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Journal of Materials Chemistry C

Materials for optical, magnetic and electronic devices

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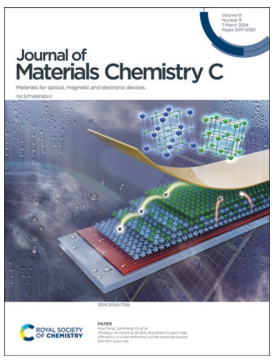
IN THIS ISSUE

ISSN 2050–7526 CODEN JMCCCX 12(9) 3017–3380 (2024)



Cover
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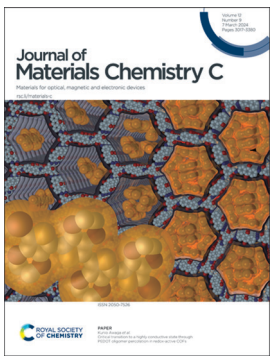


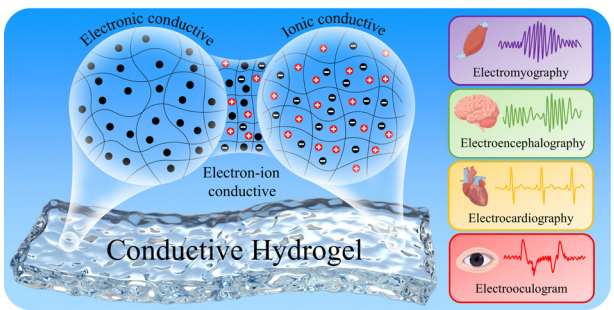
Inside cover
See Kunio Awaga *et al.*, pp. 3072–3076. Image reproduced by permission of Kunio Awaga from *J. Mater. Chem. C*, 2024, **12**, 3072.

REVIEW

3030

The latest research progress of conductive hydrogels in the field of electrophysiological signal acquisition

Hongxin Ding, Yunqing Gu,* Yun Ren, Chaoxiang Hu, Qianfeng Qiu, Denghao Wu, Jiegang Mou, Zhenxing Wu and Huijie Zhou

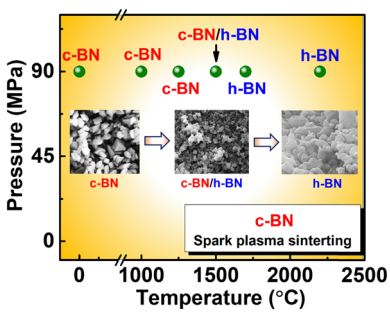


COMMUNICATION

3053

Cubic and hexagonal boron nitride phases and phase boundaries

Abhijit Biswas,* Gustavo A. Alvarez, Manoj Tripathi,* Jonghoon Lee, Tymofii S. Pieshkov, Chenxi Li, Bin Gao, Anand B. Puthirath, Xiang Zhang, Tia Gray, Jacob Elkins, Robert Vajtai, Pengcheng Dai, A. Glen Birdwell, Mahesh R. Neupane, Tony Ivanov, Elias J. Garratt, Bradford B. Pate, Ajit K. Roy, Alan Dalton,* Zhiting Tian* and Pulickel M. Ajayan*



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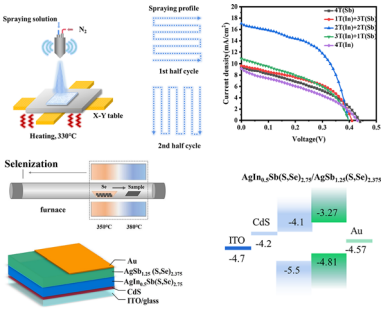
3063

Strategy of stacking double absorbers to gain high efficiency in silver antimony sulfide selenide-based thin film solar cell

