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Journal of Materials Chemistry C

Materials for optical, magnetic and electronic devices

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IN THIS ISSUE

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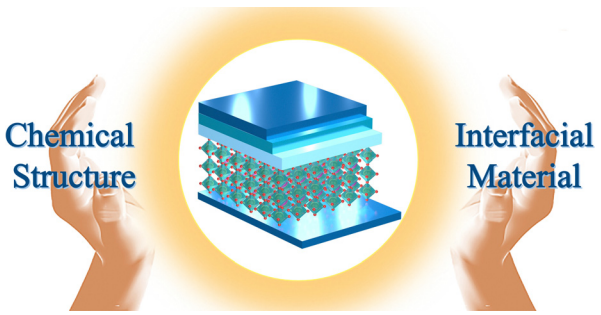
Cover
See Sahn Nahm *et al.*, pp. 1268–1280. Image reproduced by permission of Younghee Lee from *J. Mater. Chem. C*, 2024, **12**, 1268.

REVIEWS

1147

A review on conventional perovskite solar cells with organic dopant-free hole-transport materials: roles of chemical structures and interfacial materials in efficient devices

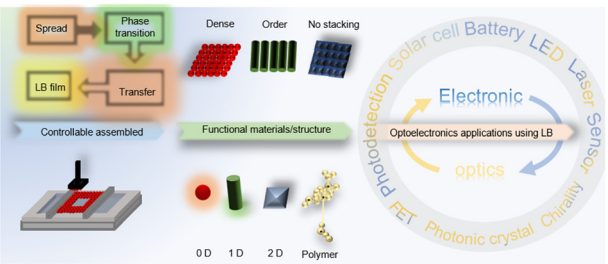
Wenhui Li, Wenning Zhao, Kairui Li and Xiuxun Han*



1177

Controllable-assembled functional monolayers by the Langmuir–Blodgett technique for optoelectronic applications

Heng Lin, Yueting Zheng, Chao Zhong, Lihua Lin, Kaiyu Yang, Yang Liu,* Hailong Hu and Fushan Li*



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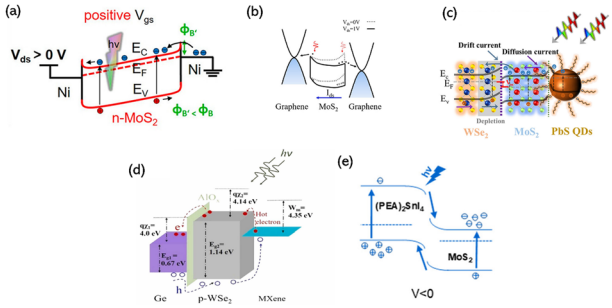
REVIEWS

1211

Progress in photodetector devices utilizing transition metal dichalcogenides

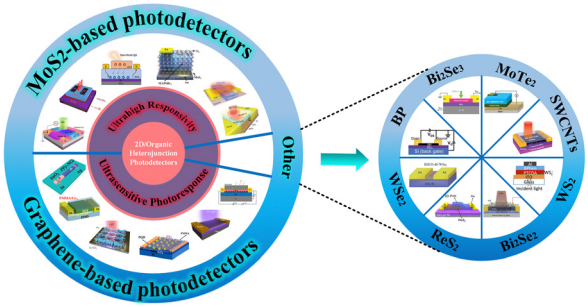
Xin Li, Sikandar Aftab,* Sajjad Hussain, Fahmid Kabir, Abdullah G. Al-Sehemi, Muhammad Aslam, Jae Hong Kim* and Burragoni Sravanthi Goud*



1233

Recent advances in enhancing the photodetector performance of 2D materials by combining them with organic thin films

