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Journal of Materials Chemistry C

Materials for optical, magnetic and electronic devices

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Cover
See Nobuo Kimizuka, Takuma Yasuda *et al.*, pp. 10874–10878. Image reproduced by permission of Takuma Yasuda from *J. Mater. Chem. C*, 2024, **12**, 10874.

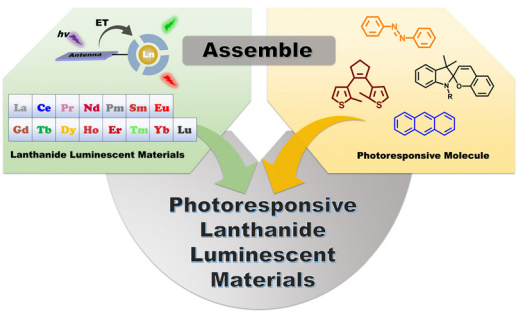
Inside cover
See Xiangfu Wang *et al.*, pp. 10889–10902. Image reproduced by permission of Xiangfu Wang from *J. Mater. Chem. C*, 2024, **12**, 10889.

REVIEWS

10759

Photoresponsive lanthanide luminescent materials

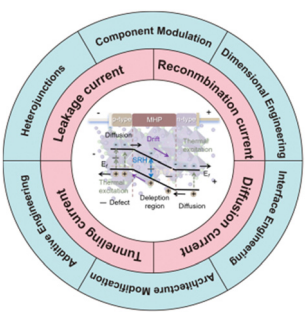
Lingna Su, Xiao Liu,* Qingyu Niu and Zhiqiang Li*



10775

Strategies for suppressing dark current of perovskite photodiodes towards reliable optoelectronic applications

Yue Wang,* Qing Song, Deli Li,* Yang Liu, Yang Wang and Yonghua Chen*



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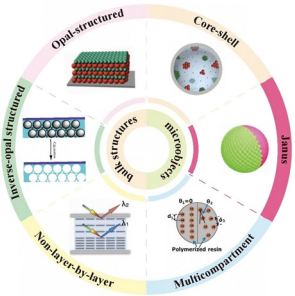
REVIEWS

10806

Advances in the construction of photonic structures with dual stopbands and beyond

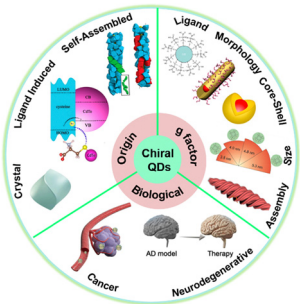
Yu Bai, Xiaoyang Du, Zhongyu Cai* and Yuandu Hu*



10825

Chiral quantum dots for bioapplications

Guangmin Li,* Jiayun Zheng, Jiafeng Li,* Jiajia Kang, Xinyu Jin, Anning Guo, Zhibo Chen, Xuening Fei, Kaiyuan Wang, Hongfei Liu, Hongbin Zhao, Wei Liu and Gaoling Yang*



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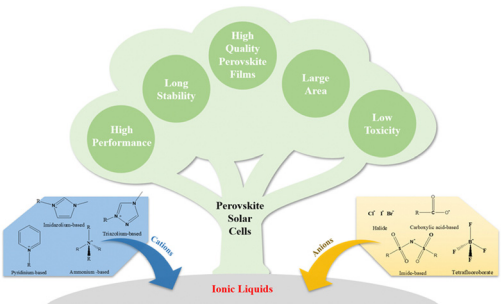
Progress and challenges: a review of ionic liquid treatment for efficient and stable perovskite solar cells

