

Journal of Materials Chemistry C

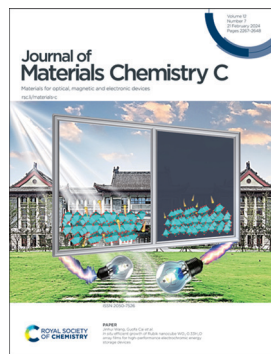
Materials for optical, magnetic and electronic devices

rsc.li/materials-c

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

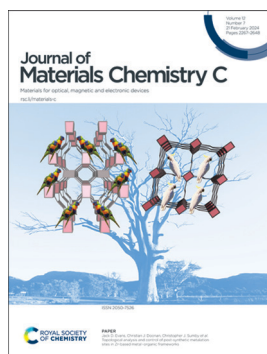
IN THIS ISSUE

ISSN 2050-7526 CODEN JMCCCC 12(7) 2267–2648 (2024)



Cover

See Jinhui Wang, Guofa Cai *et al.*, pp. 2350–2358. Image reproduced by permission of Guofa Cai from *J. Mater. Chem. C*, 2024, 12, 2350.



Inside cover

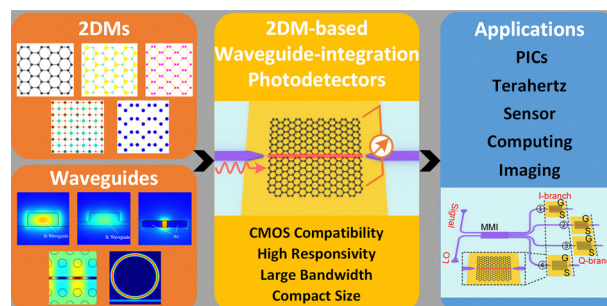
See Jack D. Evans, Christian J. Doonan, Christopher J. Sumby *et al.*, pp. 2359–2369. Image reproduced by permission of Christopher Sumby and Pol Gimeno-Fonquernie from *J. Mater. Chem. C*, 2024, 12, 2359. Topology diagrams generated by Diamond, Crystal Impact www.crystalimpact.com/diamond/

REVIEWS

2279

On-chip two-dimensional material-based waveguide-integrated photodetectors

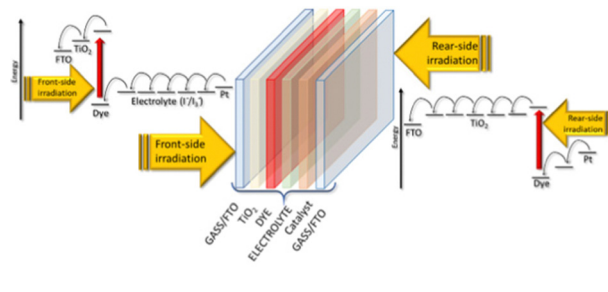
Xiao He, Yilun Wang, Zhuiri Peng, Zheng Li, Xiangxiang Yu, Langlang Xu, Xinyu Huang, Xiaohan Meng, Wenhao Shi, Xiaoyan Gao, Jihao Zhao, Jianbin Xu, Lei Tong,* Xinliang Zhang,* Xiangshui Miao* and Lei Ye*



2317

Bifacial dye-sensitized solar cells for indoor and outdoor renewable energy-based application

Jessica Barichello,* Paolo Mariani, Luigi Vesce, Donatella Spadaro, Ilaria Citro, Fabio Matteocci, Antonino Bartolotta, Aldo Di Carlo and Giuseppe Calogero*



Advance your career in science

with professional recognition that showcases your **experience, expertise and dedication**

Stand out from the crowd

Prove your commitment to attaining excellence in your field

Gain the recognition you deserve

Achieve a professional qualification that inspires confidence and trust

Unlock your career potential

Apply for our professional registers (RSci, RSciTech) or chartered status (CChem, CSci, CEnv)

