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Materials for optical, magnetic and electronic devices

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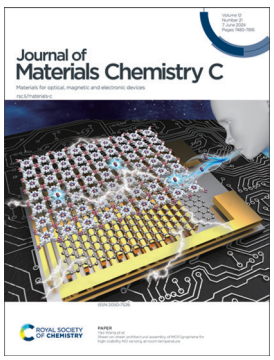
IN THIS ISSUE

ISSN 2050–7526 CODEN JMCCCX 12(21) 7485–7816 (2024)



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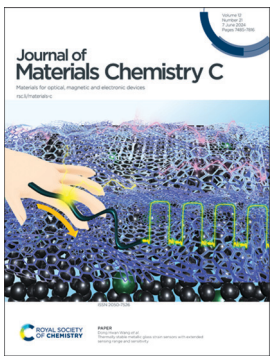


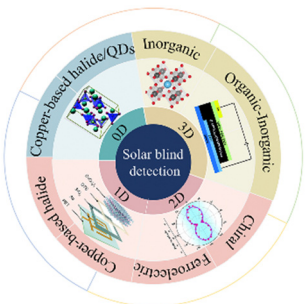
Inside cover
See Dong Hwan Wang *et al.*, pp. 7532–7541. Image reproduced by permission of Dong Hwan Wang from *J. Mater. Chem. C*, 2024, **12**, 7532.

REVIEW

7497

Recent progress on solar blind deep ultraviolet photodetectors based on metal halide perovskites

Wanfang Yang, Yutian Lei and Zhiwen Jin*

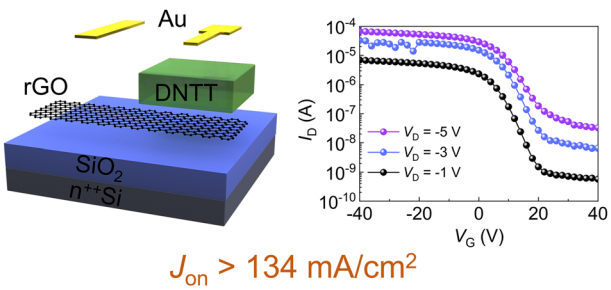


COMMUNICATION

7513

A design strategy for high-performance vertical organic field-effect transistors based on reduced graphene oxide electrodes

Kun Qiao,* Tingfeng Dai and Tao Zou



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PAPERS

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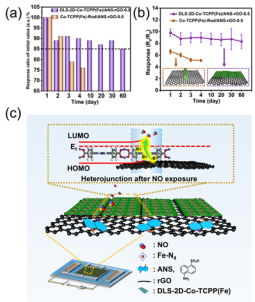
Sheet-on-sheet architectural assembly of MOF/graphene for high-stability NO sensing at room temperature

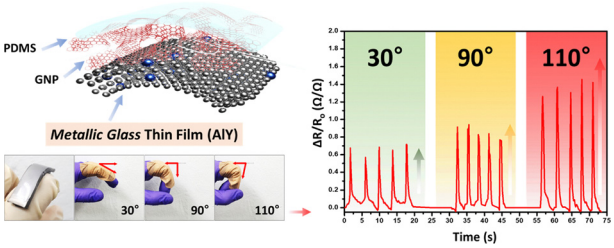
Yanwei Chang, Jingxing Zhang, Ruofei Lu, Weiran Li, Yuchen Feng, Yixun Gao, Haihong Yang, Fengnan Wang, Hao Li, Yi-Kuen Lee, Patrick J. French, Ahmad M. Umar Siddiqui, Yao Wang* and Guofu Zhou



7532

Thermally stable metallic glass strain sensors with extended sensing range and sensitivity