Jintao Ma, Lin Wang, Kun He, Yan Sun, Bixin Li,* Qiangli Zhao* and Bin Du*

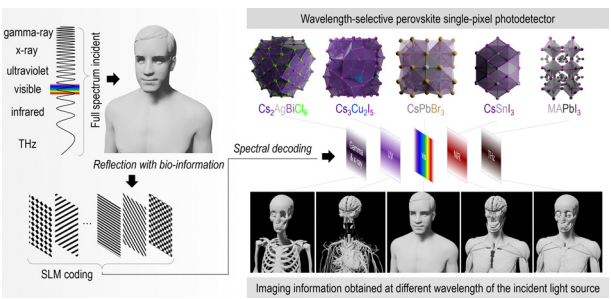


PERSPECTIVE

10857

Perovskite single pixel imaging exceeding the visible towards X-ray and THz

Xuanqi Wang, Lizhi Ren, Huiyi Zong, Congcong Wu,* Jin Qian* and Kai Wang*



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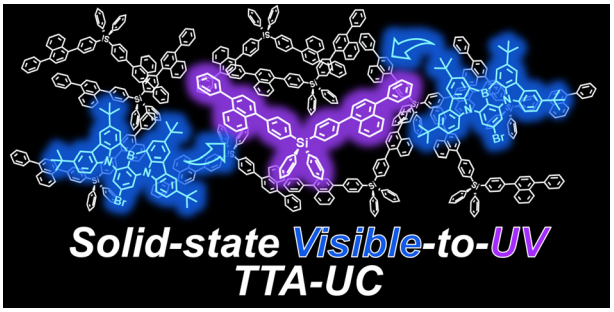
COMMUNICATIONS

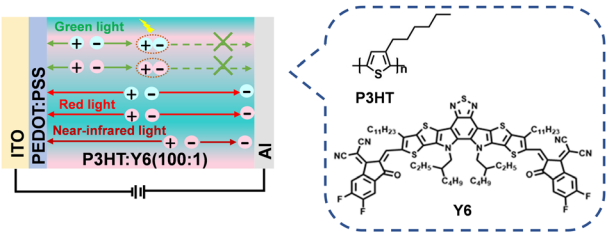
10874



Visible-to-UV photon upconversion in metal-free molecular aggregates based on glassy diphenylnaphthalene derivatives

Shun Watanabe, Kiichi Mizukami, Nobuo Kimizuka* and Takuma Yasuda*

10879

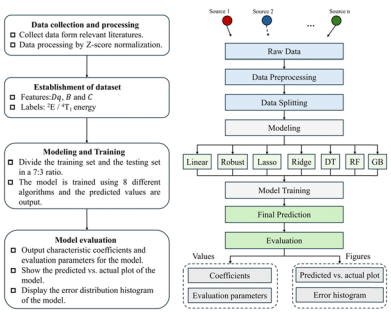


Enhanced photomultiplication in filter-free organic photodetectors for red and NIR light sensing using minimal nonfullerene blends

Linlin Shi,* Yaojiang Li, Jia Jiao, Ye Zhang, Guohui Li,* Ting Ji, Furong Zhu, Haifeng Lu and Yanxia Cui*

PAPERS

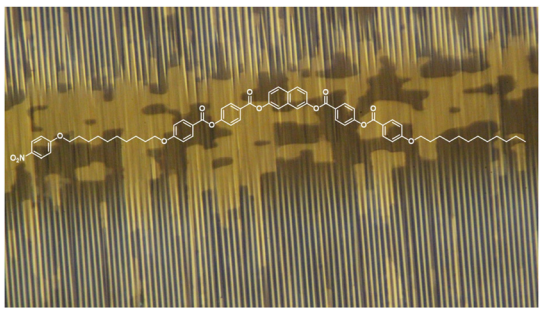
10889



Prediction of metastable energy level distribution of D^{3+} (D = Cr and Fe) doped phosphors based on machine learning

Jun Li, Junkang Sun, Yixiao Wang and Xiangfu Wang*

10903



Competing synclinic and anticlinic interactions in smectic phases of bent-core mesogens

Jiří Svoboda, Václav Kozmík, Kvetoslava Bajzíková, Michal Kohout, Vladimíra Novotná,* Natalia Podoliak, Damian Pociecha and Ewa Gorecka

