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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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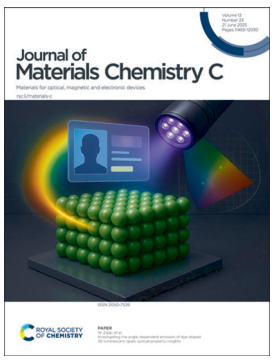

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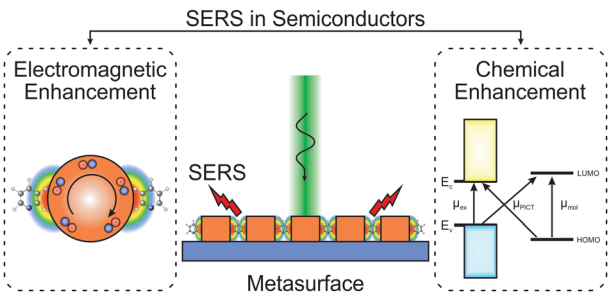
REVIEWS

11499

Molecular spectroscopies with semiconductor metasurfaces: towards dual optical/chemical SERS

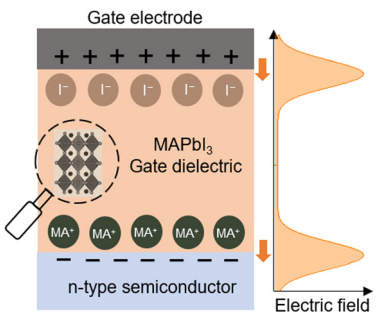
Alexander Berestennikov, Haiyang Hu and Andreas Tittl*



11515

Metal halide perovskites as gate dielectrics for transistor applications: progress and perspectives

Benjamin Nketia-Yawson,* Vivian Nketia-Yawson, Ji Hyeon Lee and Jea Woong Jo*



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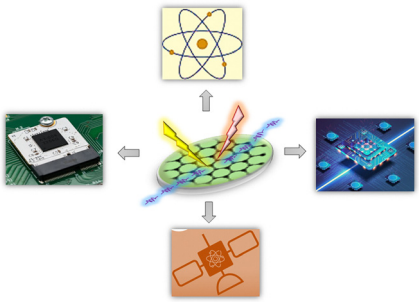
REVIEWS

11521

Advances in integrated quantum photonics for quantum sensing and communication

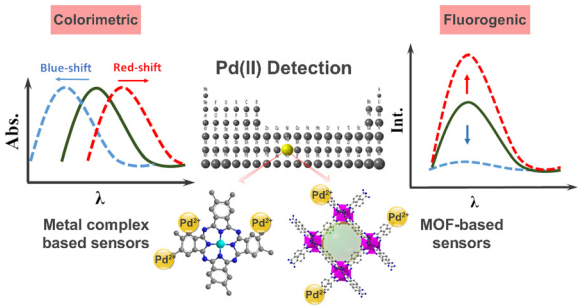
Taposhree Dutta, Atefe Safinezhad, Mariia Zhuldybina, Ignacio Llamas Garro, Jesús Salvador Velázquez-González, Anuj K. Sharma, Bora Ung and Satyendra K. Mishra*



11562

Design principles for metal–organic receptors targeting optical recognition of Pd(II) in environmental matrices

Sudhanshu Naithani, Pramod Kumar, Ritesh Dubey, Franck Thetiot,* Samar Layek,* Tapas Goswami* and Sushil Kumar*



COMMUNICATIONS

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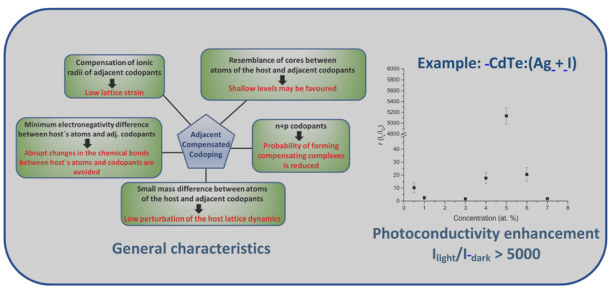
Adjacent compensated codoping (alloying) of semiconductor films and its application in CdTe and CdS

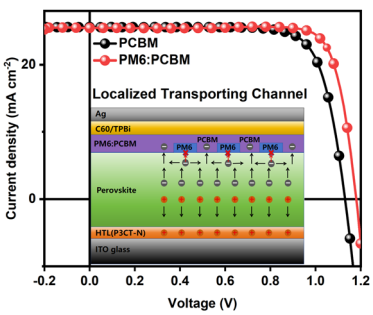
Sergio J. Jiménez-Sandoval,* Abraham I. Calderón-Martínez, Omar Jiménez-Sandoval, Miguel Ángel Gomez-Alvarez, Francisco Rodríguez-Melgarejo, Martín A. Hernández-Landaverde and Francisco J. Flores-Ruiz