Jae Sang Cho, Woongsik Jang, Keum Hwan Park and Dong Hwan Wang*



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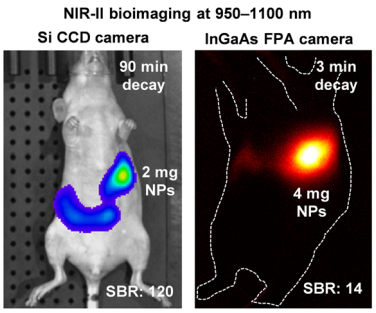
Deep-tissue NIR-II bioimaging performance of Si-based and InGaAs-based imaging devices using short-wave infrared persistent luminescence

Yafei Chen,* Simona Spinelli and Zhengwei Pan*



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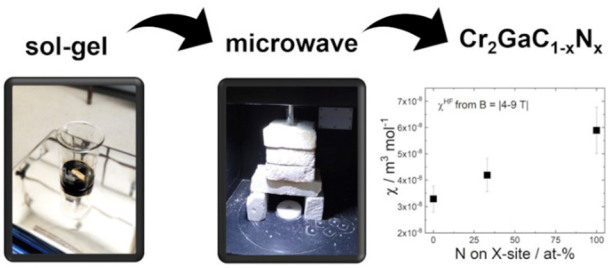
Between carbide and nitride MAX phases: sol–gel assisted synthesis and characterization of the carbonitride phase $Cr_2GaC_{1-x}N_x$

Niels Kubitza, Isabel Huck, Hanna Pazniak, Curran Kalha, David Koch, Bo Zhao, Pardeep K. Thakur, Tien-Lin Lee, Aysha A. Riaz, Wolfgang Donner, Hongbin Zhang, Benjamin Moss, Ulf Wiedwald, Anna Regoutz and Christina S. Birkel*



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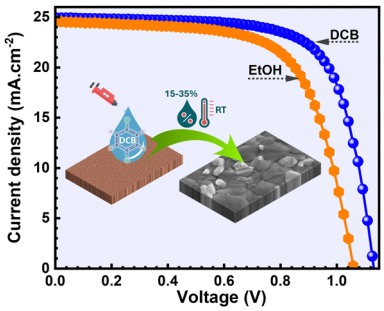
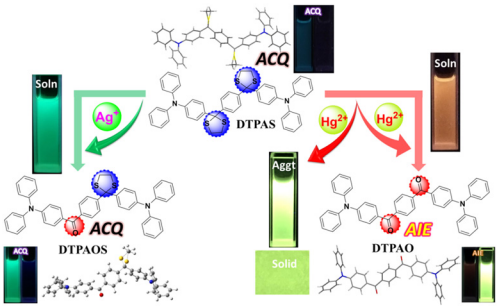


Anti-solvent engineering enables efficient ambient-processed halide perovskite solar cells

Ivy M. Asuo,* Arezo Mahdavi Varposhti, Enrique D. Gomez and Nutifafa Y. Doumon*

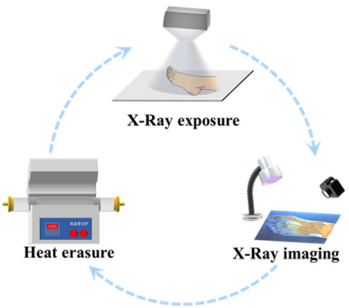
7572



A novel fluorescent chemosensor enables dual-channel selective "turn-on" detection of Hg^{2+} and Ag^{+} *via* distinct thiophilic effects, essential mechanisms, and excellent sensing performance for mercury(II) in aggregated states

Zhijun Ruan,* Xinyi Dong, Tao Long,* Shanshan Liu, Yanmei Chen and Junqi Lin*

7580



Valence regulation in europium-doped fluoride phosphor for high-resolution X-ray time-lapse imaging

Jian Zhang, Xin Li, Wei Zeng, Daiyuan Liu, Lan Lu, Heng Dai, Junheng Yuan, Jianxiong Shao, Zhichao Liu, Jie Yu* and Xuhui Xu

