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Journal of Materials Chemistry C

Materials for optical, magnetic and electronic devices

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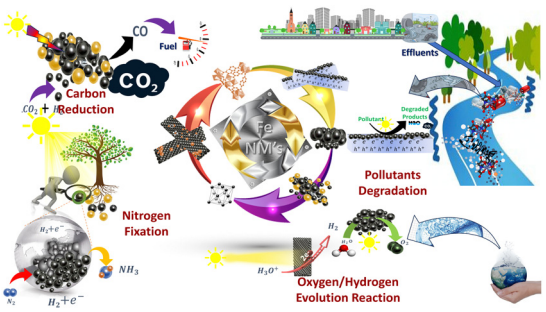
Recent advances and perspectives on iron-based photocatalysts

Nayab Arif, Muhammad Nadeem Zafar, Maria Batool, Muhammad Humayun, Muhammad Ahsan Iqbal, Muhammad Younis, Luyan Li, Kui Li* and Yu-Jia Zeng*



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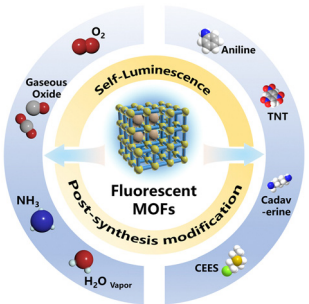
Research progress in fluorescent gas sensors based on MOFs

Ruixiao Dong, Zhengqi Shen, Huizi Li,* Jiangong Cheng* and Yanyan Fu*



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Shuhuan Li, Baoyang Lin, Yongji Xiong, Qian Zhou, Bingbing Gao* and Bingfang He

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The new material science towards sustainable robotics

Wusha Miao and Hedan Bai*

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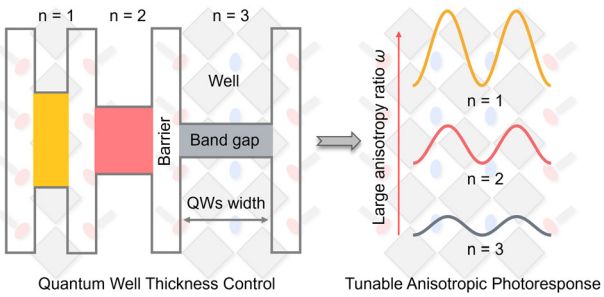
Quantum well thickness control of a hybrid perovskite to achieve a tunable anisotropic photoresponse

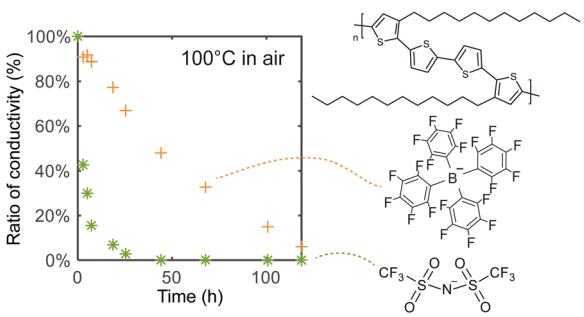
Cheng-Dong Liu, Chang-Chun Fan, Bei-Dou Liang, Wei Wang, Ming-Liang Jin, Chang-Qing Jing, Jing-Meng Zhang and Wen Zhang*



12739

Chemical doping of a semicrystalline polymeric semiconductor realizing high stability and work function

Zhenyun Xiao, Masaki Ishii, Jun Takeya, Katsuhiko Ariga and Yu Yamashita*



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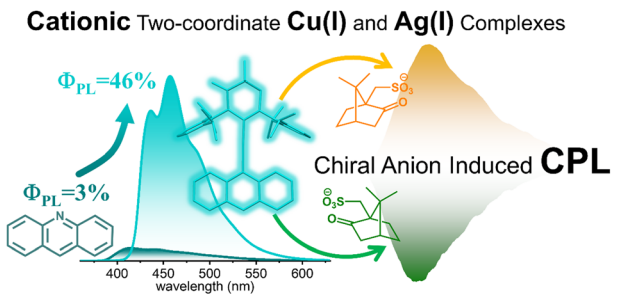
COMMUNICATIONS

12747



Enhancement of the intrinsic fluorescence of acridine and its induced circularly polarized luminescence (CPL) in ionic two-coordinate coinage metal complexes

Ke-Die Li, Shu-Jia Zheng, Shi-Quan Song, Si-Qi Yu, Yue-Yang Feng, Junzi Liu, You-Xuan Zheng and Tian-Yi Li*