11608

Localized transport channels through nanoscale phase separation for efficient inverted perovskite solar cells

Bo Feng, Wen Li, Zhengbo Cui, Yunfei Li, Qiang Weng, Jianhong Xu, Yunjie Mao, Tengyi You, Ting Shu, Wenxiao Zhang, Xiaodong Li* and Junfeng Fang*



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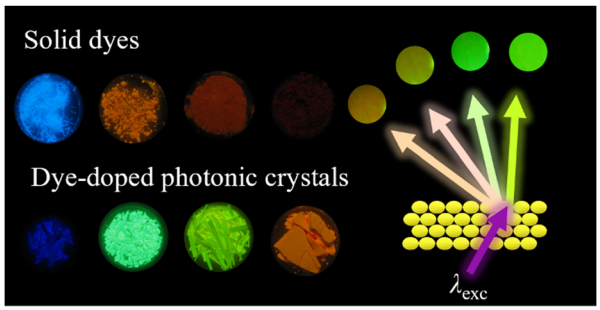
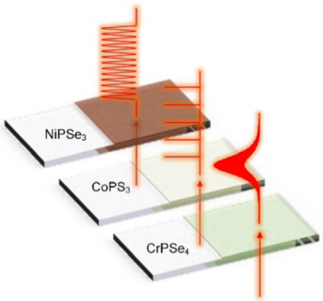


Investigating the angle-dependent emission of dye-doped 3D luminescent opals: optical property insights

Weronika Zając, Maciej Czajkowski,* Bartłomiej Potaniec, Maria Zdończyk and Joanna Cybińska*

11627



Inkjet-printed tunable 2D metal thiophosphate saturable absorbers for pulsed solid-state laser applications

Hongfu Huang, Wenyao Zhang, Shunxiang Liu, Zian Cai and Qiao Wen*

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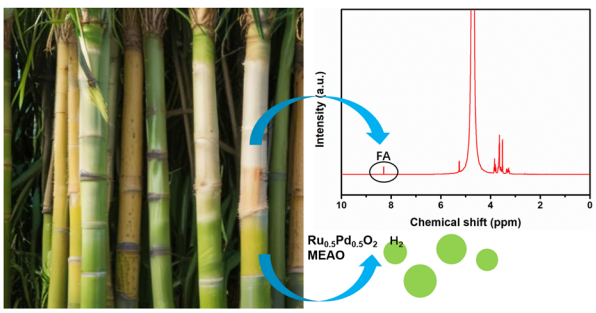
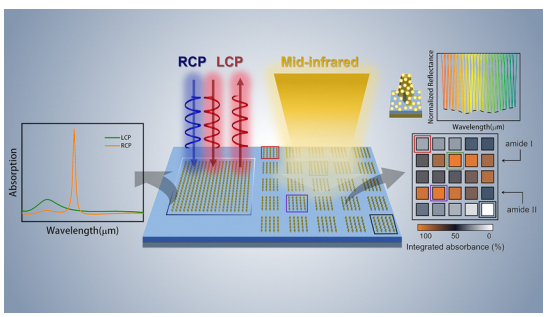


Ruthenium-based medium-entropy alloy oxide for hydrogen evolution linked to biomass sucrose upcycling

Gen Liu, Jingjing Yang, Wangxi Fan, Shuang Dong* and Zhou Yang*

11644



Mid-infrared bifunctional high-*Q* plasmonic metasurfaces with strong intrinsic chirality and imaging-based biosensing

Han-Lei Xu, Zi-Ming Meng,* Yuan-Hao Liu, Jin-Yue Su, Ze-Zhou Fang and Jin-Yun Zhou

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PAPERS

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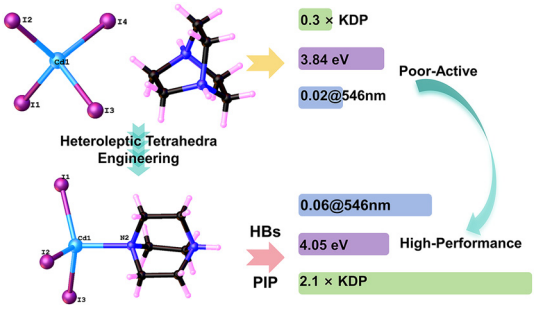
From poor-active to high performance *via* heteroleptic tetrahedra engineering: rational design of non-π-conjugated hybrids for phase-matchable ultraviolet nonlinear optics

Ming-Chang Wang, Mo-Fan Zhuo, Zhi Lin, Jia-Jia Li, Miao-Bing Xu, Yun-Xia Hu, Jia-Min Lian, Ke-Zhao Du* and Jin Chen*