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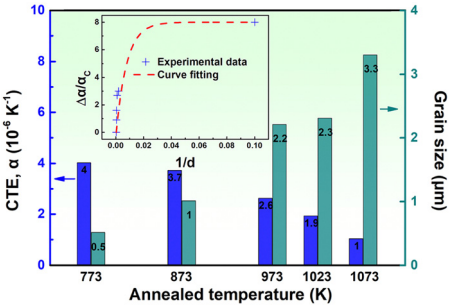
10910

Fabrication of low thermal expansion coefficient electrodeposited Invar alloy films by hydrogen annealing for OLED fine metal masks

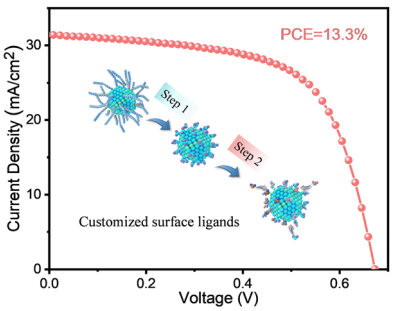
Wei Ren, Xi Lan, Lei Guo and Zhancheng Guo*



10919

Ligand-customized colloidal quantum dots for high-performance optoelectronic devices

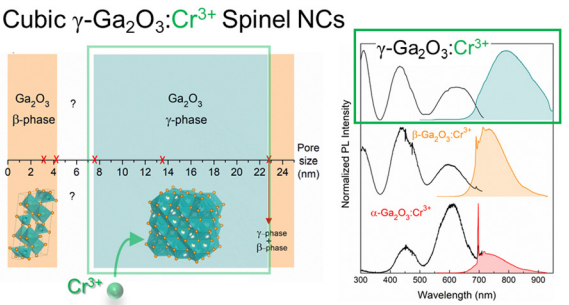
Hang Xia, Huicheng Hu, Ya Wang, Mengxuan Yu, Mohan Yuan, Ji Yang, Liang Gao, Jianbing Zhang, Jiang Tang and Xinzheng Lan*



10929

Stabilizing cubic γ-Ga_2O_3:Cr^{3+} spinel nanocrystals by size confinement into mesoporous silica nanoreactor channels

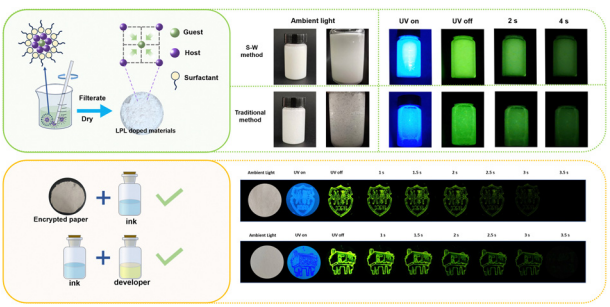
Michele Crozzolin, Camilla Belloni, Jian Xu, Takayuki Nakanishi, Jumpei Ueda, Setsuhisa Tanabe, Federico Dallo, Eleonora Balliana, Asia Saorin, Flavio Rizzolio, Davide Cristofori, Pietro Riello, Alvise Benedetti and Michele Back*



10942

Growth regulation of an easily crystallized organic long-persistent luminescence system with *in situ* anti-counterfeiting applications

Duo Liu, Yakun Song,* Hao Wang, Tiantian Wang, Zhiyong Zhou, Zhen Liu, Weiwei Lu and Tianyang Wang*



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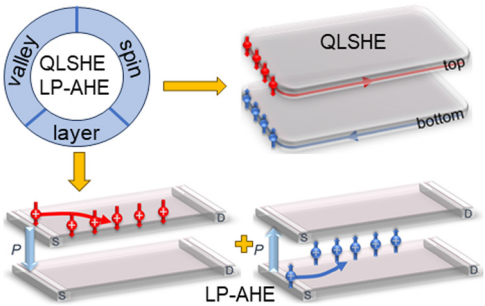
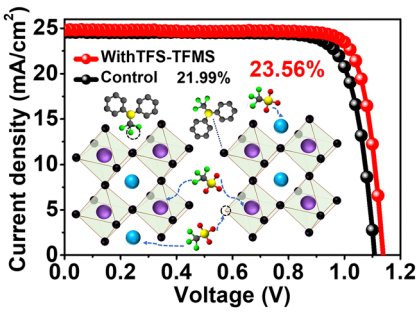