Lei Guo, Jiayue Han and Jun Wang*

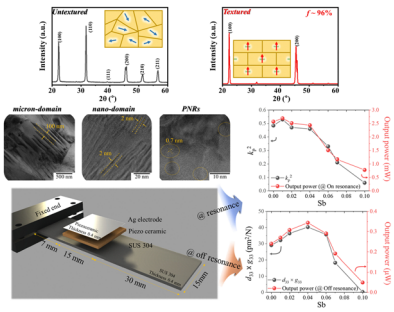


PAPERS

1268

Optimized physical properties of [001]-textured (Na, K)NbO_3-based lead-free piezoceramics for high power piezoelectric energy harvesters

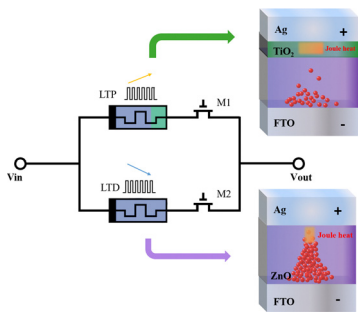
Seok-June Chae, Seung-Hyun Kim, In-Su Kim, Geun-Soo Lee, Seok-Jung Park and Sahn Nahm*



1281

LTP–LTD transformation of unipolar pulse voltage-driven zinc oxide memristors *via* TiO_2 thin layer incorporation

Yucheng Wang, Jiawei Zheng, Yueyang Shang, Dingyun Guo, Hexin Wang, Zeyang An, XiaoChuan Chen, Ruixi Huang, JunYu Jiang, Kai Sun and Shaoxi Wang*



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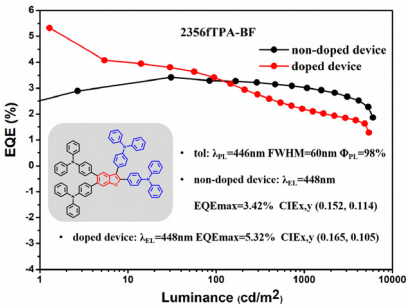
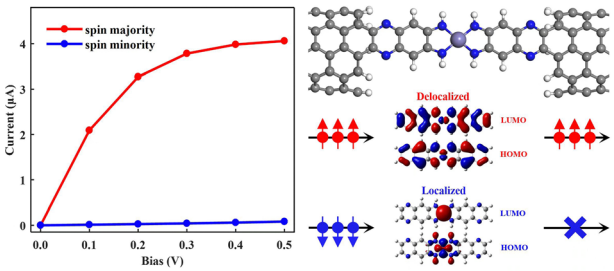
1289



Tuning the number and position of triphenylamine substituents on a benzo[*b*]furan core to achieve high-efficiency deep-blue and blue emitters

MeiTing Luo, MingXin Wu, BoHua Zhang, XinYe Wang, Yi Chen, QingYu Jia, Dongdong Wang,* Lei Gou and Zhaoxin Wu

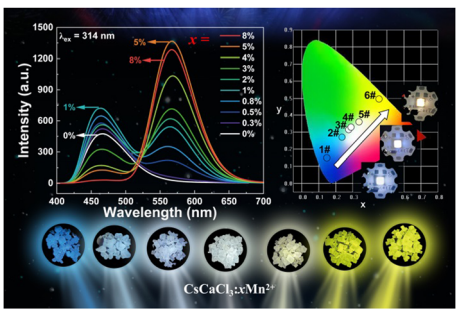
1297



High-performance molecular spin filters based on a square-planar four-coordinate Fe complex and covalent pyrazine anchoring groups

Yudi Wang, Haoyang Pan, Yuxuan Jiang, Jie Li, Dongying Lin, Shi Li, Yongfeng Wang, Stefano Sanvito and Shimin Hou*