11661

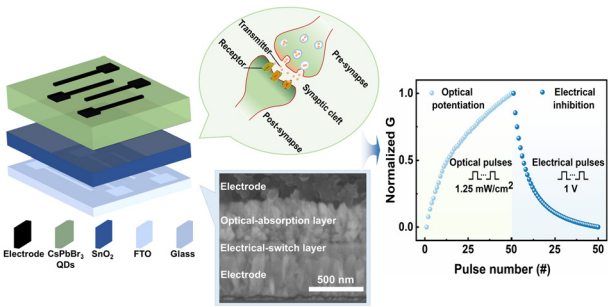
Photo-switching in multi-stimuli-responsive low *Z′*-high *Z′* co-crystal polymorphs

Ishtiyaq Ahmad, Siriyara Jagannatha Prathapa and Aijaz A. Dar*

11671

Mimicking excitatory and inhibitory synaptic behaviors with optical-absorption and electrical-switch heterostructures

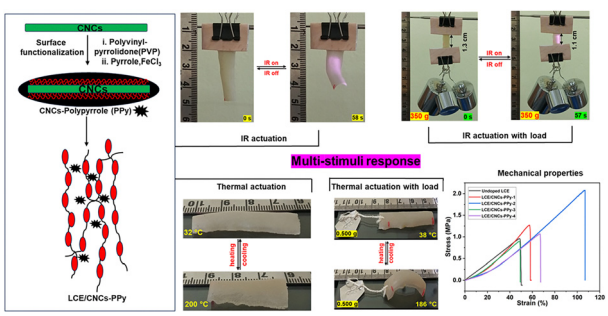
Chen Zhu, Tenglong Guo, Hanyu Zhang, Jiyuan Jiang, Zhengjian Lin, Xian Wei,* Lei Wang, Xiaoyan Liu, Xing'ao Li,* Xuegong Yu* and Wen Huang*



11684

Polypyrrole-decorated cellulose nanocrystal fillers in liquid crystal elastomers for multi-stimuli response

N. Santhiya and S. Umadevi*



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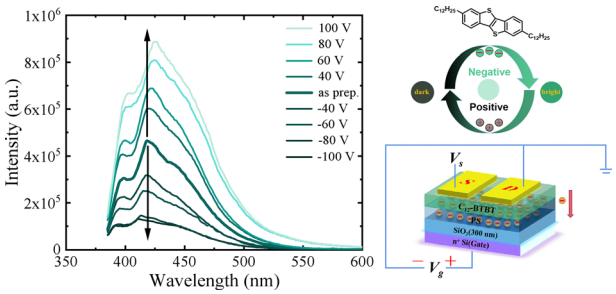
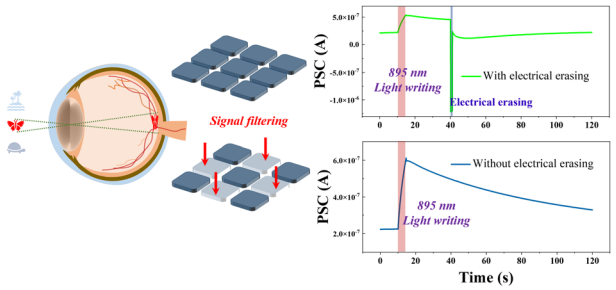


Space charge-induced electrofluorochromic behavior for C12-BTBT-based thin-film devices

Yuanwei Zhu,* Yihang Jiang, Fenghua Cao, Pengju Wang, Junxin Ke, Jie Liu, Yongjie Nie, Guochang Li, Yanhui Wei, Guanghao Lu* and Shengtao Li*

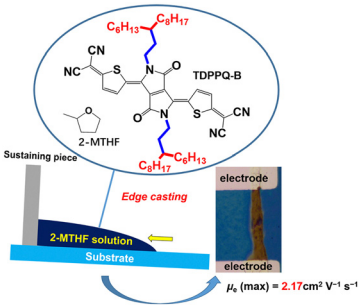
11707



Multifunctional organic artificial optoelectronic synapses for neuromorphic computing and a weak-light-sensitive visual system

Peixian Lei, Zeyu He, Luye Cao, Ming Zhang, Caijun Zheng, Hui Lin, Xiaoyang Du* and Silu Tao*

11718



High-mobility and nonhalogenated-solvent-processable n-type organic semiconductors enabled by alkyl-side-chain engineering

Sihong Pan, Zhen Ji, Zhikang Zhang, Junwen Yang, Jiahao Yang, Zhongmin Zhou,* Liyao Liu, Chao Wang* and Chong-an Di