Quantum layer spin Hall effect in sliding antiferromagnetic bilayers

Yuping Tian, Chao-Bo Wang, Bin-Yuan Zhang, Xiangru Kong* and Wei-Jiang Gong*

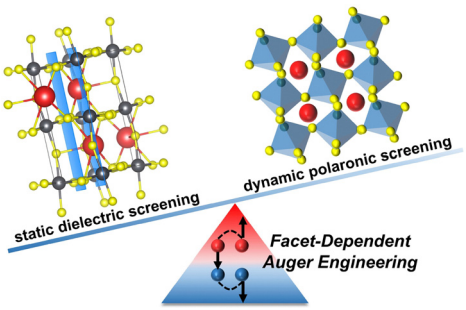
10960



Surface-anchoring fluorinated sulfonate enables efficient and stable perovskite photovoltaics

Bo Yang, Xinyue Li, Bing Cai,* Xiaojia Zheng, Kai Xiong* and Wen-Hua Zhang*

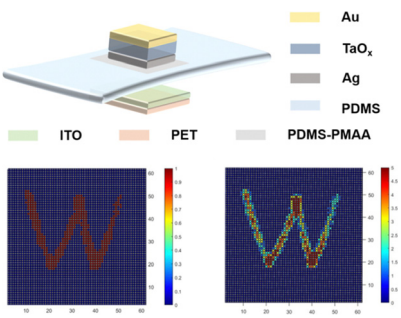
10971



Modulation of Auger recombination *via* facet engineering in $CsPbBr_3$ perovskite nanocrystals

Jiachen Zhang, Shuyue Feng and Qun Zhang*

10979



Stretchable and stable neuromorphic tactile system

Yaqian Liu, Hui Wang, Jiaming Lin, Weixi Ye, Zhichao Rao, Wenjie Lu, Bingle Huang* and Huipeng Chen*

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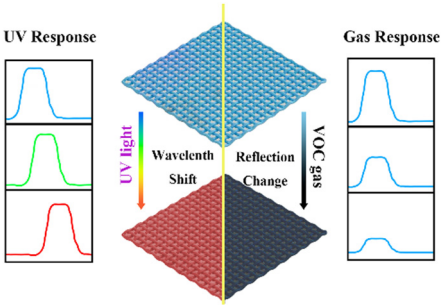
10985

Dual-stimuli responsive chromatic cholesteric fibres with programmable structural-colour

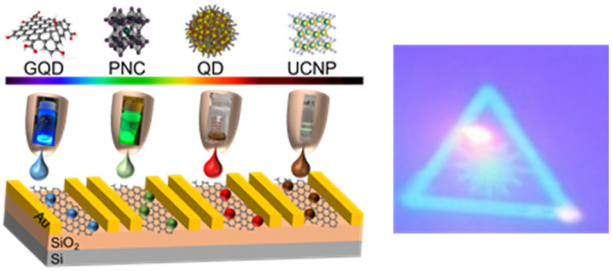
Jiajing Zheng, Xuan Liu, Conglong Yuan and Zhigang Zheng*



10992

Developing colloidal nanoparticles for inkjet printing of devices with optical properties tuneable from the UV to the NIR

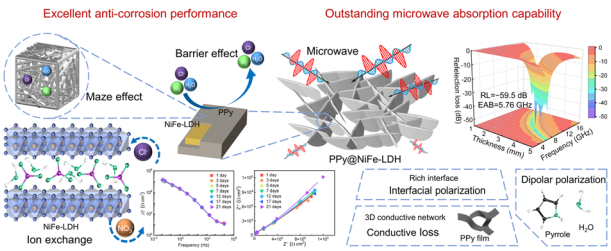
Jonathan S. Austin, Weitong Xiao, Feiran Wang, Nathan D. Cottam, Geoffrey Rivers, Ellie B. Ward, Tyler S. S. James, Weiling Luan, Christopher J. Tuck, Richard Hague, Oleg Makarovsky and Lyudmila Turyanska*