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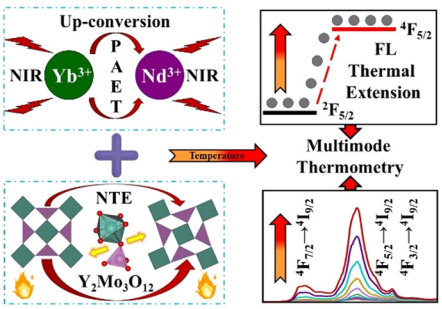

Thermally enhanced NIR up-conversion fluorescence multimode thermometry based on $Y_2Mo_3O_{12}$:Nd^{3+},Yb^{3+}

Yexuan Zhang, Minkun Jin, Wang Chen, Ziyang Wu, Zexun Li and Chongfeng Guo*

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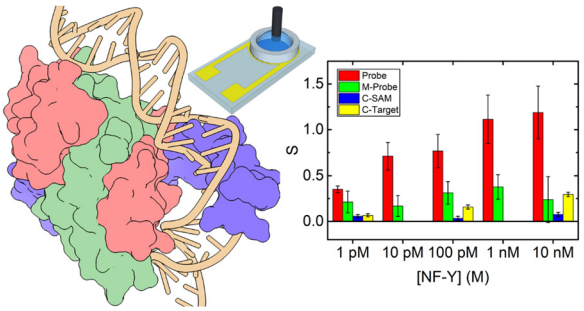
Investigation of transcription factor–DNA binding with electrolyte-gated organic transistors

Matteo Sensi,* Andrea Ricci, Giovanna Rigillo, Alessandro Paradisi, Marcello Berto, Nerina Gnesutta, Carol Imbriano, Fabio Biscarini and Carlo Augusto Bortolotti



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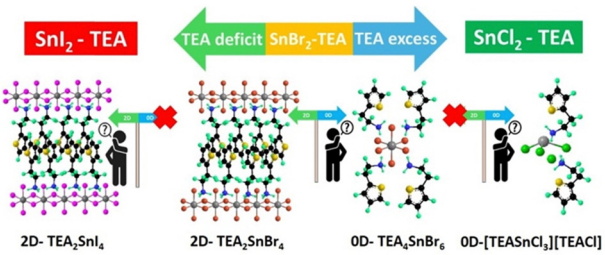
Chemically driven dimensionality modulation of hybrid tin(II) halide perovskite microcrystals

Raúl I. Sánchez-Alarcón, Omar E. Solís, María Cristina Momblona-Rincon, Teresa S. Ripolles,* Juan P. Martínez-Pastor, Rafael Abargues* and Pablo P. Boix*



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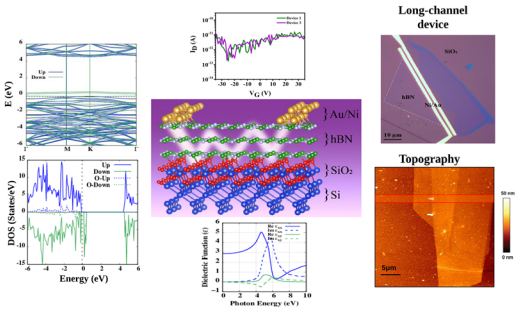
Current-in-plane tunneling measurement of oxygen-functionalized few-layer boron nitride lateral barriers

Ziba Torkashvand, Kavoos Mirabbaszadeh,* Farzaneh Shayeganfar,* Pawan Kumar Srivastava, Changgu Lee and Mohadese Beigtan



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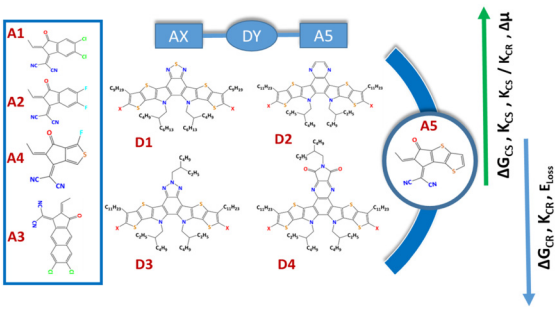
Unveiling symmetry: a comparative analysis of asymmetric and symmetric non-fullerene acceptors in organic solar cells