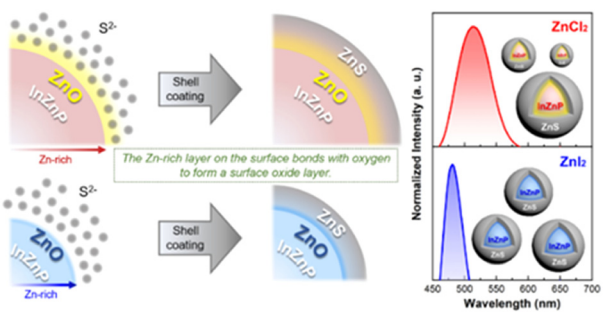
1309



The unique luminescent properties and enhanced thermal stability of a novel all-inorganic perovskite $CsCaCl_3:Mn^{2+}$ for solid-state lighting applications

Zhichao Liu, Yuexiao Pan,* Xiaoxiao Fu, Yihong Ding and Liyi Li*

1317



Enhancing optical properties through zinc halide precursor selection: interfacial optimization of InZnP quantum dots

Chien-Chi Huang, Shu-Ru Chung* and Kuan-Wen Wang*

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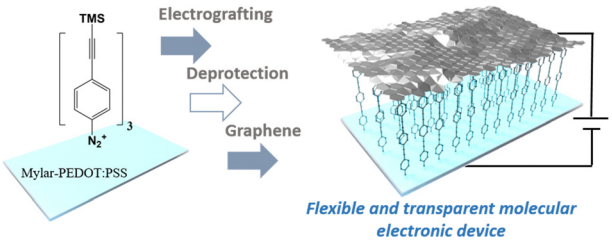
PAPERS

1325

Robust large area molecular junctions based on transparent and flexible electrodes

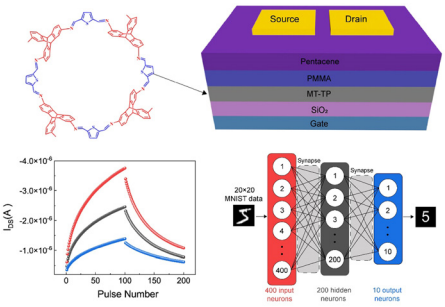
Aitor García-Serrano, Pilar Cea,* Henrry M. Osorio, Francesc Pérez-Murano, Gemma Rius, Paul J. Low and Santiago Martin*



1334

A covalent organic polymer-based transistor with multifunctional memory and synaptic functions

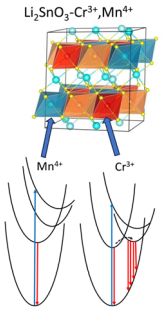
Zihao Feng, Ahmed M. Elewa, Islam M. A. Mekhemer, Wenbiao Niu, Xin-Qi Ma, Ziqi Jia, JiYu Zhao, Su-Ting Han, Ho-Hsiu Chou* and Ye Zhou*



1341

Evaluation of Li_2SnO_3:Cr^{3+}, Mn^{4+} as a dual-emitter luminescence sensor for cryogenic temperatures

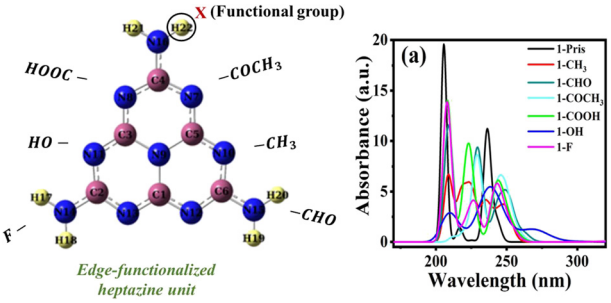
V. Mykhaylyk,* Y. Zhydachevskyy, H. Kraus, V. Stasiv, G. Leniec, V. Hreb, L. Vasylechko, V. Sydorchuk and A. Suchocki



1354

Tuning the electronic and optical properties of hg-C_3N_4 quantum dots with edge-functionalization: a computational perspective