11001

Polypyrrole/NiFe-layered double hydroxide composite as an anticorrosive microwave absorber

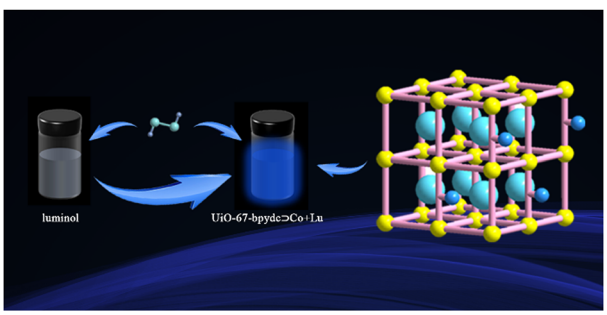
Haoxiang Zhai, Lihong Wu, Lei Yu, Liang Li, Gengping Wan,* Ying Zhang, Xiang Yuan, Jieping Wang and Guizhen Wang*



11012

Encapsulation of luminol and Co^{2+} within a metal–organic framework for enhanced chemiluminescence and imaging of inflammation

Hongxu Chen, Danna Zou, Wenqian Cao, Yuanjing Cui,* Guodong Qian* and Zhengluan Liao*



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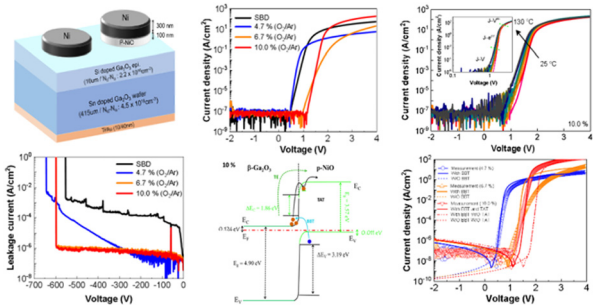
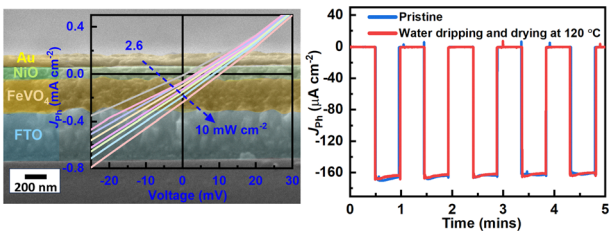


Non-damaging growth and band alignment of p-type NiO/β-Ga_2O_3 heterojunction diodes for high power applications

Ji Young Min, Madani Labed,* Chowdam Venkata Prasad, Jung Yeop Hong, Young-Kyun Jung and You Seung Rim*

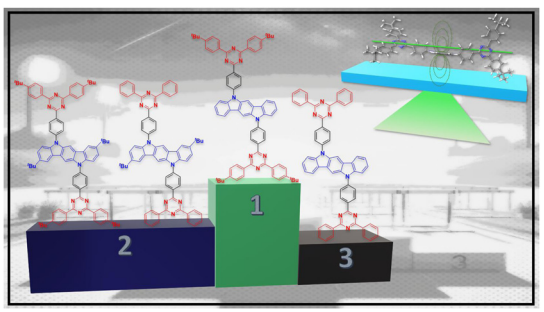
11033



$FeVO_4$-based solution-processed all oxide self-biased fast photodetectors

Parul Garg, Priya Kaith, Vishal Nagar and Ashok Bera*

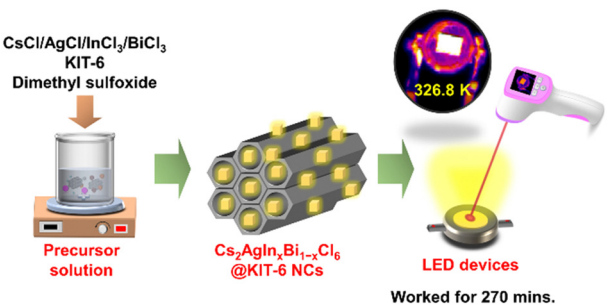
11041



Effect of *tert*-butyl substitution on controlling the orientation of TADF emitters in guest–host systems