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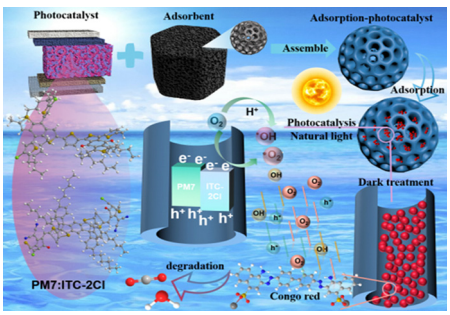

Carbon-based binary organic photocatalysts for rapid dye degradation under weak light: performance and mechanistic study

Ciyuan Huang, Shasha Shi, Songlin Cai, Yue Qiao, Caiyun Wang,* Linji Yang, Yuchen Wang, Hao Cheng,* Tao Yang, Kai Huang, Bingsuo Zou and Tao Liu*

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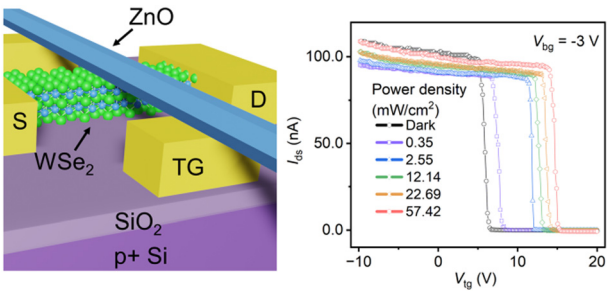

Photovoltage junction memtransistor for optoelectronic in-memory computing

Xueming Li, Sujuan Wang, Yani Yang, Shankun Xu, Xueyan Bao, Lei zhao, Xueting Liu, Zhidong Pan, Yujue Yang,* Shichen Su* and Nengjie Huo*

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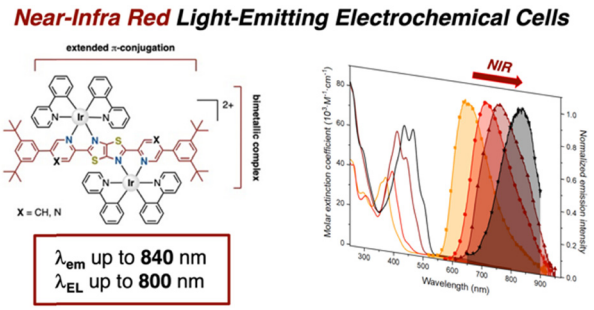

Binuclear iridium(III) complexes for efficient near-infrared light-emitting electrochemical cells with electroluminescence up to 800 nm

Lavinia Ballerini, Wei-Min Zhang, Thomaz Groizard, Christophe Gourlaouen, Federico Polo, Abdelaziz Jouaiti,* Hai-Ching Su* and Matteo Mauro*

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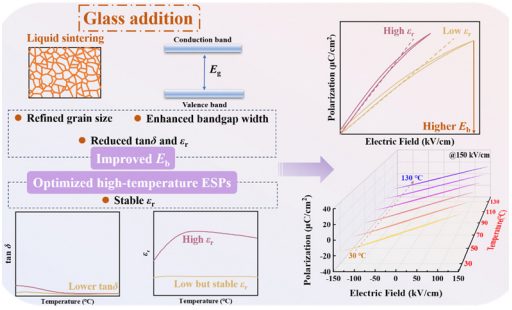
Glass modified $Na_{0.5}Bi_{0.5}TiO_3$-based energy-storage ceramics for high-temperature applications at low/moderate electric fields

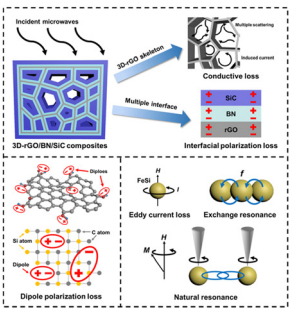
Chunhui Wu, Yongping Pu,* Xiang Lu, Yating Ning, Zhemin Chen, Lei Zhang and Yongqiang Yang



12794

Evaluation analysis of electromagnetic wave absorption for self-assembled 3D graphene skeleton-supported BN/SiC composites

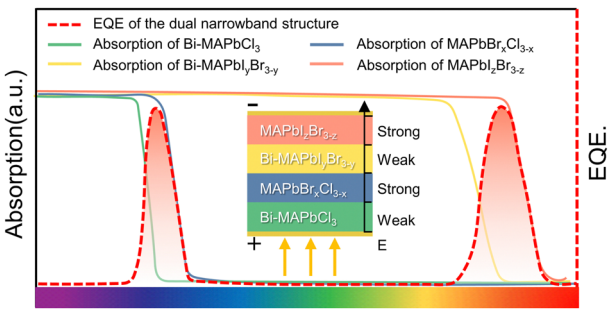
Qiuqi Zhang, Xiao You,* Huiying Ouyang, Yuanhang Yang, Zhenzhong Xing, Haodong Gu, Li Tian, Qingliang Shan, Xiangyu Zhang, Jinshan Yang* and Shaoming Dong*



