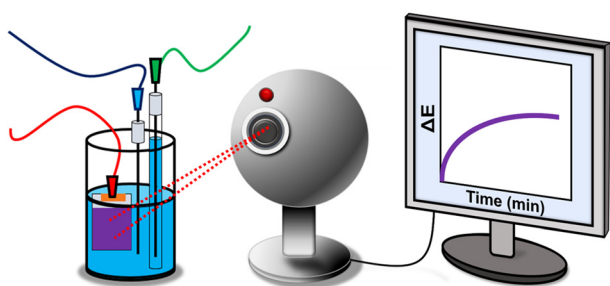
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### Naphthyridinedione-based multifunctional small molecules for applications in both photovoltaics and transistors

Min-Woo Choi,\* Sungjin Park, Su-Yeon Kim, Dong Won Kim, Seong Il Kim, Won Sik Yoon and Soo Young Park\*

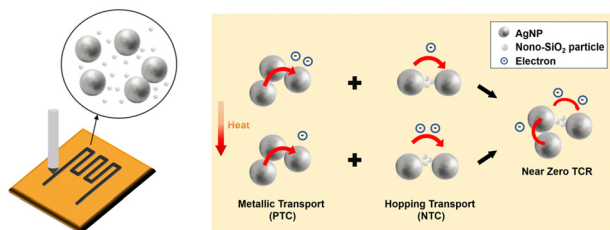
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### Non-contact computer vision enables analysis of the dynamic performance of naphthalene diimide electrochromic films

Nicholas R. Murray, Timothy J. D. McCabe, Marc Reid\* and Emily R. Draper\*

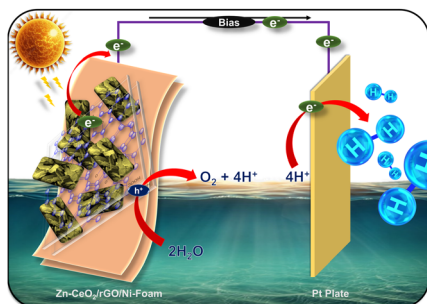
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### Temperature self-compensation thin film strain gauges based on nano-SiO<sub>2</sub>/AgNP composites

Yang Zhao,\* Jin Liu, Yuhuang Ying, Hongyu Chen, Wenxuan Wang, Sijie Zhang, Zhenyin Hai and Daoheng Sun

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### MOFs-derived Zn-doped ceria/rGO nanocomposites as photoanode for solar-driven water splitting

Pramod A. Koyale, Amruta D. Patil, Tukaram D. Dongale, Parth S. Thorat, Santosh S. Sutar, Vinayak G. Parale, Hyung-Ho Park, Dillip K. Panda and Sagar D. Delekar\*

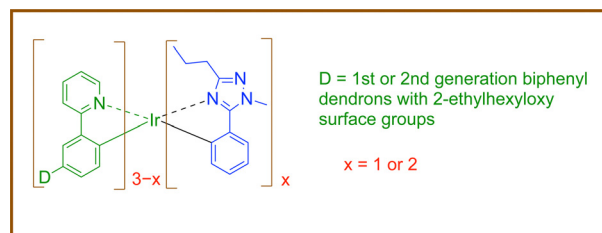




12510

### Effect of co-ligand number on the optoelectronic properties of first- and second-generation heteroleptic green emissive iridium(III) complex-cored dendrimers

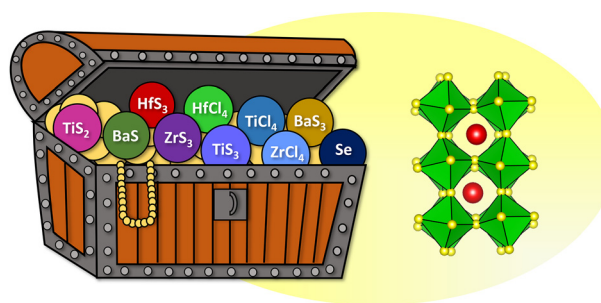
Manikandan Koodalingam, Junhyuk Jang, Mile Gao, Paul L. Burn,\* Jos C. M. Kistemaker, Emma V. Puttock and Paul E. Shaw



12521

### Expanding the horizons for viable precursors and liquid fluxes for the synthesis of BaZrS<sub>3</sub> and related compounds