Prakhar Sahay, Ettore Crovini, Kleitos Stavrou, Zhen Zhang, Bình Minh Nguyên, Daniel Wagner, Peter Strohriegl, Stefan Bräse, Andrew Monkman, Eli Zysman-Colman* and Wolfgang Brütting*

11051



Advanced lead-free double perovskites/silica hybrid nanocrystals for highly stable light-emitting diodes

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

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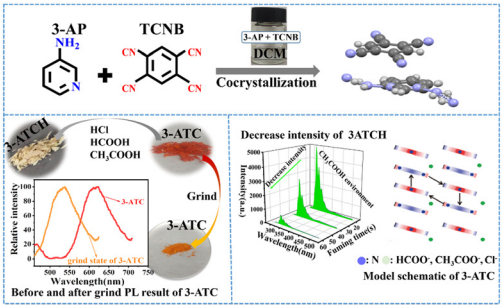
11060

Luminescent switching behavior achieved by adjusting cocrystal charge transfer excitons under acid stimulation

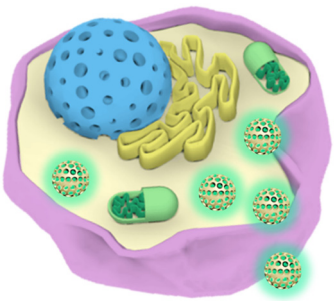
Darya Khan, Fei Li, Xiaotao Zhang,* Fei Jiao* and Wenping Hu



11065

Photoinduced absorption and linear/nonlinear emission of assembled carbon dot–silica nanocomposites for cellular imaging

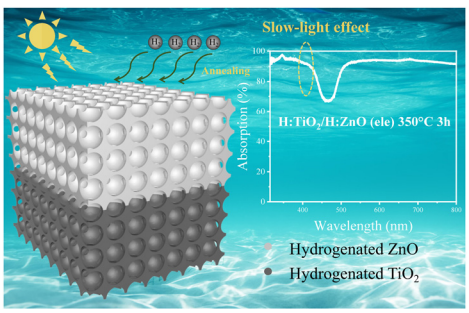
Jiangling He,* Xu Chen* and Youling He*



11073

Advanced photoelectrochemical performance of inverse-opal heterostructures fabricated using hydrogenated ZnO and TiO_2

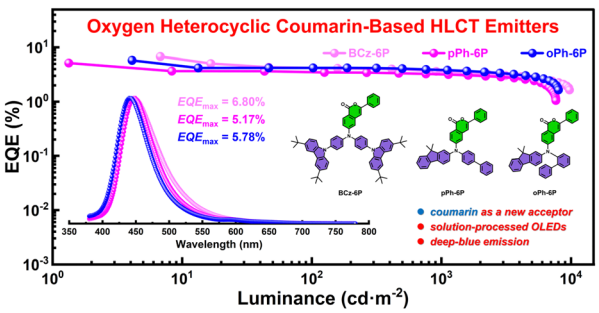
Zheli Wu, Jie Long, Ming Fu,* Xiaoyu Liu, Jiefeng Li, Peixin Chu, Chenhui Wei, Yuting Zhang, Yijun Ning, Dawei He and Yongsheng Wang



11085

Oxygen heterocyclic coumarin-based hybridized local and charge-transfer deep-blue emitters for solution-processed organic light-emitting diodes