Apply now

rsc.li/professional-development

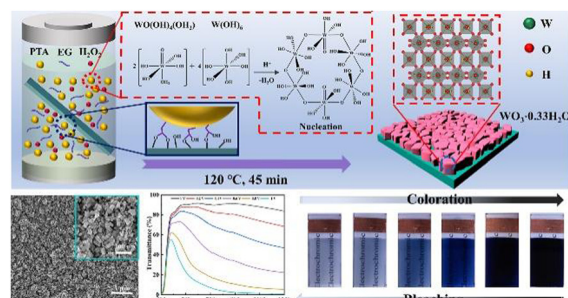


PAPERS

2350

In situ efficient growth of Rubik nanocube $\text{WO}_3 \cdot 0.33\text{H}_2\text{O}$ array films for high-performance electrochromic energy storage devices

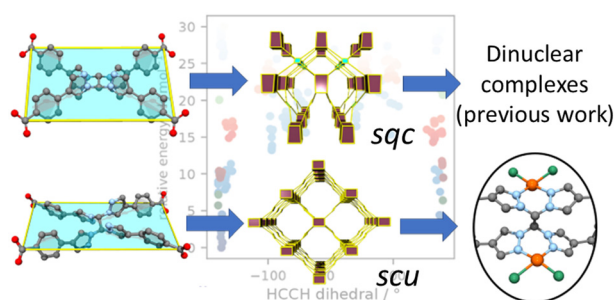
Sensen Jia, Pengyang Lei, Zhuanpei Wang, Weilong Yang, Jinhui Wang* and Guofa Cai*



2359

Topological analysis and control of post-synthetic metalation sites in Zr-based metal–organic frameworks

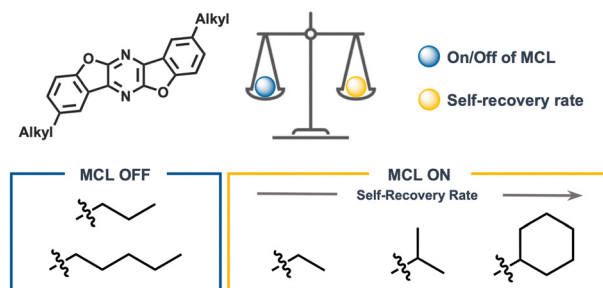
Pol Gimeno-Fonquernie, Jorge Albalad, Jason R. Price, Witold M. Bloch, Jack D. Evans,* Christian J. Doonan* and Christopher J. Sumby*



2370

Tunable mechanochromic luminescence of benzofuran-fused pyrazine: effects of alkyl chain length and branching pattern

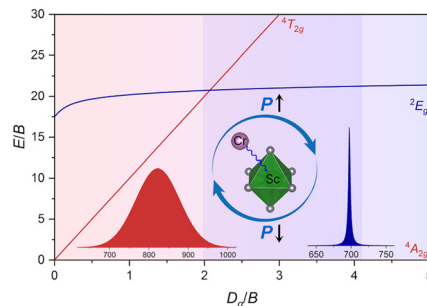
Shotaro Nakamura, Kohei Okubo, Yuji Nishii, Koji Hirano,* Norimitsu Tohnai* and Masahiro Miura



2379

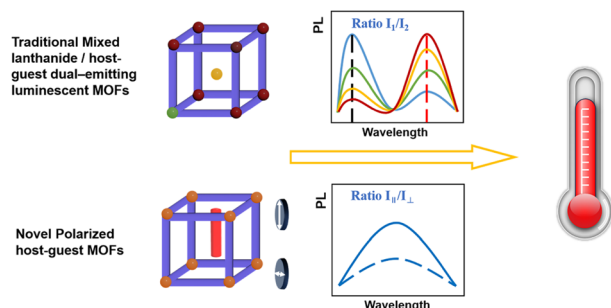
Crystal-field regulation enables broadband-to-line emission switching in Cr^{3+} -activated pyroxenes

Yingying Ma, Ting Wen,* Ke Liu, Chen Li, Dequan Jiang, En Chen, Tianyao Pei, Chuanlong Lin and Yonggang Wang*