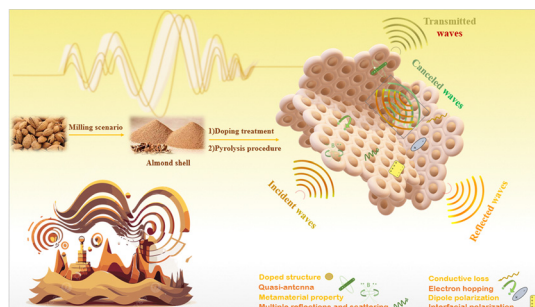
Kiruba Catherine Vincent, Shubhanshu Agarwal, Zirui Fan, Alison Sofia Mesa Canizales and Rakesh Agrawal\*



12535

### Elemental doping and size effect-modified biomass-derived carbon: a fascinating microwave absorbing/shielding and energy saving material

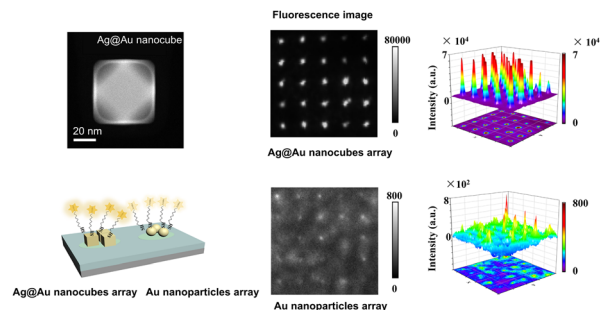
Ali Fahimi, Pouyan Fakharian, Ali Mirakhan, Atiye Farahani, Zehua Zhou,\* Yue Zhao and Reza Peymanfar\*



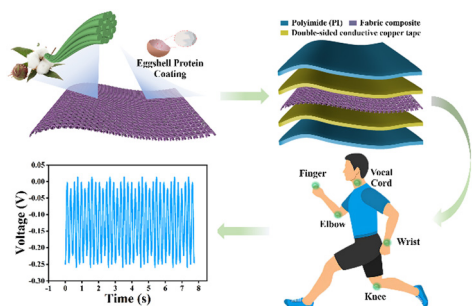
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### Revealing the correlation between the size, structure, and fluorescence enhancement in Ag@Au nanocube clusters: a high-content platform approach

Jiahao Pan, Yuchen Zhang, Zhentao Pang, Yu Deng and Zhenda Lu\*



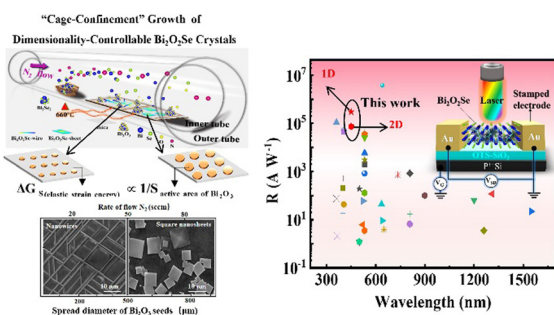
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### Eggshell protein modified cotton fabric for flexible and sustainable piezoelectric wearable sensors

Xinhua Liang, Hao Xu, Xuliang Yu, Tian Luo, Honglian Cong, Gaoming Jiang, Lei Xu, Seeram Ramakrishna\* and Haijun He\*

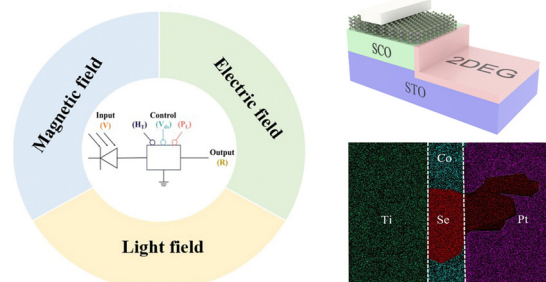
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### "Cage-confinement" controlled dimensionality conversion of $\text{Bi}_2\text{O}_2\text{Se}$ crystals towards high-performance phototransistors

Kaiyi Zhang, Fang Wang, Lei Zheng,\* Junqing Wei, Yongxu Hu, Yangyang Xie, Hongling Guo, Fengpu Zhang, Xin Lin, Zewen Li, Tianling Ren, Zhitang Song and Kailiang Zhang\*