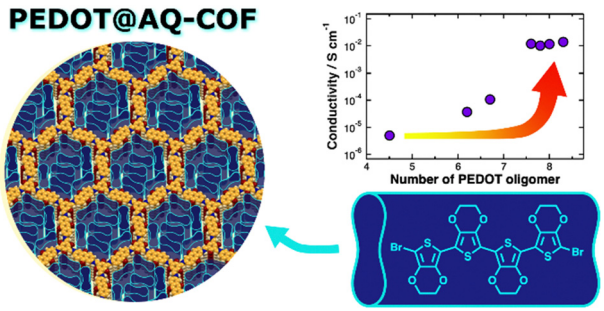
Haoyang Li, Hua Tang,* Junsheng Yu,* Jiang Cheng and Lu Li



3072

Critical transition to a highly conductive state through PEDOT oligomer percolation in redox-active COFs

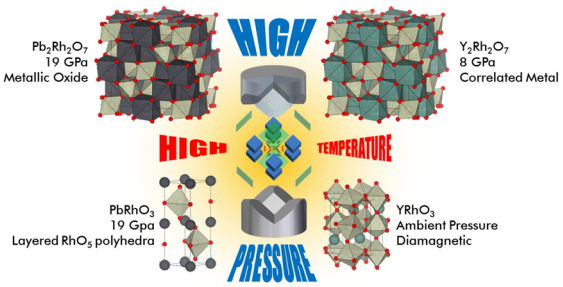
Chaoqun Cao, Qi Chen, Rie Suizu and Kunio Awaga*



3077

Characterisation of $Pb_2Rh_2O_7$ and $Y_2Rh_2O_7$: an unusual case of pyrochlore stabilisation under high pressure, high temperature synthesis conditions

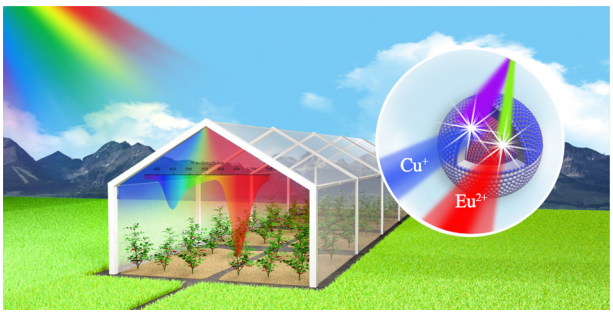
Sean D. Injac, Bryce G. Mullens, Fabio Denis Romero, Maxim Avdeev, Christopher Barnett, Alexander K. L. Yuen, Midori Amano Patino, Supratik Mukherjee, Ganapathy Vaitheeswaran, David J. Singh, Brendan J. Kennedy and Yuichi Shimakawa*



3090

Novel dual spectral conversion *via* Eu^{2+}, Cu^{+}-coactivated core–shell-structured CaS@CaZnOS phosphors for efficient photosynthesis of plants

Liu Yan, Mei Peng, Zirong Song, Yue He, Yulin Fan, Yuya Wang, Rumeng Xiong, Shixun Lian,* Xinxian Ma* and Zhongxian Qiu*



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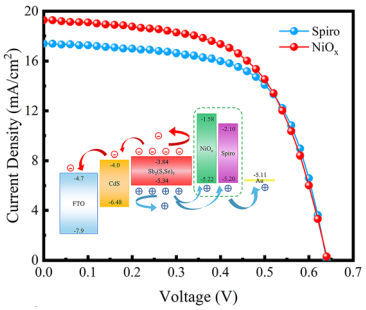
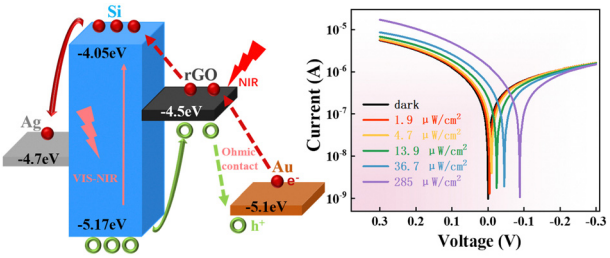