Rudranarayan Khatua and Anirban Mondal*



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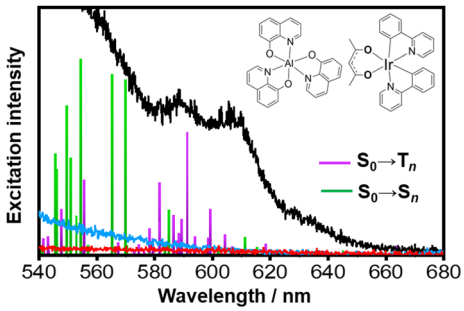

Crystalline confinement leads to broadening of absorption spectra through activated spin-forbidden transitions in Alq_3-$Irppy_2acac$ engineered crystals

Yufang Nie, Heming Zhang,* Jiaxuan Wang, Lianbao Ke, Semion K. Saikin,* Hai Bi, Wangqiao Chen and Guofu Zhou*

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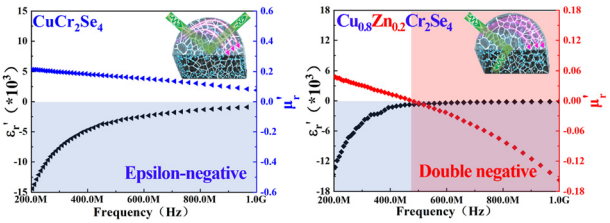

Modified Lossy epsilon-negative $CuCr_2Se_4$ toward single-phase metamaterials with double negative parameters *via* Zn doping

Zechao Xu, Weiyi Lu, Kelan Yan,* Runhua Fan and Ningzhong Bao*

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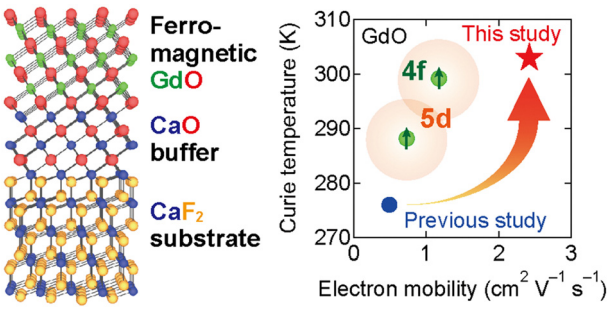

Enhanced Curie temperature near 300 K in highly crystalline GdO epitaxial thin films concomitant with an anomalous Hall effect

Takato Fukasawa, Dai Kutsuzawa, Daichi Oka,* Kenichi Kaminaga, Daichi Saito, Hirokazu Shimizu, Hiroshi Naganuma and Tomoteru Fukumura*

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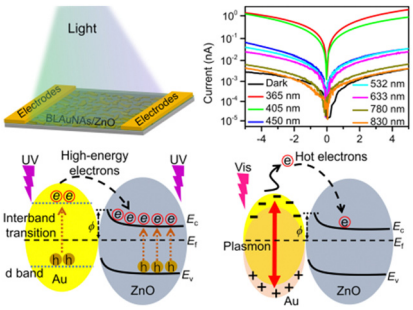

Heterostructures made from bone-like plasmonic Au nanoantennas and ZnO quantum dots for broadband photodetectors

Bingwu Liu, Xi Xie, Yuan Feng, Pu Chen, Dong Li, Huan Cheng, Changjun Min,* Qinglin Zhang* and Jiawen Hu*

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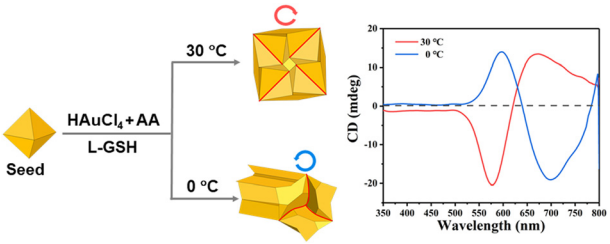
Tuning chiral morphology of gold nanoparticles with reversed chiral signals by adjusting the reaction temperature of the seed-mediated growth process