Khushboo Dange, Vaishali Roondhe and Alok Shukla*



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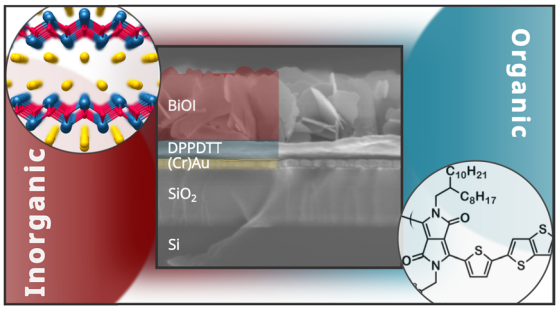
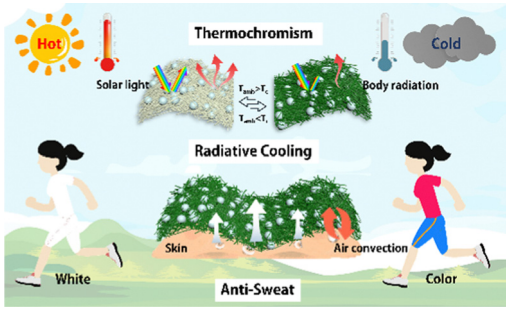


Influence of chemical interactions on the electronic properties of BiOI/organic semiconductor heterojunctions for application in solution-processed electronics

Vaidehi Lapalikar, Preetam Dacha, Mike Hambsch, Yvonne J. Hofstetter, Yana Vaynzof, Stefan C. B. Mannsfeld* and Michael Ruck*

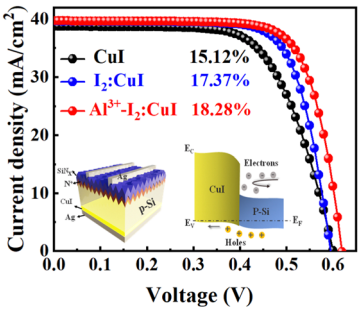
1377



A hierarchical metafabric with dynamically thermochromic property for subambient daytime radiative cooling

Rong Zhang, Renzhi Li, Peng Xu and Bo Xiang*

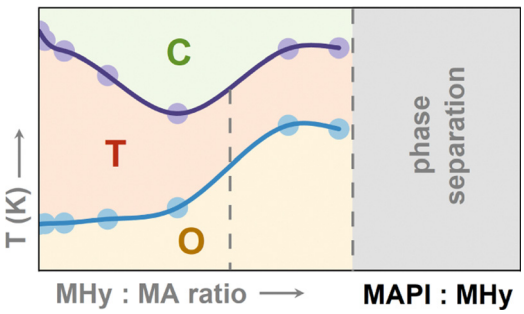
1386



Solution-processed copper(I) iodide *via* co-doping for enhanced hole selective contacts in p-type crystalline silicon solar cells

Wang Fu, Wuqi Liu, Yaju Wei, Dan Liu, Songyu Li, Di Zhao, Xiaoping Wu, Lingbo Xu, Ping Lin, Can Cui,* Xuegong Yu and Peng Wang*

1396



The lattice symmetrization worked, but with a plot twist: effects of methylhydrazinium doping of $MAPbI_3$ on phase transitions, cation dynamics and photoluminescence

Mirosław Mączka,* Maciej Ptak, Katarzyna Fedoruk, Dagmara Stefańska, Anna Gągor, Jan K. Zaręba and Adam Sieradzki

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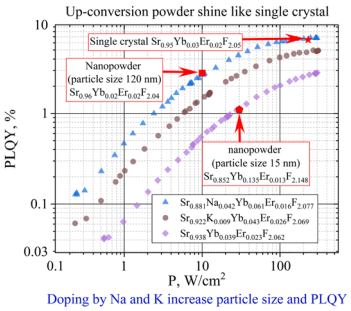
1406

Effect of the fluorinating agent type (NH_4F, NaF, KF) on the particle size and emission properties of SrF_2:Yb:Er luminophores