PAPERS

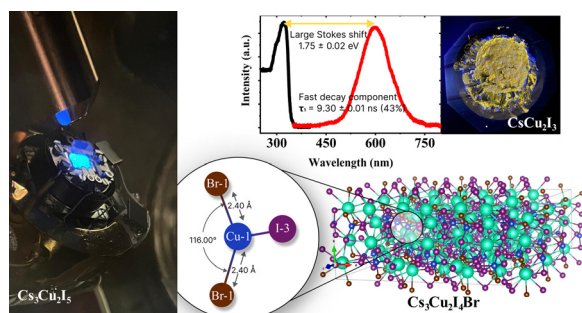
2391



A polarized luminescence thermometer based on a dye encapsulated metal-organic framework

Shenghan Lin, Zhengluan Liao, Heqi Zheng, Chenyu Li, Yuanjing Cui,* Zhiyu Wang and Guodong Qian*

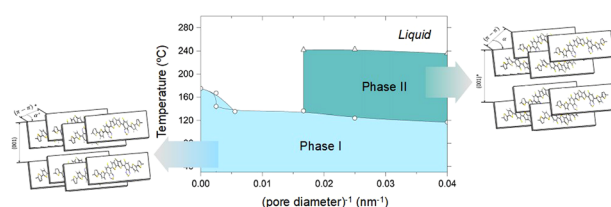
2398



All-inorganic copper-halide perovskites for large-Stokes shift and ten-nanosecond-emission scintillators

Tobias Haposan, Arramel Arramel,* Pramitha Yuniar Diah Maulida, Sri Hartati, Afif Akmal Afkauni, Muhammad Haris Mahyuddin, Lei Zhang, Dominik Kowal, Marcin Eugeniusz Witkowski, Konrad Jacek Drozdowski, Michal Makowski, Winicjusz Drozdowski, Lina Jaya Diguna* and Muhammad Danang Birowosuto*

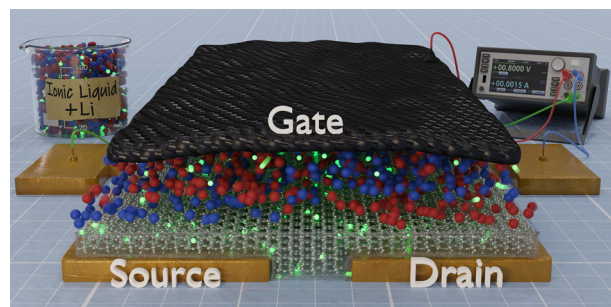
2410



Using spatial confinement to decipher polymorphism in the organic semiconductor p-DTS(FBTTh₂)₂

Sara Marina, Matthew Dyson, Xabier Rodríguez-Martínez, Obadiah G. Reid, Ruipeng Li, Garry Rumbles, Detlef Smilgies, Aram Amassian, Mariano Campoy-Quiles, Natalie Stingelin* and Jaime Martín*

2416



A study of the doping process in $\text{Li}_4\text{Ti}_5\text{O}_{12}$ and TiO_2 battery electrode materials studied in the ion-gated transistor configuration

José Ramón Herrera Garza, Luan Pereira Camargo, Ramin Karimi Azari, Lariel Chagas da Silva Neres, Shahid Khaleel, Martin Schwellberger Barbosa,* Francesca Soavi* and Clara Santato*

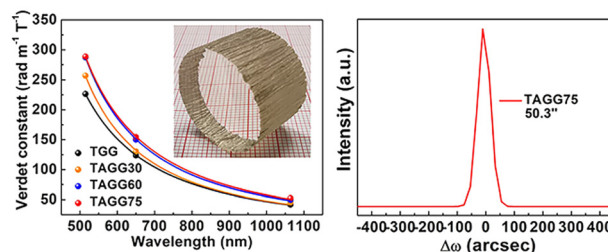


PAPERS

2423

Lattice engineering through Al-substitution leads to enhanced magneto-optical properties of $\text{Tb}_3(\text{Al}_x\text{Ga}_{1-x})_5\text{O}_{12}$ single crystals