12806

Dual narrowband photodetectors based on halide perovskite single crystal heterojunctions with solution-processed epitaxial growth

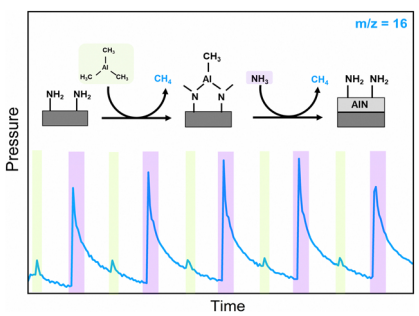
Dan Zhang, Yuzhu Pan, Xin Wang,* Ziyu Wei, Yubing Xu, Damian Chinedu Onwudiwe, Byung Seong Bae, Mehmet Ertuğrul, Jianming Zhou, Xiaobao Xu and Wei Lei*



12818

Surface chemistry in atomic layer deposition of AlN thin films from $Al(CH_3)_3$ and NH_3 studied by mass spectrometry

Pamburayi Mpofu, Houyem Hafdi, Pentti Niiranen, Jonas Lauridsen, Oscar Alm, Tommy Larsson and Henrik Pedersen*



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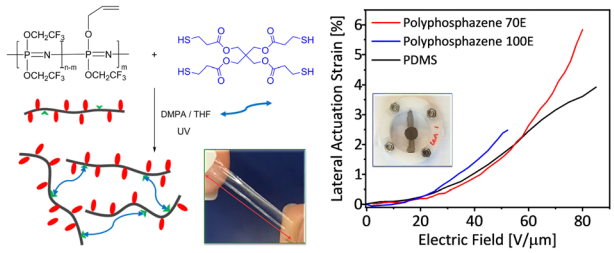
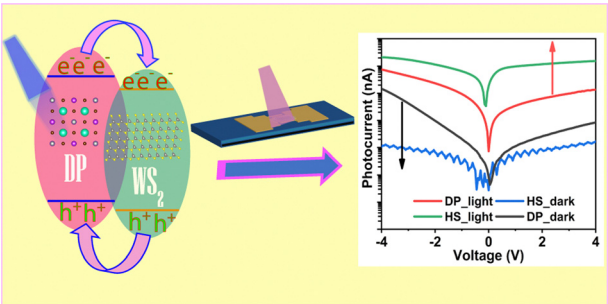


A polyphosphazene elastomer containing 2,2,2-trifluoroethoxy groups as a dielectric in electrically responsive soft actuators

Cansu Zeytun Karaman, Thulasinath Raman Venkatesan, Johannes von Szczepanski, Frank A. Nüesch and Dorina M. Opris*

12835



Facile *in situ* synthesis of double perovskite $Cs_2AgBiBr_6/WS_2$ heterostructure and interfacial charge transfer mediated high-performance ultraviolet photodetection

Ravinder Chahal, Abdul Kaim Mia, Abhilasha Bora and P. K. Giri*

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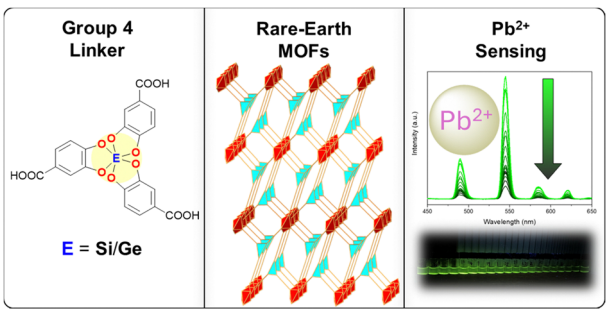
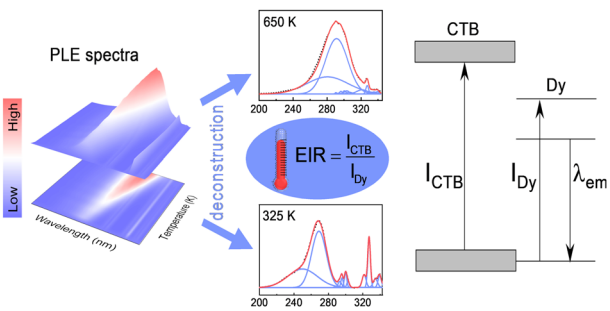


Hexacoordinate germanate metal–organic frameworks for the detection of Pb^{2+} ions in aqueous solution

Shouyi Tian, Peter N. Horton, Simon J. Coles, Andrew J. P. White, Paul D. Lickiss and Robert P. Davies*