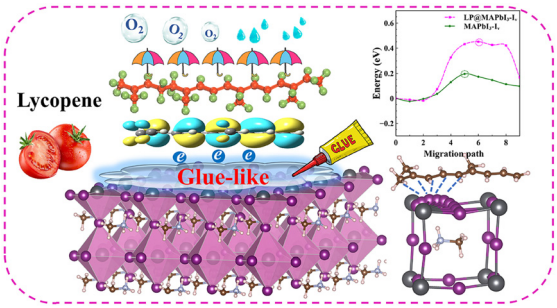
J. A. Ermakova, E. I. Madirov, P. P. Fedorov, A. A. Alexandrov and S. V. Kuznetsov*



1412

Glue-like passivation by the natural alkene lycopene for efficient and stable perovskite solar cells: insights from a theoretical perspective

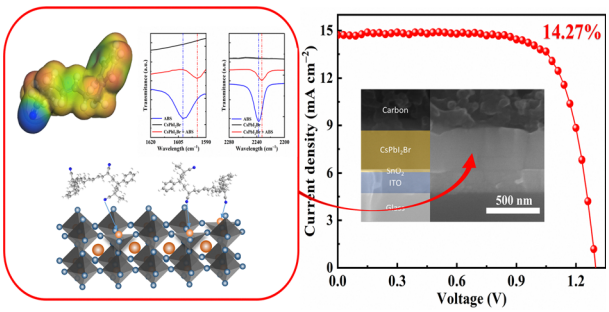
Na Chen and Quan-Song Li*



1421

Enhanced comprehensive performance of carbon-based hole-transport-layer-free $CsPbI_2Br$ solar cells by a low-cost and stable long chain polymer

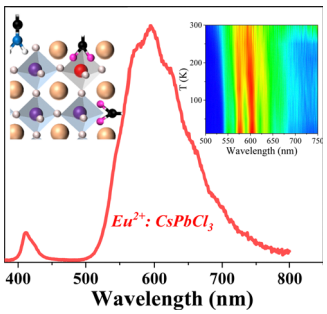
Wenxuan Li, Yali Li,* Zhe Gao, Guodong Wan, Xiaoyang Liu, Yujun Fu, Qiming Liu, Deyan He and Junshuai Li*



1430

Nanocrystals of divalent europium-doped $CsPbCl_3$ perovskites: a novel optoelectronic material with dual-emissions

He Yuan, Shilin Jin, Song Zheng, Rong Xie, Tao Pang, Bin Zhuang, Feng Huang and Daqin Chen*



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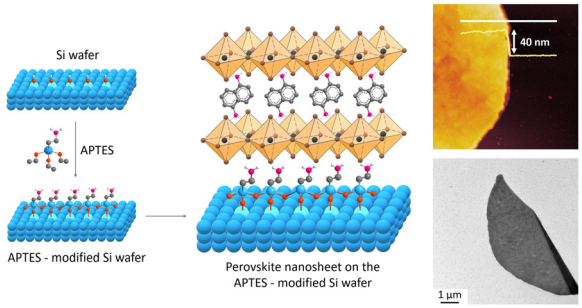
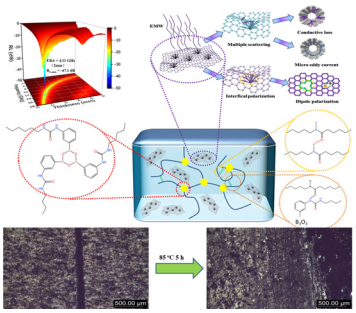


Surface-assisted synthesis of perovskite nanosheets with bivalent aromatic cations

Andrei Mitrofanov, Khrystyna Rymsha, Dmitrii Sychev, Karina Zakirova, Petr Formanek, Darius Pohl, Eva Bittrich, Ilka M. Hermes, Quinn A. Besford* and Brigitte Voit*