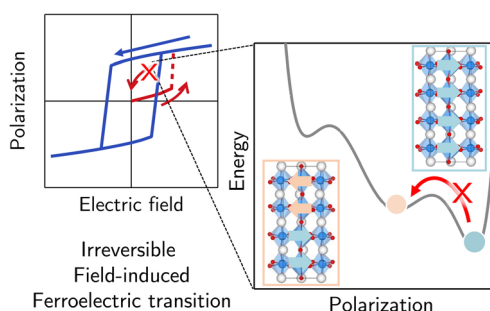
Xianhui Xin, Yuankai Hao, Xianxian Yang, Zhen Zhang, Xiuwei Fu,* Zhitai Jia* and Xutang Tao



2432

Unlocking the key mechanism behind field-induced ferroelectric phase transition in sodium niobate for energy storage systems

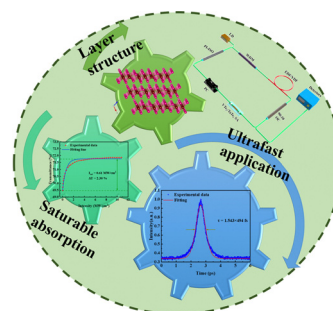
Woohyun Hwang and Aloysius Soon*



2441

Ultrafast nonlinear optical properties of MTe_2 ($\text{M} = \text{V}$ and Ta) and their application as broadband saturable absorbers

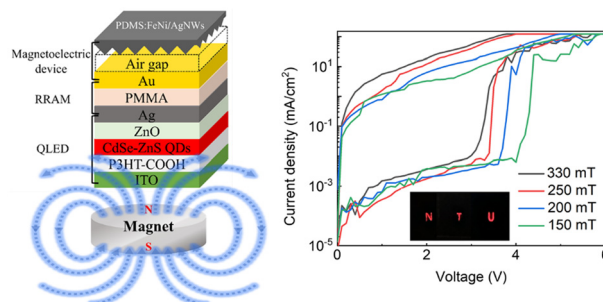
Wenyao Zhang, Zichen Li, Xudong Leng, Qun Jing and Qiao Wen*



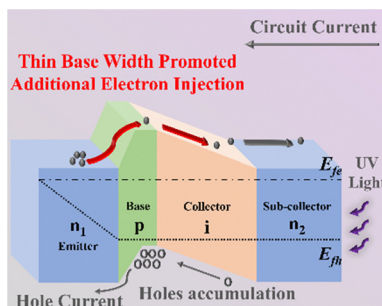
2450

A high-performance magnetoelectric non-volatile light-emitting memory device

Jia-Wei Wu, Yu-Chieh Chao, Jia-Yu Lin, Chia-Chun Ho, Meng-Ching Lai, Fang-Chi Hsu* and Yang-Fang Chen*



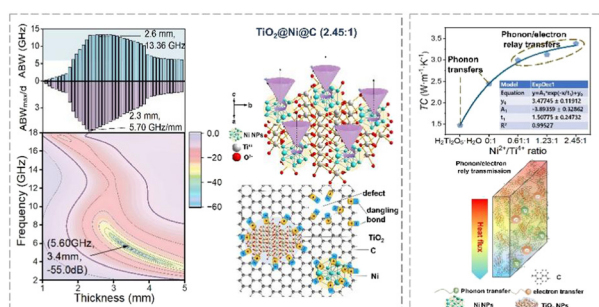
2459



Realizing high zero-bias gain in a GaN-based bipolar phototransistor through thin-base configuration for ultraviolet imaging

Bingxiang Wang, Ke Jiang,* Shanli Zhang, Yuxuan Chen, Tong Fang, Zhiwei Xie, Jianwei Ben, Yang Chen, Yuping Jia, Mingrui Liu, Xiaojuan Sun* and Dabing Li