Enhancement in the efficiency of $Sb_2(S,Se)_3$ thin-film solar cells with spin-coating NiO_x as the hole transport layer

Shan Huang, Yelei Xing, Honcheng Zhu, Tingyu Zhang, Kangjun Geng, Yusheng Yang, Han Zhang, QingYan Gu, Jianhua Qiu,* Sai Jiang,* Huafei Guo,* Ningyi Yuan and Jianning Ding

3105



Self-driven broadband photodetectors on flexible silicon nanowires substrate by forming a heterojunction with reduced graphene oxide

Haiyuan Xin, Shengyi Yang,* Ying Wang, Muhammad Sulaman, Zhenheng Zhang, Zhenhua Ge, Jinming Hu, Shilu Wang, Bingsuo Zou and Libin Tang

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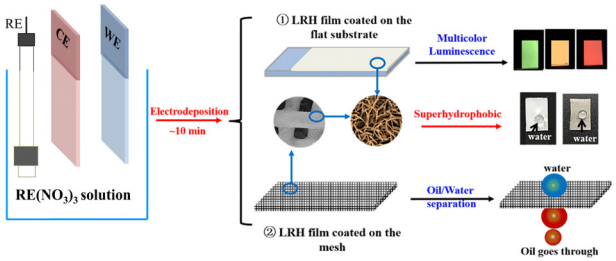

Fast and versatile electrodeposition of vertically aligned layered rare-earth hydroxide nanosheets for multicolour luminescence and oil/water separation

Xiaoli Wu, Yongping Guo, Ji-Guang Li* and Yuanli Liu*

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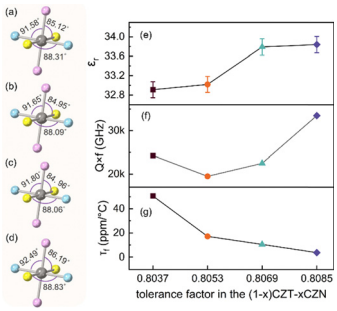

Effect of B-site complex substitutions on orthorhombic distortion and microwave dielectric properties of $Ca(Zr_{0.95}Ti_{0.05})O_3$ perovskites

Xin Wang, Tao Zhou,* Wei Wang, Zhaochen Xi, Diming Xu, Chao Du, Xiao-Gang Yao, Hui-Xing Lin, Huiqi Xia, Biaobing Jin, Yongqiang Pang, Haijie Zhang, Chao Liang and Di Zhou*

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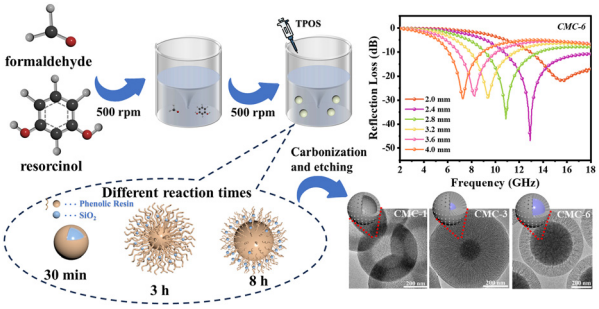
3132

Morphology evolution of core–shell carbon@ mesoporous carbon microspheres with excellent microwave absorption performance

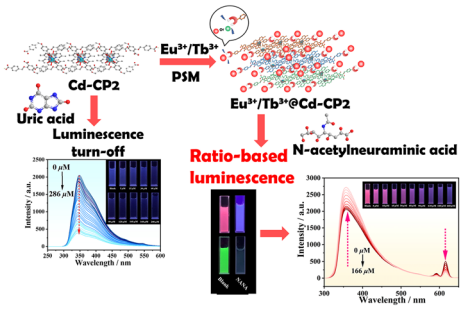
Yan Cheng,* Yongzhen Ma, Zhener Dang, Luyao Han, Kai Zhou, Jiaying Zhang, Qiwei Liu, Huanqin Zhao,* Ying Lin and Haibo Yang*