12854



Deconstructing excitation transitions in Dy^{3+}-doped $CaWO_4$ to develop a new ratiometric luminescent thermometry for achieving ultra-high sensing sensitivity

Qianrui Liu, Baosheng Cao,* Miao Gao, Lulu Qiu, Yujie Weng, Yangyang He, Xiaoguang Han* and Bin Dong

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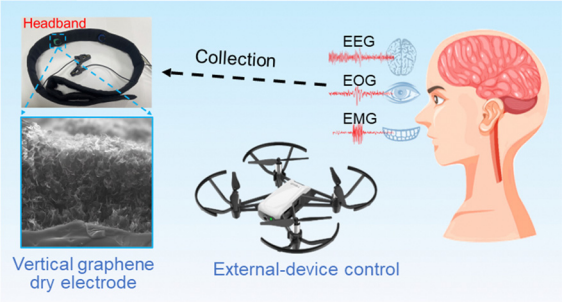
12862

Wearable gold–graphene dry electrode-based headband for effective brain–computer interface applications

Yuhang Zheng, Yongyue Sun,* Hongji Li,* Xiuwei Xuan, Penghai Li and Mingji Li*



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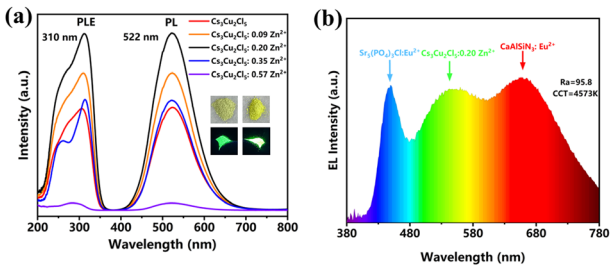
Enhancement of photoluminescence quantum yield in lead-free inorganic copper based halide perovskites *via* zinc doping

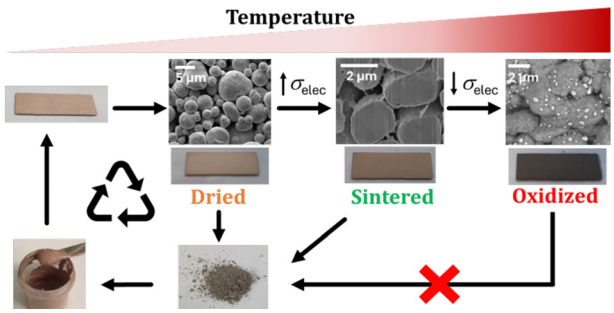
Yuchen Peng, Jing Guo,* Jingrui Guo, Jianghua Wu, Na Zhang, Guoying Zhao, Jingshan Hou, Ganghua Zhang, Yufeng Liu* and Yongzheng Fang*



12882

Low-temperature sintering of Cu@Ag microparticles in air for recyclable printed electronics

David van Impelen, Lola González-García* and Tobias Kraus*



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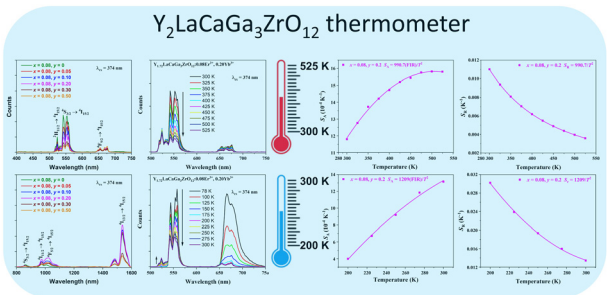
Synthesis, dual mode luminescence and down-conversion based thermometric properties of novel $Y_{2-x-y}LaCaGa_3ZrO_{12}$:$xEr^{3+}$, yYb^{3+} phosphors

Zhurong Mo, Hongli Wen,* Xin Gao, Chonge Ta, Zhongfei Mu,* E. A. Dawi and Deshmukh Abdul Hakeem*



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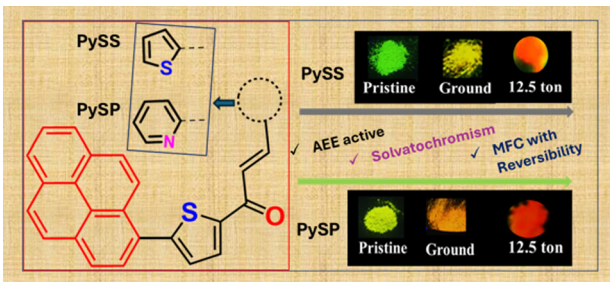

Precise molecular design for a twisted pyrene-thiophene based mechanofluorochromic probe with large Stokes shift and feasibility study towards security ink and re-writable papers