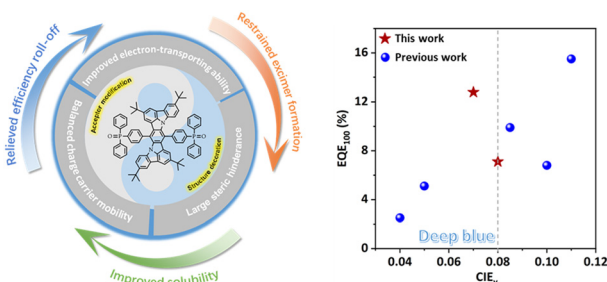
2470



Synchronous achievement of ultra-wideband microwave absorption and high thermal conduction in spongy TiO_2 -based magnetic composites via constructing magnetic/dielectric double loss and phonon/electron co-transmission

Qibin Yao, Kang Fu, Ran Ji, Meiwan Ying, Yijun Yang, Kaixia Yang, Guoxiu Tong,* Wenhua Wu and Dabo Chen*

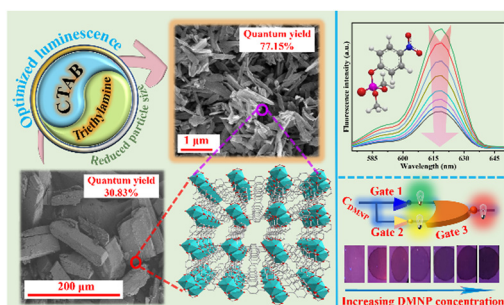
2485



Acceptor modification of diindolocarbazole embedded multiple-resonance emitters for efficient narrowband deep-blue OLEDs with $\text{CIE}_y \leq 0.08$ and alleviated efficiency roll-off

Shuxin Wang, Jianping Zhou, Jibiao Jin, Minqiang Mai, Chui-Shan Tsang, Lawrence Yoon Suk Lee, Lian Duan* and Wai-Yeung Wong*

2493



Construction of a logic gate computation and visual test paper for methyl paraoxon assay based on a fluorescent europium-organic framework

Nan Li, Yanyan Yu, Yuanyuan Zhou, Kexin Xu, Yunshan Zhou,* Lijuan Zhang* and Yuxu Zhong*

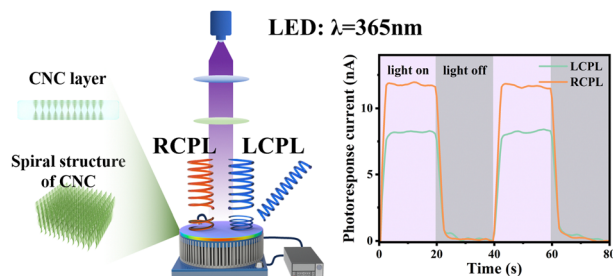


PAPERS

2505

High-performance and environmentally friendly circularly polarized light direct detection based on ZnO nanowires and chiral cellulose nanocrystals

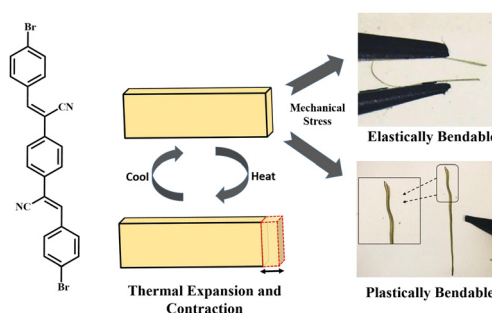
Junjun Yang, Yuxin Huang, Sixian He, Congcong Dang, Ming Li, Liancheng Zhao and Liming Gao*



2515

Elasto-plastic behaviour with reversible thermosalient expansion in acrylonitrile-based organic crystals

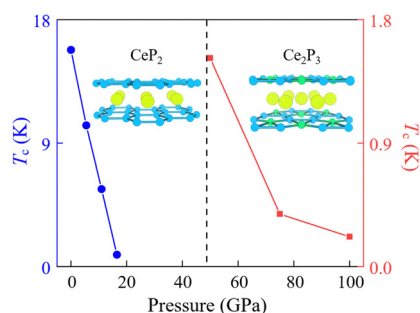
Deepak Manoharan, Subham Ranjan, Franziska Emmerling, Biswajit Bhattacharya,* Satoshi Takamizawa* and Soumyajit Ghosh*