3141

Eu^{3+}/Tb^{3+}-modified Cd(II) coordination polymers for effective detection of uric acid and lung cancer biomarker *N*-acetylneuraminic acid

Hongjian Li, Yuqian Chen, Hengyi Zhao, Huiqi Zou, Hui Yan, Jing Lu, Hongguo Hao, Jianmin Dou, Yunwu Li* and Suna Wang*



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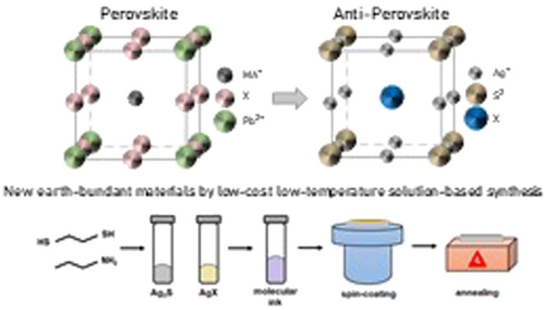
Novel synthesis of semiconductor chalcohalide anti-perovskites by low-temperature molecular precursor ink deposition methodologies

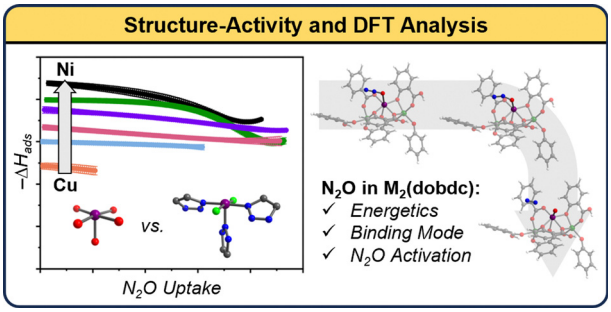
Ivan Caño,* Jonathan W. Turnley, Pol Benítez, Cibrán López-Álvarez, José-Miguel Asensi, David Payno, Joaquim Puigdollers, Marcel Placidi, Claudio Cazorla, Rakesh Agrawal and Edgardo Saucedo



3164

Benchmarking nitrous oxide adsorption and activation in metal–organic frameworks bearing coordinatively unsaturated metal centers

Tristan A. Pitt, Haojun Jia, Tyler J. Azbell, Mary E. Zick, Aditya Nandy, Heather J. Kulik and Phillip J. Milner*



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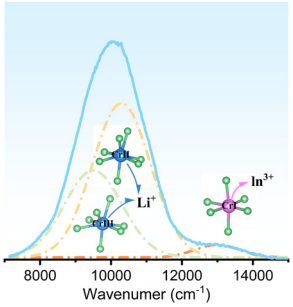

Site-selective occupancy of Cr^{3+} enabling tunable emission from near infrared I to II in fluoride $LiInF_4:Cr^{3+}$

H. Chang, F. Q. He, E. H. Song* and Q. Y. Zhang*

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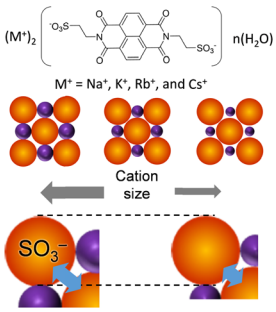

Condensed π-molecular arrangement for $-C_2H_4SO_3^-$ armed naphthalenediimide

Ryo Ide, Ayumi Kawasaki, Takashi Takeda, Shun Dekura, Norihisa Hoshino, Wakana Matsuda, Shu Seki and Tomoyuki Akutagawa*

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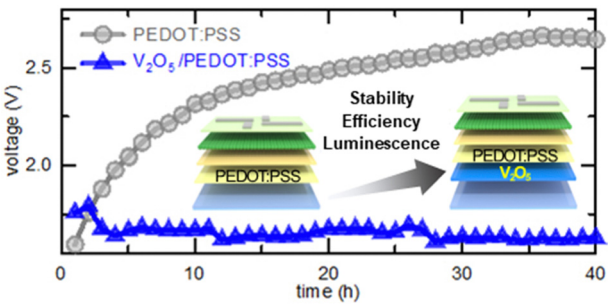