Qi Xie, Chuanxin Liao, Hongli Liu, Shirong Wang* and Xianggao Li*



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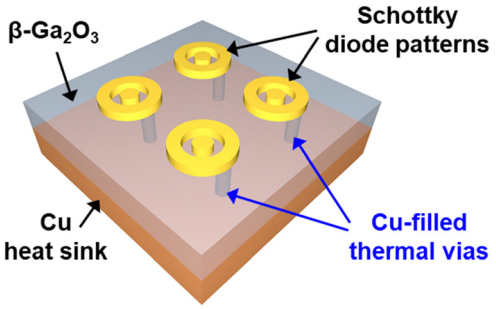
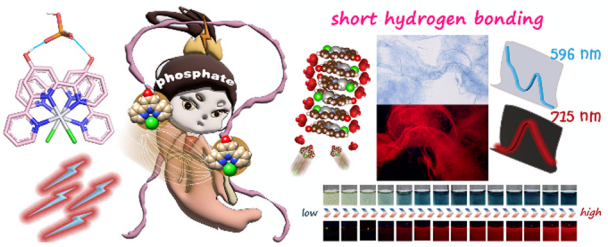


Enhancement of heat dissipation in β-Ga_2O_3 Schottky diodes through Cu-filled thermal vias: experimental and simulation investigations

Younghyun You, Hui Won Eom, Jehwan Park, Myung Jun Kim* and Jihyun Kim*

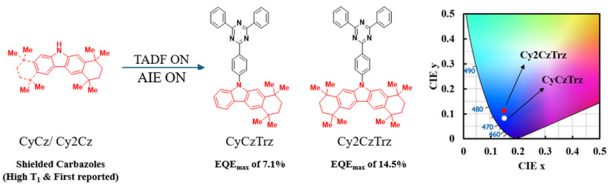
11103



Effective dual-mode turn-on sensing of phosphates enabled by the twisted "head-to-head" self-assembly of a platinum(II)-terpyridyl complex with close Pt–Pt packing

Jiajia Xie, Fangfang Xiao, Chaogan Liu, Jian Sun, Jun Yao* and Yushu Li*

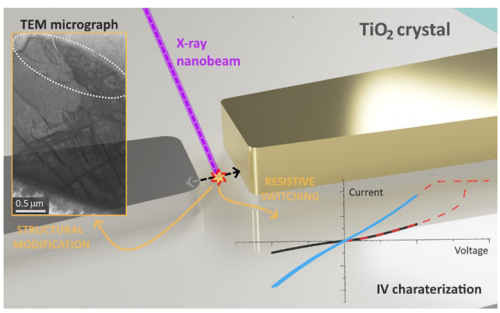
11115



Strategic carbazole-cycloalkyl fused donors to induce TADF featured AIE for high efficiency deep blue emission

Jae Hee Lee, Yeonju Jeong, Jairam Tagare, Min Jeong Kwon, Taekyung Kim* and Wan Pyo Hong*

11127



Improving the control of the electroforming process in oxide-based memristive devices by X-ray nanopatterning

Lorenzo Mino,* Valentina Bonino, Andrea Alessio, Federico Picollo, Andrei Kuncser, Ionel Mercioniu, Aurel-Mihai Vlaicu, Petre Badica, Rosaria Brescia, Matteo Fretto, Kalle Goss, Regina Dittmann and Marco Truccato

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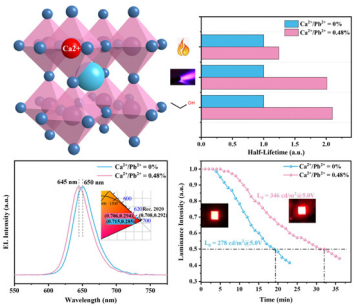
11133

Ca^{2+}-doping for stable pure red $CsPbI_3$ quantum dot light-emitting diodes

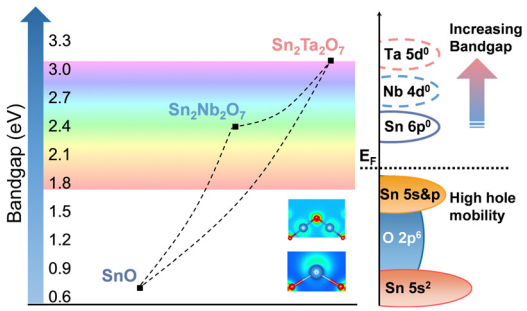
Wei Shen, Hao Cui, Yanxing He, Zhan Su, Suyun Liu, Wei Zhao, Kun Cao, Junmin Xia, Gang Cheng, Lihui Liu* and Shufen Chen*