Ram Prasad Bhatta, Sumit, Vishal Kachwal, Vandana Vishwakarma, Angshuman Roy Choudhury and Inamur Rahaman Laskar*

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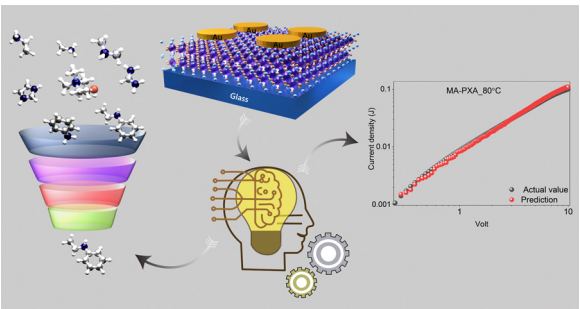

Perovskite single crystal SCLC measurement prediction using a machine learning model

Sarvani Jowhar Khnanam, Harinath Kuruva, Salman Abdul Moiz* and Murali Banavoth*

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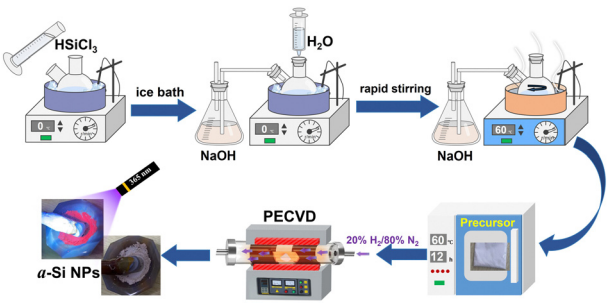

A near-infrared fluorescence enhancement strategy of amorphous silicon nanoparticles for night vision imaging and visualizing latent fingerprints

Qian Zhang, Wanyin Ge,* Yunting Wang, Di Han, Maohao Yang, Xin Xie, Peng He and Honglei Yin

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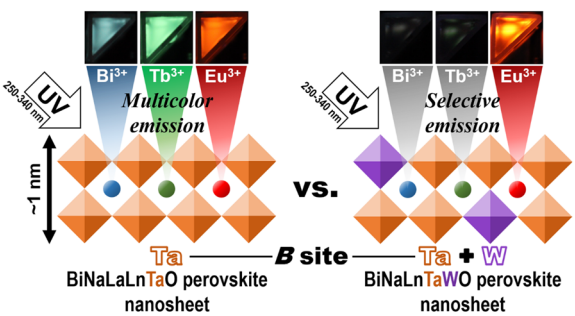

Photoluminescence study of perovskite materials derived from tungsten- and lanthanide-containing aurivillius layered perovskite, $Bi_2Na_{0.63}Ln_{0.37}Ta_{1.75}W_{0.25}O_9$

Keisuke Awaya,* Ayaka Yamamoto, Kazuto Hatakeyama and Shintaro Ida*

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12951

Bismuth drives the morphology and piezoresistivity of lead-free $(TMSO)_3Sn_{3x}Bi_{2(1-x)}I_9$ halide perovskite thin films

Simone Virga, Giuseppe Arrabito, Vittorio Ferrara, Michelangelo Scopelliti, Alessandro Longo, Bruno Pignataro* and Francesco Giannici*

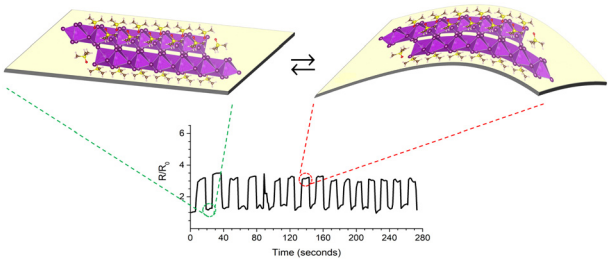

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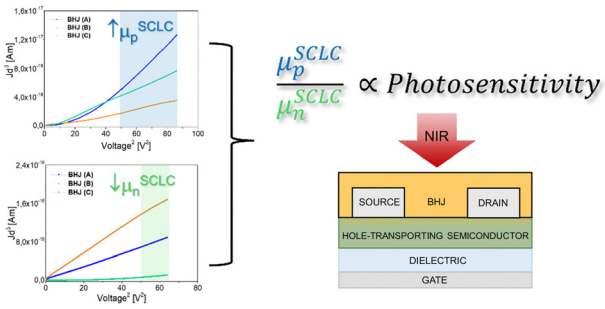
Photo-gain optimization in multilayer organic phototransistors by study of space-charge limited current