Advanced HIL strategies in QLEDs: V_2O_5 and PEDOT:PSS dual-layer for charge balance and electron leakage prevention

Han Bin Cho, Ha Jun Kim, Noolu Srinivasa Manikanta Viswanath, Tuhin Samanta, Jeong Wan Min, Sung Woo Jang, Yong Min Park, Se Hyuk Jang, Heesun Yang* and Won Bin Im*

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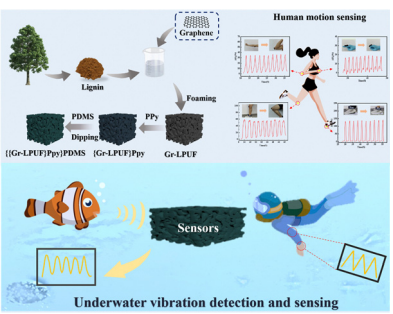

Lightweight, superhydrophobic, lignin-based polyurethane foam composites for underwater pressure sensing

Honglong Zhao, Xiaozhen Ma, Xiaobo Xu, Minghui Cui, Nathan E. Stott, Jin Zhu and Jing Chen*

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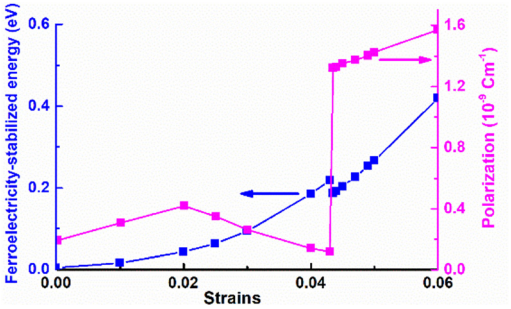
Strain engineering of Bi_2OS_2 ultrathin films: electronic and ferroelectric properties

Chunying Pang, Kai Gao, Chunju Hou and Yi Yang*



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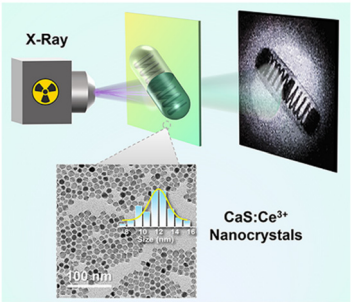
Ce^{3+}-doped alkaline-earth sulfide nanocrystals for X-ray scintillation imaging screens

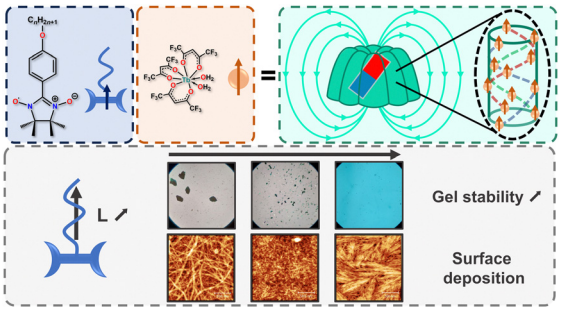
Yuying Liu,* Kai Han, Shihao Zhao,* Xinquan Zhou, Song Gao, Yexin Wang,* Zhiguo Xia* and Shangda Jiang*



3228

Investigation and control of metallogel formation for the deposition of supramolecular nanotubes of single-chain magnets

Felix Houard, Andrea Olivier, Giuseppe Cucinotta, Olivier Galangau, Marie Gautier, Franck Camerel, Thierry Guizouarn, Thierry Roisnel, Boris Le Guennic, Mykhaylo Ozerov, Yan Suffren, Guillaume Calvez, Carole Daiguebonne, Olivier Guillou, Franck Artzner, Matteo Mannini* and Kevin Bernot*