2526

Superconducting Ce_2P_3 and CeP_2 with an interesting planar P layer

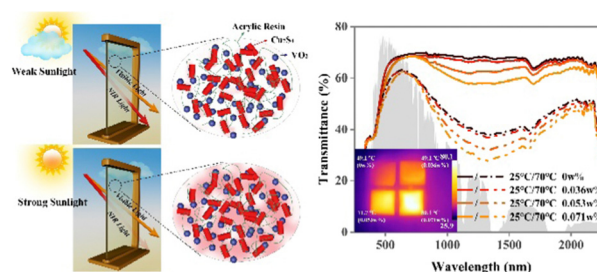
Xing Li, Aitor Bergara, Xiaohua Zhang, Fei Li, Yong Liu and Guochun Yang*



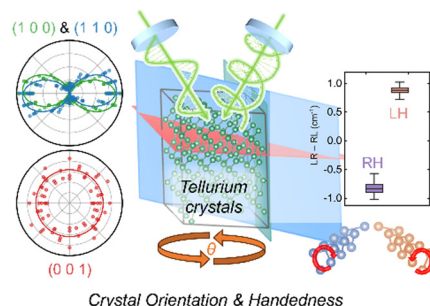
2534

Novel sunlight-driven $\text{Cu}_7\text{S}_4/\text{VO}_2$ composite films for smart windows

Yong Zhao, Haining Ji,* Yangyong Ou, Yi Wang, Yongxing Chen, Jundong Tao, Bin Liu, Mingying Lu, Yan Huang and Junlong Wang



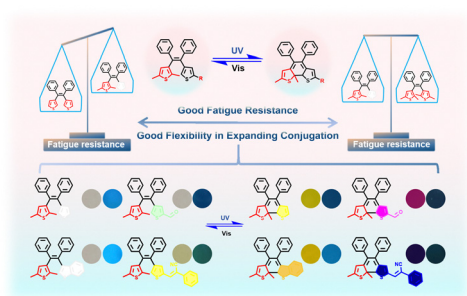
2544



Lattice dynamics in chiral tellurium by linear and circularly polarized Raman spectroscopy: crystal orientation and handedness

Davide Spirito, Sergio Marras and Beatriz Martín-García*

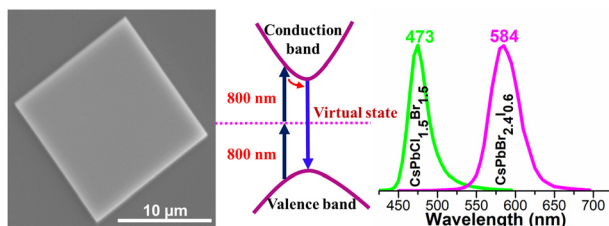
2552



Multicolor AIE-active photoswitches with improved fatigue resistance by introducing asymmetric photoactive units

Yuzhen Wu, Jiale Zhan, Zhengdong Han, Weidong Liu, Zhaosheng Qian and Hui Feng*

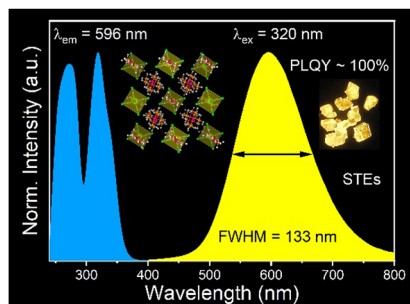
2561



Quaternary CsPbX₃ (X = Cl_{1-x}Br_x, Br_{1-x}I_x) alloy microplates synthesized by single-step chemical vapor deposition and their two-photon absorption (TPA) properties

Mohammad Kamal Hossain, Wayesh Qarony, Ying Wang, Cheuk Kai Gary Kwok, Kingsley O. Egbo, Yuen Hong Tsang, Johnny C. Ho and Kin Man Yu*