Giulia Baroni, Francesco Reginato, Mario Prosa, Marco Brucale, Federico Prescimone, Mirko Seri, Katherine Gallegos-Rosas, Caterina Soldano, Margherita Bolognesi* and Stefano Toffanin*



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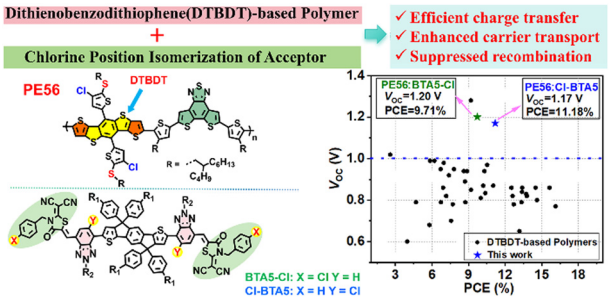
Effect of chlorination and position isomerization of benzotriazole-based acceptors on high-voltage organic solar cells based on dithienobenzodithiophene (DTBDT)-containing polymer donor

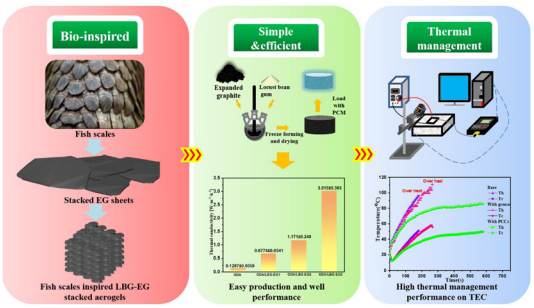
Jinge Zhu, Mengzhen Du, Ailing Tang,* Yuhan Meng, Chao Li,* Qing Guo* and Erjun Zhou*



12980

Fish scales inspired phase change composites with hierarchical porosity and enhanced thermal conductivity for passive thermal management

Yanqing Wang, Weidong Liang,* Hanxue Sun, Jiyan Li, Zhaoqi Zhu and An Li*



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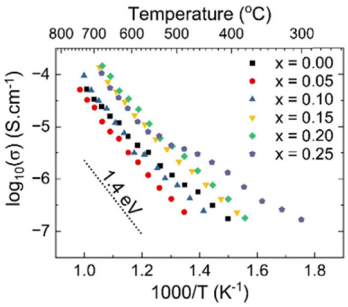


Structural, dielectric, and conduction behaviour of A-site deficient $Sr_xNa_{1-2x}NbO_3$ ceramics

Thomas E. Hooper* and Derek C. Sinclair

13002

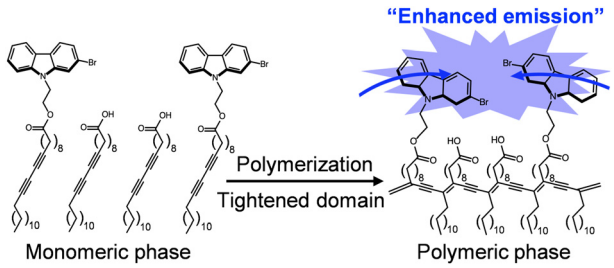
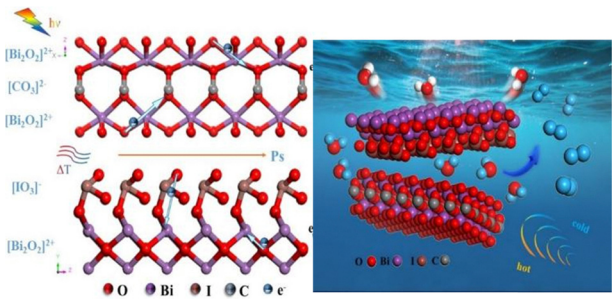


Photo-polymerization-induced tightened domain enhancing the room-temperature phosphorescence emission

Cheng Yuan, Sang Yup Lee, Jingyuan Huang, Yong Ho Cho, Yujie Liu, Dong June Ahn* and Chunzhi Cui*

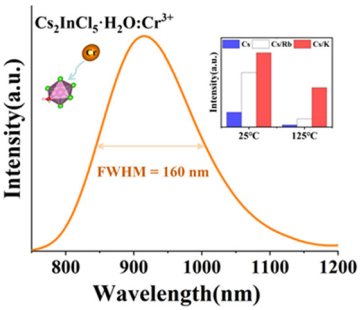
13010



Construction of 2D/2D $BiOIO_3/Bi_2O_2CO_3$ composite structures with face-to-face contacts can facilitate carrier transfer *via* a built-in electric field and a polar field for pyro–photo-electric catalysis

Yunfei Wu, Mengnan Ruan, Chengyi Wang, Tingting Zhong and Zhifeng Liu*

13021



Enhancing the thermal stability of the NIR emitting $A_2InCl_5{\cdot}H_2O:Cr^{3+}$ phosphor based on A site regulation