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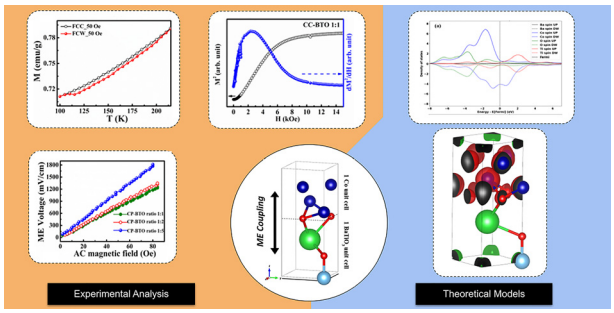
Exchange bias mediated self-biased magnetoelectric coupling in Co–$BaTiO_3$ composites

Ramany Revathy, Anoop Ajaya Kumar Nair, Nandakumar Kalarikkal, Manoj Raama Varma* and Kuzhichalil Peethambharan Surendran*



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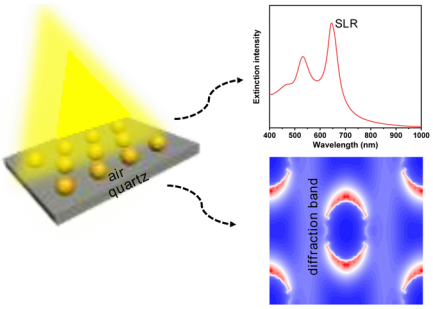

Surface lattice resonance in an asymmetric air environment of 2D Au near-spherical nanoparticle arrays: impact of nanoparticle size and its sensitivity

Dandan Men, Hong Wang,* Qianqian Ding, Yingyi Wu, Ting Wu, Wenshan Qu, Liang Ma, Honghua Zhang, Guihua Jiang and Lifeng Hang*

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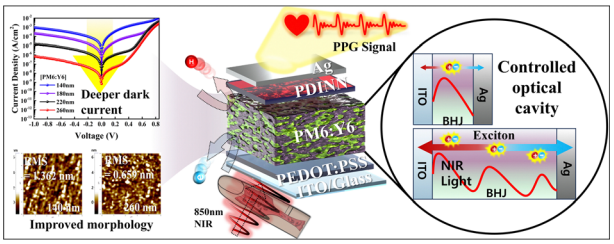

Efficient noise suppression *via* controlling the optical cavity in near-infrared organic photoplethysmography sensors

Zhao Yang, Byung Gi Kim, Woongsik Jang and Dong Hwan Wang*

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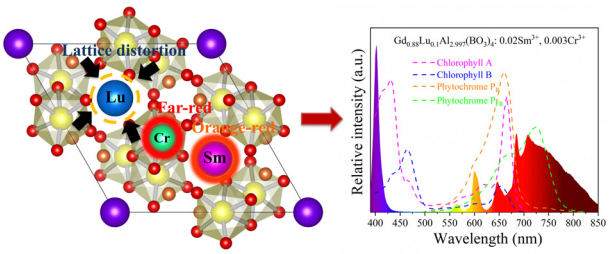

Highly efficient and thermostable far-red phosphor for promoting root growth in plants

Sha Ouyang, Jiamai Yin, Liujuan Su, Maohai Yao, Guichao Wang, Jiayi Yang, Maxim S. Molokeev, Zhi Zhou, Sijin Zhang* and Mao Xia*

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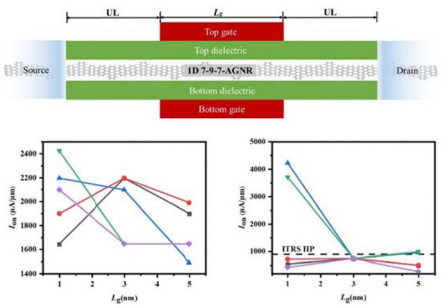