Qingyuan Liu, Miao Zhang, Chunli Xu* and Baoxin Li*



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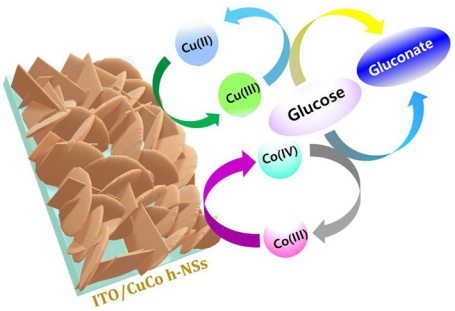
Methionine-assisted electrodeposition of porous copper cobalt bi-metallic hetero-nanostructures on an indium tin oxide electrode: a disposable and stable electrode for non-enzymatic glucose sensing

Perumal Viswanathan, Ji Won Kim, Shanmugam Manivannan and Kyuwon Kim*



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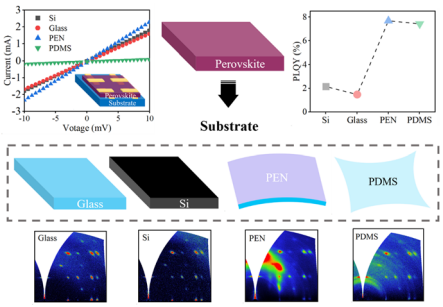
Substrate effects on structural and optoelectronic properties of quasi-2D perovskite films

Chenyu Hu, Zhenmei He, Shuochen Wang, Lixuan Kan, Sanfeng Lei, Xixiang Zhu, Jinpeng Li, Kai Wang and Haomiao Yu*



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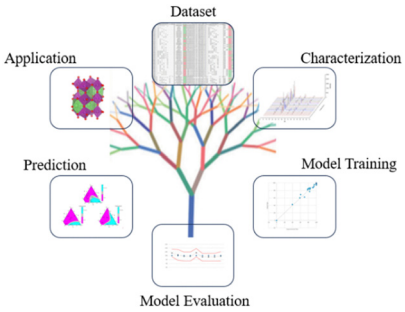
A chemometric approach for the design of lanthanum-based high entropy perovskite oxides

Luca Angelo Betti, Lisa Rita Magnaghi,* Aldo Bosetti, Raffaella Biesuz and Lorenzo Malavasi*



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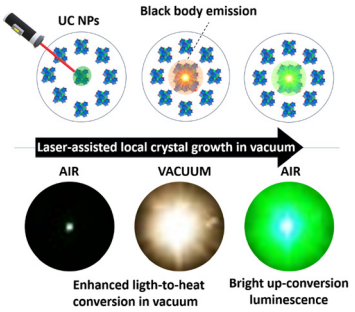

Vacuum-assisted colossal enhancement of up-conversion luminescence of lanthanide-doped nanoparticles upon NIR laser irradiation – a new strategy for phosphor development

Christian Hernández-Álvarez,* Kevin Soler-Carracedo, Przemysław Woźny, Inocencio R. Martín* and Marcin Runowski*

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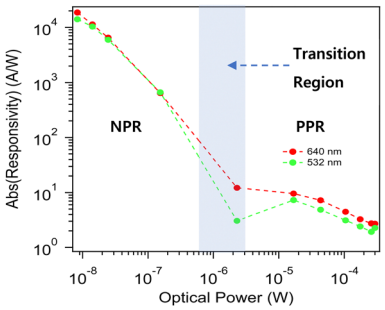