Lingkang Yu, Yining Wang, Xiaole Xing, Zheng Xu and Mengmeng Shang*

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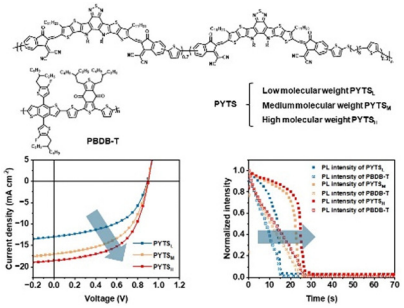
In situ **monitoring drying process to disclose the correlation between the molecular weights of a polymer acceptor with a flexible spacer and the performance of all-polymer solar cells**

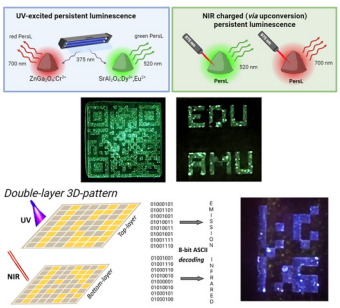
Jiale Xiang, Sven Englund, Zewdneh Genene, Guanzhao Wen, Yanfeng Liu,* Nannan Yao, Rui Zhang, Leiqiang Qin, Lei Wang, Ergang Wang,* Wei Zhang* and Fengling Zhang*



13040

Unleashing the glow: upconverting nanoparticles recharge persistent luminescent materials – applications in 3D-printing and optical coding

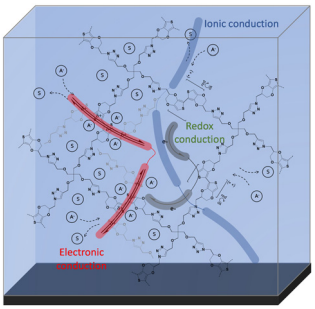
Adrian Drozdowski, Dirk Poelman, Marcin Runowski, Hanoch Hemmerich, Fernando Rivera-López and Tomasz Grzyb*



13050

Polymerization of EDOT functionalized star-shaped pentaerythritol and study of the structure and conducting properties of polymers

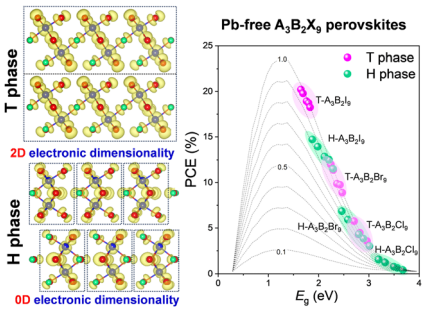
Rana Abdel Samad, Frédéric Gohier, Barbara Daffos, Pierre-Louis Taberna and Charles Cougnon*



13061

Unravelling phase-dependent electronic dimensionality and optoelectronic properties in lead-free layered $A_3B_2X_9$ perovskites for photovoltaic applications

Qingyuan Luo, Dabao Xie, Yiqian Tian, Congmin Zhang, Dan Cao, Xiaoshuang Chen, Pei Liang and Haibo Shu*



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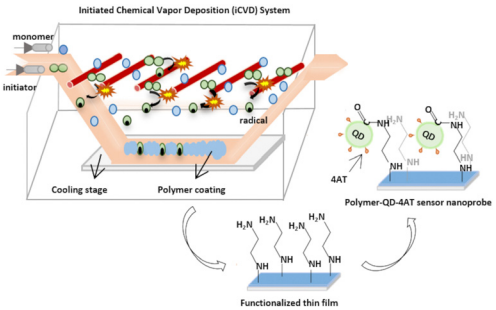
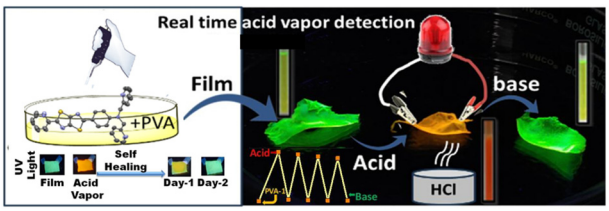
13073



Reusable polymer-based fluorescent sensor nanoprobe for selective detection of Cd^{2+} ions in real water sources

Merve Karabıyık* and Özgenç Ebil

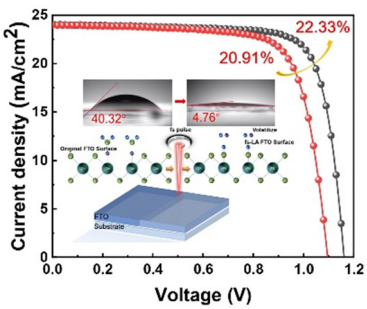
13088



An asymmetric thiazolo-thiazole derivative as a solvatochromic, reversible and self-color recovery acid–base molecular switch