11139

Insights into the electronic structure of tin(II) pyrochlore oxides with $5s^2$ lone pair states as transparent p-type oxide semiconductors

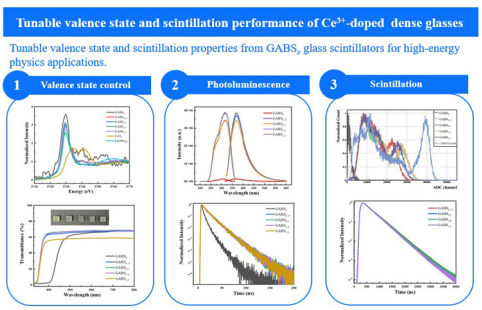
Jueli Shi, Ziqian Sheng, Yong-Bin Zhuang, Dong-Chen Qi* and Kelvin H. L. Zhang*



11149

Tunable valence state and scintillation performance of dense Ce^{3+}-doped borosilicate glasses prepared in ambient atmosphere

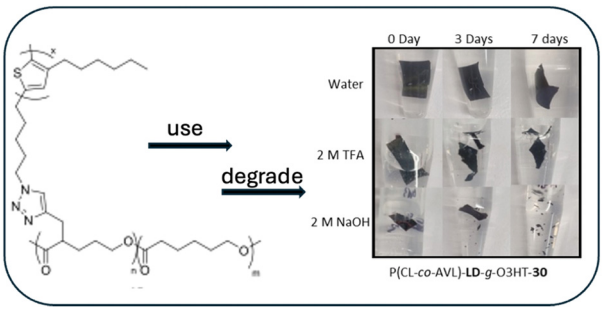
Xin-Yuan Sun,* Zhehao Hua, Xi Chen, Yufeng Wen,* Sen Qian,* Hua Cai, Danping Chen, Jifeng Han, Richeng Lin, Shan Liu, Jing Ren, Gao Tang, Shenghua Yin, Minghui Zhang and Lirong Zheng



11157

Transient polymer electronics enabled by grafting of oligo-3-hexylthiophenes onto polycaprolactone

Eddie Wai Chi Chan, Xin Sun, Yuhka Uda, Bicheng Zhu, David Barker and Jadranka Travas-Sejdic*



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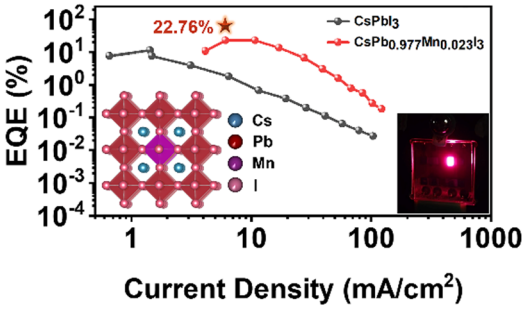
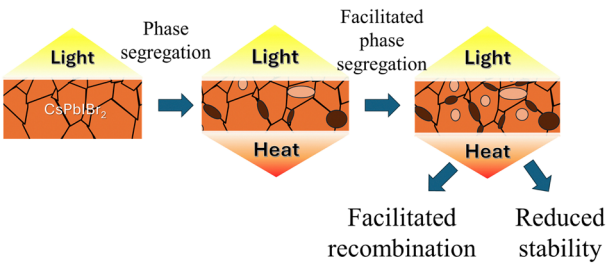


Mn^{2+}-doping enables improved crystallization of $CsPbI_3$ quantum dots for efficient deep-red light-emitting diodes

Mengyun Liu, Jing Zhou, Xuerong Hao, Hongli Liu,* Shirong Wang and Xianggao Li*

11181



How temperature impacts material properties and photovoltaic performance of mixed-halide perovskite *via* light-induced ion migration

Po-Kai Kung, Ming-Hsien Li, Chen-Fu Lin and Peter Chen*

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