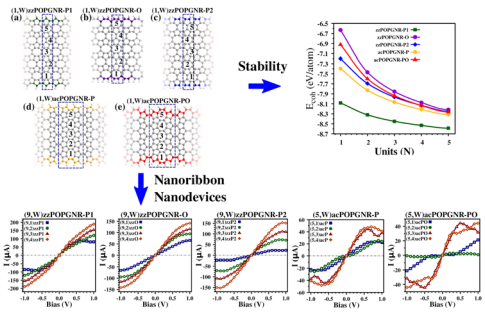
1446



Ultra-strength polyurethane/MOF-derived composites with self-healing and recycling capabilities and highly efficient microwave absorption properties

Wenhong Zhang, Kun Li, Liuwenlin Han, Tianyu Wu, Junying Zhang* and Jue Cheng*

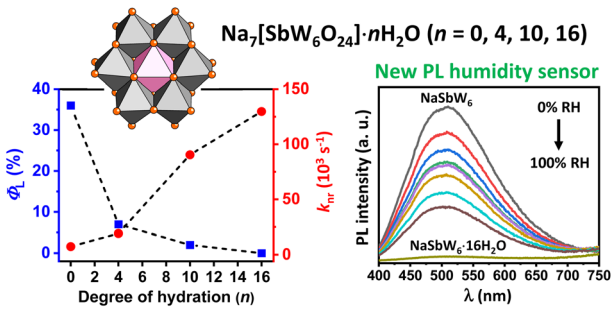
1459



Theoretical investigation of width effects in the electronic and transport properties of carbon nanoribbons with 5-8-5 carbon rings: a first-principles study

Elder Augusto Viana Mota,*
Carlos Alberto Brito da Silva Jr and
Jordan Del Nero

1474



$Na_7[SbW_6O_{24}]$: a new type of turn-off luminescence humidity sensor based on a lanthanide-free polyoxometalate

Aurély Bagghi, Philippe Deniard, Yohann Cartigny* and Rémi Dessapt*

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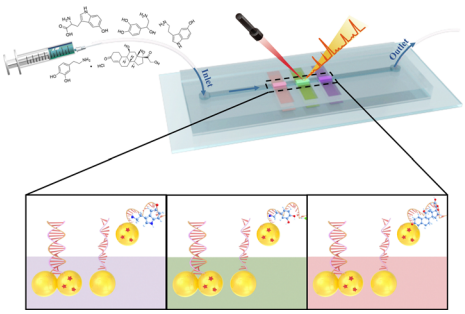
PAPERS

1485

An ultrasensitive SERS sensing chip for the serum screening of psychiatric disorders

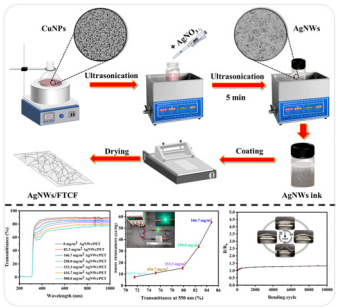
Ziteng Zhang, Qianqian Dong, Mulong Xu, Kuo Yang* and Zhuyuan Wang*



1492

Fast synthesis of silver nanowires at room temperature *via* ultrasonication-mediated galvanic replacement for flexible transparent electrodes

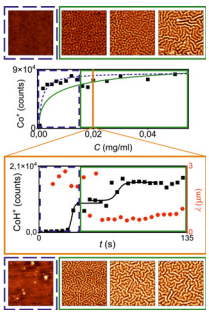
Qiusui Chen, Yuehua Ding, Meiling Xu, Ziyi Liu, Zhenpeng Liu, Qiang Liu, Yanmin Qin, Xing Wang, Zheng Fang* and Haifeng Bao*



1500

Means of control over poly(4-vinylpyridine)–$CoBr_2$ complex functional thin film formation in static and dynamic conditions