Sanchita Shah, Neeraj Naithani, Subash Chandra Sahoo, Prakash P. Neelakandan* and Nidhi Tyagi*

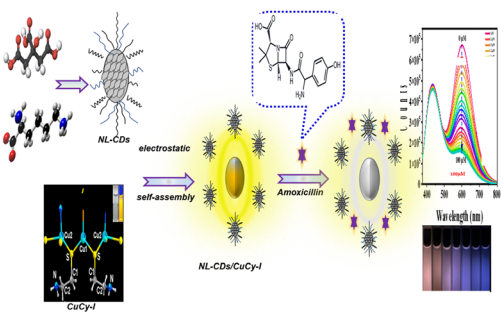
13096



Femtosecond laser annealing of fluorine-doped tin oxide films towards high-performance perovskite photovoltaics

Weihan Li, Nianyao Chai, Xiangyu Chen, Zhongle Zeng, Yunfan Yue, Fengyi Zhao and Xuewen Wang*

13104



Exploration of novel dual-emission NL-CDs/Cu–Cy–I ratio fluorescent probe for the sensitive detection of amoxicillin

Bowen Shi, Zirui Yin, Xiaodan Tang,* Hongmei Yu,* Shuanping Cui and Wei Chen*

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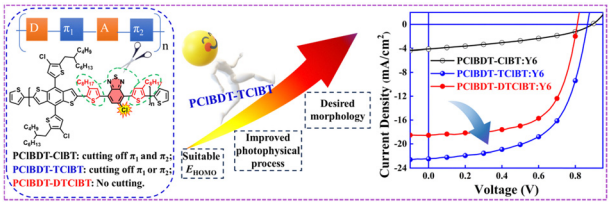
PAPERS

13115

The optimized energy level, morphology and photophysical procedure boosted the photovoltaic performance of monochlorinated benzothiadiazole-based polymer donors

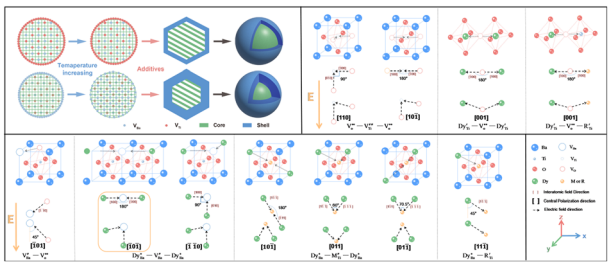
Junfeng Tong,* Wuyan Liu, Lili An, Shilei Qu, Aoxiang Zhang, Pengzhi Guo, Zezhou Liang, Lihe Yan, Chunyan Yang, Jianfeng Li and Yangjun Xia*



13131

Exceptional dielectric performance of MLCCs enabled by defect-engineered $BaTiO_3$

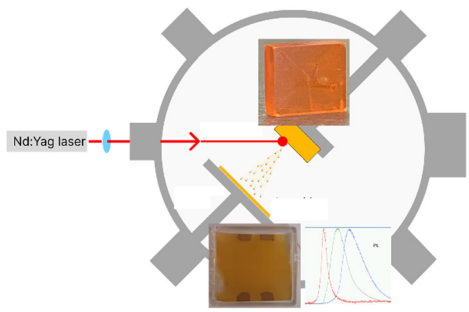
Pengfei Wang, Xiong Huang, Saiwei Luan, Jianwei Zhao, Bo Li, Jun Yang, Zhenxiao Fu,* Xiuhua Cao, Lei Zhang,* Shuhui Yu and Rong Sun



13141

High quality $MAPbBr_3$ films *via* pulsed laser deposition of single-crystalline targets

E. Ghavidel, A. Di Carlo, A. Ishteev, J. Barichello, K. Konstantinova, D. Saranin, V. Campanari, F. Martelli, B. Paci, A. Generosi, M. Guaragno, A. Cricenti, D. Becerrill, M. Luce, F. Matteocci and A. Di Trolio*



CORRECTIONS

13149

Correction: Perovskite single crystal SCLC measurement prediction using a machine learning model

Sarvani Jowhar Khanam, Harinath Kuruva, Salman Abdul Moiz* and Murali Banavoth*

CORRECTIONS

13150

Correction: Photo-gain optimization in multilayer organic phototransistors by study of space-charge limited current

Giulia Baroni, Francesco Reginato, Mario Prosa, Marco Brucale, Federico Prescimone, Mirko Seri, Katherine Gallegos-Rosas, Caterina Soldano, Margherita Bolognesi* and Stefano Toffanin*

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