Transition of photoresponsivity in graphene–insulator–silicon photodetectors

Hong-Ki Park and Jaewu Choi*

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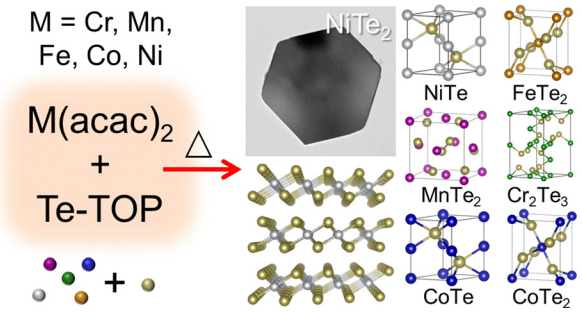

General synthesis of magnetic binary transition metal telluride nanocrystals

Jingxia Wang, Bin Wang, Yifen Wang, Ruixia Yang, Lanfang Wang, Fang Wang, Xiaohong Xu and Yang Liu*

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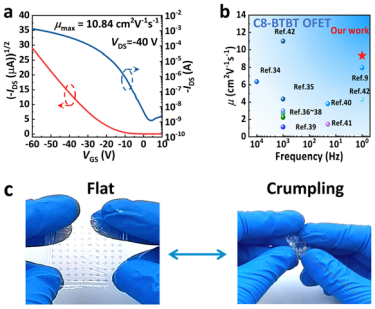

Antisolvent polysulfone dielectric for ultrastable solution-processed high-performance conformal organic transistor array

Mingxin Zhang, Mengqiao Du, Yanhong Tong,* Xue Wang, Jing Sun, Shanlei Guo, Xiaoli Zhao, Qingxin Tang* and Yichun Liu

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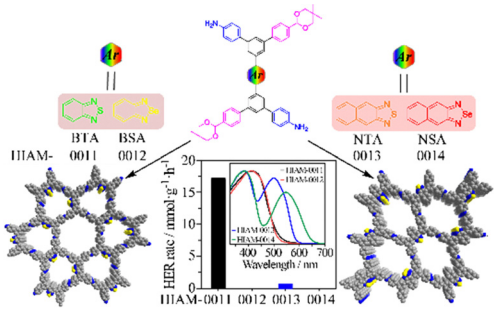
Facile synthesis of benzothiadiazole and its derivative-based covalent organic frameworks using "two-in-one" monomers for photocatalytic hydrogen generation

Jia-Xin Guo, Ze-Yang Wang, Chao-Qin Han, Shuai Sun, Lei Wang,* Gonghao Lu* and Xiao-Yuan Liu*



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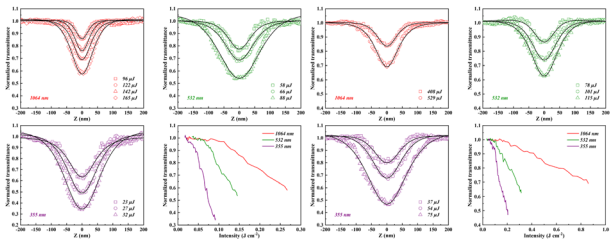
2D Ta_4AlC_3 and Ta_4C_3 nanosheets with excellent ultraviolet optical limiting behavior for laser protection

Binjian Du, Zhenyu Zhao, Zihan Ren, Qianhou Liu and Fang Zhang*



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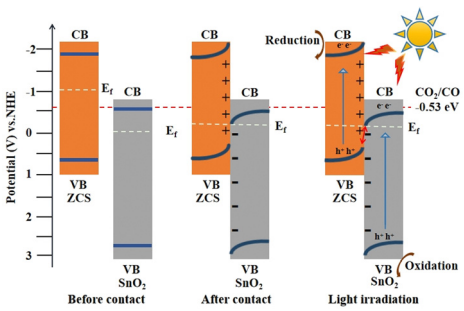
Construction of a $Zn_{0.65}Cd_{0.35}S/SnO_2$ S-scheme heterojunction for efficient photocatalytic CO_2 reduction

Tao Li, Xiong He, Junhao Wu, Guangyu Pan, Dandan Wang, Fan Zhang, Limin Gao,* Haiquan Xie and Kui Li*