2571



Near-unity photoluminescence quantum yield in zero-dimensional lead-free indium-based hybrid perovskites by antimony doping

Jingheng Nie, Xiangyan Yun, Fangrui Cheng, Ban Lan,* Renping Cao and Jing Wang*

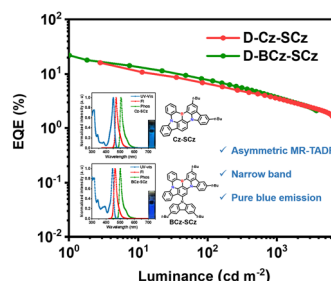


2578

Asymmetric multiple resonance thermally activated delayed fluorescence emitters for sky-blue and pure blue electroluminescence

Hua-Xiu Ni, Xu-Feng Luo, Li Yuan, Jia-Jun Hu, Wen-Wei Zhang* and You-Xuan Zheng*

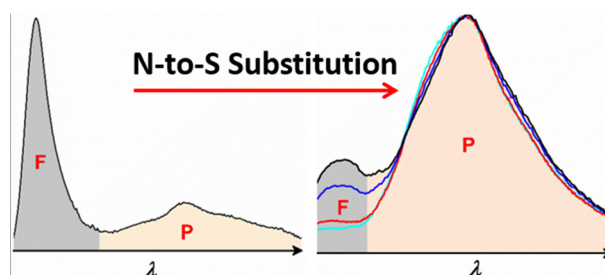
Asymmetric MR-TADF emitters for blue emission



2585

N-to-S substitution induced fluorescence-to-phosphorescence dominant emission with excitation-dependent intersystem crossing

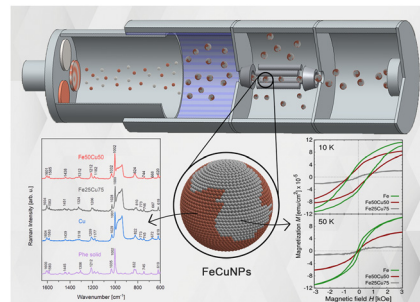
Guoyan Li, Yexin Li,* Xiaofeng Yang, Jinling Miao, Yu Cui, Yong Nie, Shuaijun Yang, Wei Liu and Guoxin Sun*



2593

Inert gas condensation made bimetallic FeCu nanoparticles – plasmonic response and magnetic ordering

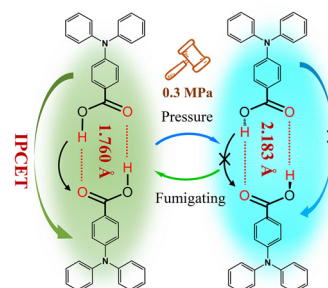
Kamila Kollbek,* Piotr Jabłoński, Marcin Perzanowski, Dominika Święch, Marcin Sikora, Grzegorz Słowik, Mateusz Marzec, Marta Gajewska, Czestawa Paluszkievicz and Marek Przybylski



2606

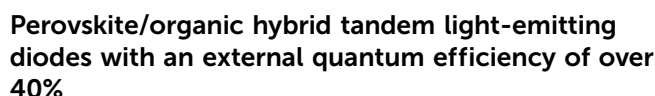
Controlled intermolecular proton-coupled electron transfer process: a novel design strategy for highly sensitive piezo-chromic fluorescent materials

Miao Yu, Jingping He, Zhenzhen Xu,* Zhongwei Man, Ping Wang, Yuhao Xiang, Fei Yu and Hongbing Fu*

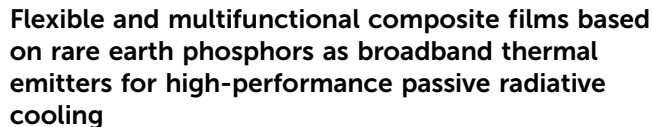




2623



2629



2639



Yuandi He, Yao-long Kang, Renhuai Wei,*
Peng-Lai Gong,* Ling Hu, Wenhai Song, Xuebin Zhu*
and Yuping Sun