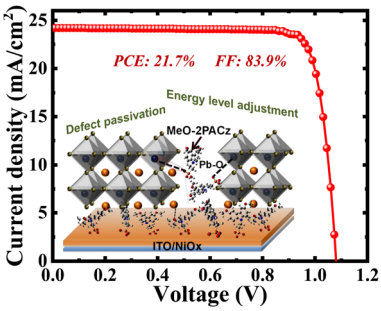
J. Chudzik, P. Dąbczyński, J. Rysz, S. Tymetska and A. M. Majcher-Fitas*



1507

Efficient inverted perovskite solar cells with a low-temperature processed NiO_x/SAM hole transport layer

Yi Guo, Like Huang,* Chaofeng Wang, Jiajia Huang, Shuang Liu, Xiaohui Liu, Jing Zhang, Ziyang Hu and Yuejin Zhu*



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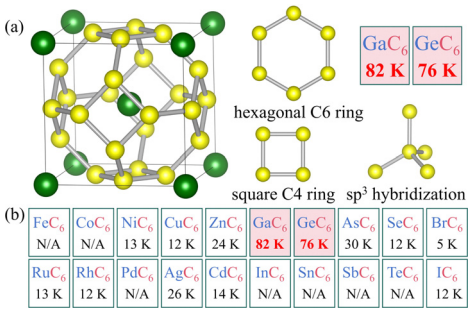
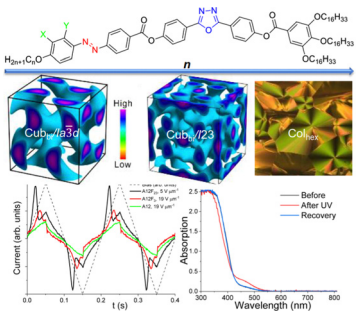


Sodalite-like carbon based superconductors with T_c about 77 K at ambient pressure

Siyu Jin, Xiaoyu Kuang, Xilong Dou, Andreas Hermann* and Cheng Lu*

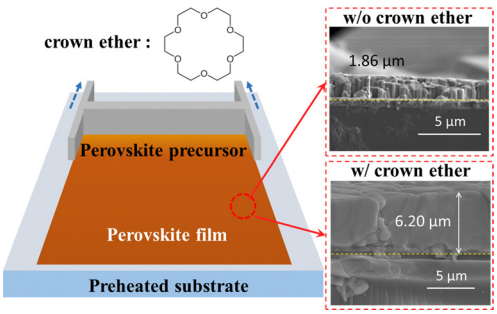
1523



Electric field- and light-responsive oxadiazole bent-core polycatenar liquid crystals

Mohamed Alaasar,* Ahmed F. Darweesh, Yu Cao, Konstantin Iakoubovskii* and Masafumi Yoshio

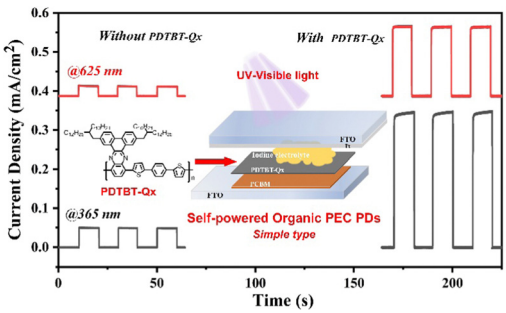
1533



Fast fabrication of μm-thick perovskite films by using a one-step doctor-blade coating method for direct X-ray detectors

Kuo-Wei Huang, Ming-Hsien Li, Yen-Ting Chen, Zi-Xiang Wen, Chen-Fu Lin and Peter Chen*

1543



Efficient organic self-powered photoelectrochemical photodetectors based on conjugated polymers/fullerene heterojunctions

Peng Han, Zhi Zheng, Yi Lu, Caili Lang, Shiyong Gao,* Fengyun Guo, Jinzhong Wang and Yong Zhang*

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