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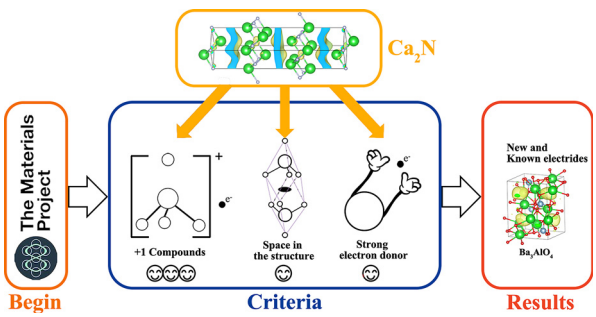
Assessing the design rules of electrides

Zhikun Yao, Yanzhen Zhao, Wenjun Zhang and Lee A. Burton*



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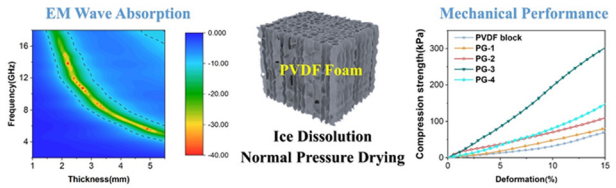

Enhanced electromagnetic wave absorption and mechanical performances of graphite nanosheet/PVDF foams *via* ice dissolution and normal pressure drying

Xiaogang Su,* Yu Zhang, Jun Wang and Yaqing Liu*

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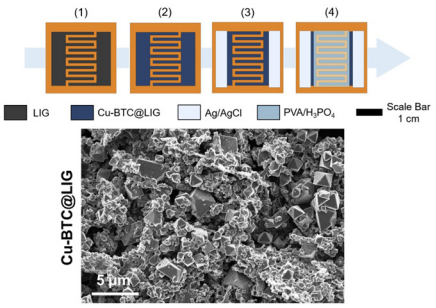

Simple fabrication of laser-induced graphene functionalized with a copper-based metal–organic framework and its application in solid-state supercapacitors

Samuel Morales-Cámara, Victor Toral, Iñigo J. Vitorica-Yrezabal, Almudena Rivadeneyra, Luis Pereira, Sara Rojas and Francisco J. Romero*

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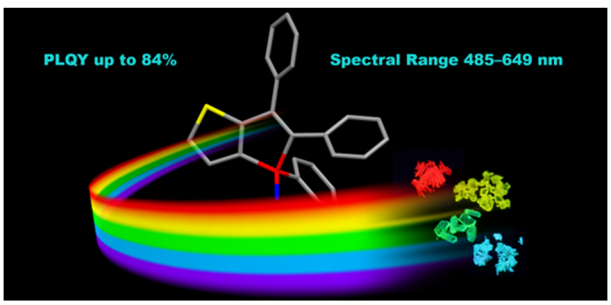

Thieno[3,2-*b*]phosphole-based AIEgens: facile preparation and dual modulation of solid-state luminescence

Nils König, Justin Mahnke, Yokari Godínez-Loyola, Hendrik Weiske, Julian Appel, Peter Lönnecke, Cristian A. Strassert* and Evamarie Hey-Hawkins*

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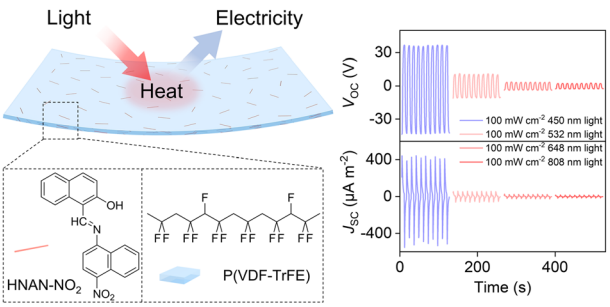

Schiff base organic molecular crystals/ferroelectric polymer composite for photo-pyroelectric conversion

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