High-performance and low-power sub-5 nm field-effect transistors based on 7-9-7-AGNR

Hang Guo, Xian Zhang,* Shuai Chen, Li Huang,* Yan Dong and Zhi-Xin Guo*

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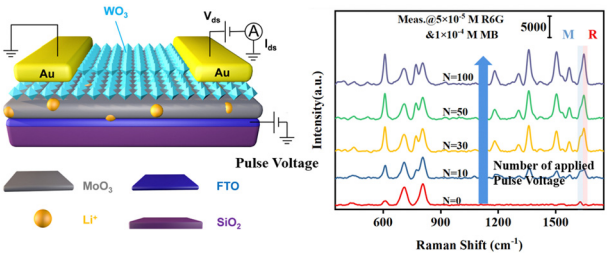
Electrically configurable SERS-FET for the highly sensitive and selective detection of molecules

Yinghao Xu, Qinli Ye, Miaomiao Wu, Yong Xu,* Dong Chen, Shuwen Zeng, Kui Liu, Liqiang Zhu, Muhammad Danang Birowosuto, Tao Jiang and Chenjie Gu*



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Thermogalvanic organohydrogel-based non-contact self-powered electronics for advancing smart agriculture

Xinru Yang, Zhiyi Zhang, Saeed Ahmed Khan, Lei Sun, Zhaosu Wang, Xiaojing Cui, Zhiquan Huang* and Hulin Zhang*

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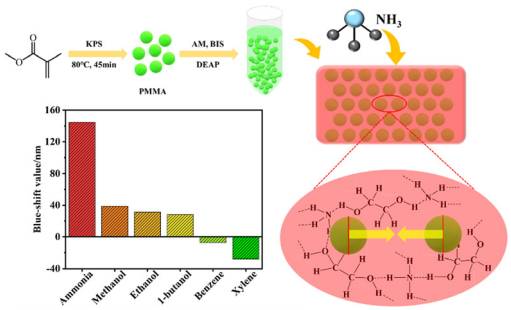
A bio-inspired colorimetric sensor based on ethylene glycol – non-close-packed photonic crystals for visual monitoring of ammonia

Wenxiang Zheng, Niu Zhang, Ghulam Murtaza, Lei Wu,* Zihui Meng and Lili Qiu*



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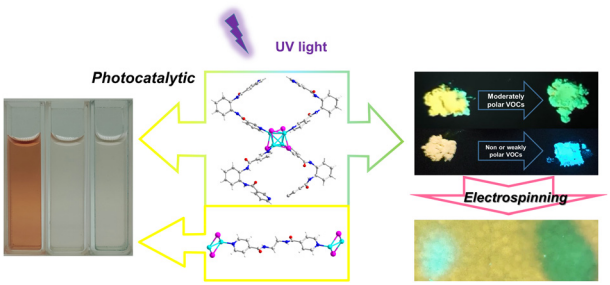
Pyridine-amide-based hetero-copper iodide for the photocatalytic degradation of dyes and aerosol discolouration of VOC gases

Ze-Bin Wang, Yu-Hang Zhang, Yi-Lian Sun, Mei-Heng Lv, Yu Liu, Wen-Ze Li,* Jian Luan* and Xiao-Sa Zhang*



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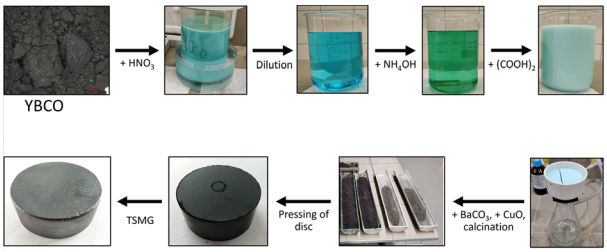
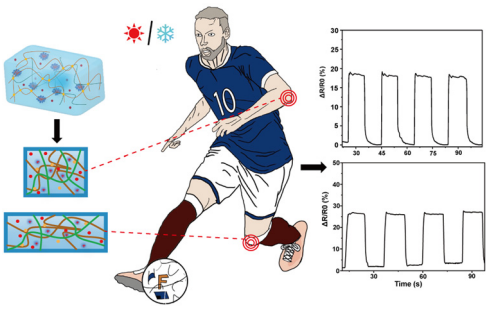