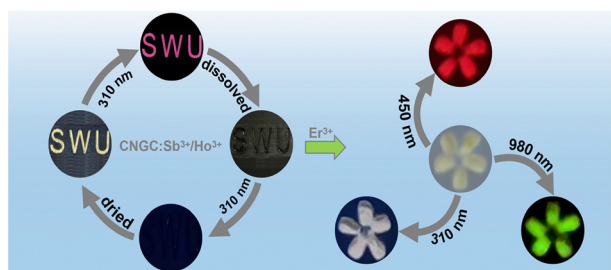
12582



### Emergent multi-field interaction in a magnetic quasi-two-dimensional $\text{WSe}_2/\text{SrCoO}_{2.5}/2\text{DEG}$ heterojunction

Xinyue Zhang, Chenyu Xu, Guangyao Sun, Kaifeng Li, Hao Yang, Guozhen Liu, Yucheng Jiang, Ju Gao, Hao Lu,\* Run Zhao\* and Wei Tian\*

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### Construction of energy transfer channels from $[\text{SbCl}_6]^{3-}$ to $\text{Ln}^{3+}$ ( $\text{Ln}^{3+} = \text{Ho}^{3+}, \text{Er}^{3+}$ ) in $\text{Cs}_2\text{NaGdCl}_6$ for advanced anti-counterfeiting materials

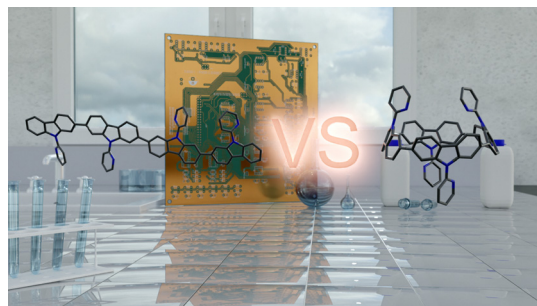
Yanyang Li, Huimin Du, Yue Ma, Meifang Liu, Jian Zou, Shentang Wang, Jun Yang,\* Shanshan Hu\* and Jun Lin\*



12598

### Importance of the curvature in electronic, structural and charge transport properties: oligomers of *N*-pyridine carbazole

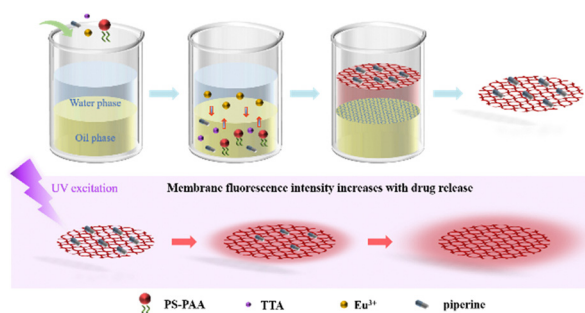
Clément Brouillac, Ari Serez, Nemo McIntosh, Joëlle Rault-Berthelot, Olivier Jeannin, Benoît Heinrich, Cassandre Quinton, Olivier De Sagazan, Emmanuel Jacques, Jérôme Cornil and Cyril Poriet\*



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### A smart microporous block copolymer membrane containing fluorescent europium complexes reports drug release through fluorescence changes

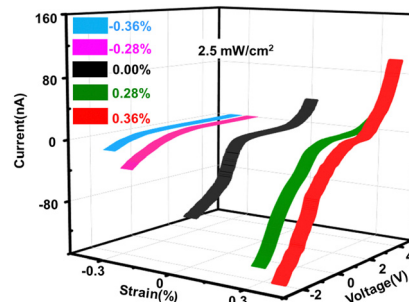
Rui Xu,\* Jingjing Wang,\* Zengkun Li, Boying Wang, Wenfei Shen, Yao Wang, Wei Wang, Yanxin Wang, Jun Li, Christopher D. Snow, Matt J. Kipper, Laurence A. Belfiore and Jianguo Tang\*



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### Piezo-phototronic effect modulated performances of guest-substrate integrated p-i-n GaN ultraviolet detectors

Peishan Li, Yuqing Yang, ZeXin Dong, Xiaoyue Huang, Yihan Wang, Huan Chang, Zihao Song, Zhenjian Peng, Kang Zhang\* and Xingfu Wang\*



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### Synergistic enhancement of triethylamine sensing performances via oxygen vacancy-rich Co-doped MnO<sub>2</sub>@MnCo<sub>2</sub>O<sub>4.5</sub> nanorods/nanosheets

Xiaobing Hu, Hao Chen, Kaibin Zhang, Dongxia Tian, Yi Cao and Zhigang Zhu\*