Novel chemical recycling process of REBCO materials showcased on TSMG-processed waste

Jan Sklenka, Ondřej Jankovský, Tomáš Hlásek and Filip Antončík*

3333



PVA/KGM dual network hydrogels doped with carbon nanotube-collagen corona as flexible sensors for human motion monitoring

Xingzhong Cao, Tingxiang He, Jinqi Sui, Yihan Yan, Xiang Liu, Leipeng Liu and Shenghua Lv*

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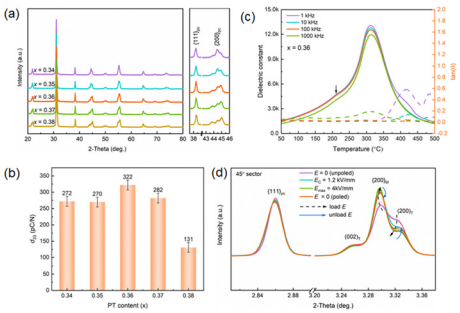

Structural evolution of a high-temperature piezoelectric $Pb(In_{1/2}Nb_{1/2})O_3$–$PbTiO_3$ ceramic under an *in situ* electric field

Na Wang, Yueyun Zhang, Huajie Luo,* Shengdong Sun, Hui Liu* and Jun Chen

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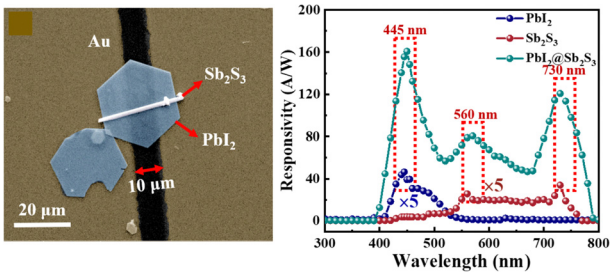

2D/1D PbI_2/Sb_2S_3 van der Waals heterojunction for highly sensitive and broadband photodetectors

Shili Fu, Xiaohui Liu, Jiaxiu Man, Quanhong Ou, Xiaolu Zheng, Zhiyong Liu, Ting Zhu* and Hong-En Wang*

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PAPERS

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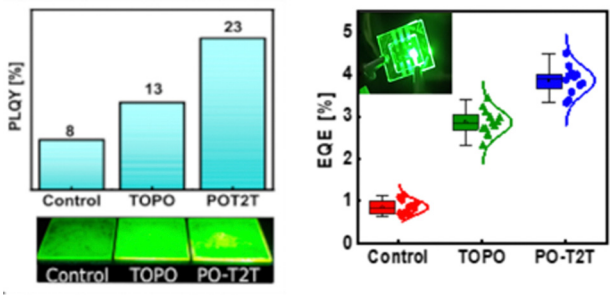
Phosphine oxide based semiconducting small molecule as an additive and an electron transport layer enables efficient and stable perovskite light-emitting devices

Susmita Mukherjee, Ashutosh Panigrahi, Yen-Hung Lin and Ajay Perumal*



CORRECTIONS

3376

Correction: Phosphine oxide based semiconducting small molecule as an additive and an electron transport layer enables efficient and stable perovskite light-emitting devices

Susmita Mukherjee, Ashutosh Panigrahi, Yen-Hung Lin and Ajay Perumal*

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Correction: Orthogonal anthracene and pyrene derivatives for efficient pure deep-blue organic light-emitting diodes

He Jiang, Hanlin Li, Jibiao Jin, Govardhana Babu Bodedla, Peng Tao,* Dongge Ma* and Wai-Yeung Wong*