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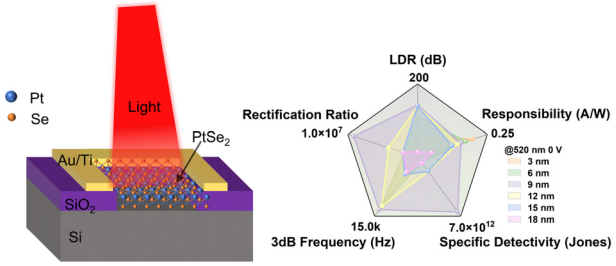

$PtSe_2$ thickness engineering towards fast response, large linear dynamic range, and broadband $PtSe_2$/Si heterojunction photodetectors

Ji Zeng, Changyong Lan,* Yiyang Wei, Shuren Zhou, Chuanfu Huang, Mingyu Xu, Yi Yin and Chun Li

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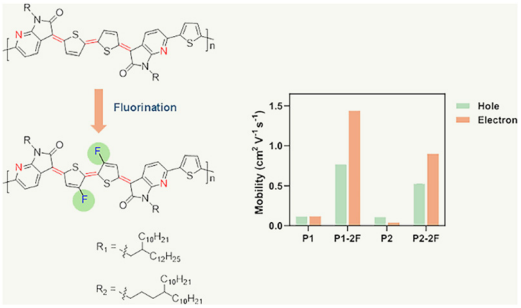
Enhancement of ambipolar charge transport for quinoidal bithiophene-diazaisoindigo-based donor–acceptor copolymers *via* fluorine substitution strategies

Yunchao Zhang, Zhihui Chen, Weifeng Zhang,* Jiadi Chen, Tianhao Zhang, Hao Luo, Youjia Li, Lei Yang, Liping Wang* and Gui Yu*



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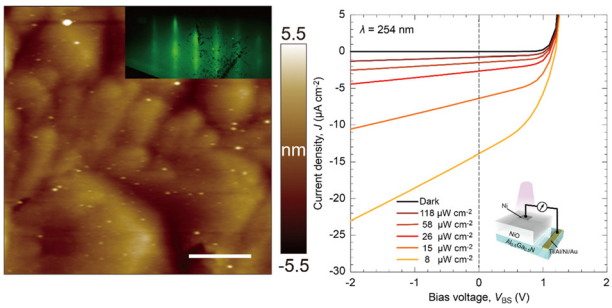
Epitaxial NiO/$Al_{0.5}Ga_{0.5}N$ heterostructures for high-performance solar-blind ultraviolet self-powered photodetectors

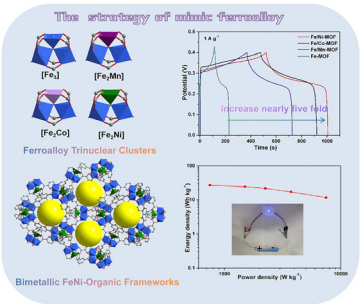
Shen Zhang, Qian Yang,* Yuhao Yin, Wentian Zhang, Yi Cheng, Yanda Ji, Hao Yang, Long Zhang, Weiqiang Zhou, Shun Li, Jianming Zhang, Federico Rosei and Yuqiao Zhang*



11756

Developing bimetallic FeM–organic frameworks based on ferroalloy trinuclear clusters for high-performance supercapacitors

Bo Yan, Dan Wang, Wenjuan Ji* and Yunlong Fu*



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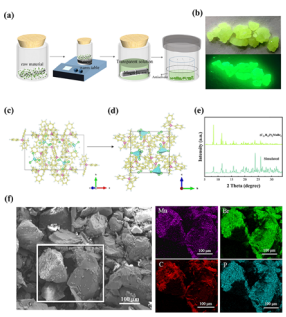
High resolution X-ray imaging *via* near unity emission organic–inorganic manganese bromide scintillator films using a suction filtration method

Mengyue Wu, Jun'an Lai,* Yayun Pu, Zixian Wang, Faguang Kuang, Yongqiang Zhou, Kang An, Sijun Cao, Baofei Sun, Zhengzheng Liu, Juan Du, Heng Luo, Peng He* and Xiaosheng Tang*



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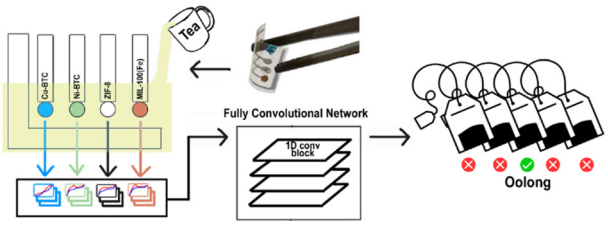

Metal–organic frameworks at the tip of the e-tongue: machine learning-driven disposable electrochemical sensors

Ivan Zlobin, Artem Sinelnikov, Nikita Toroptsev, Konstantin Titov, Evgenia Antoshkina, Igor Nikovskiy, Valentin Novikov and Yulia Nelyubina*

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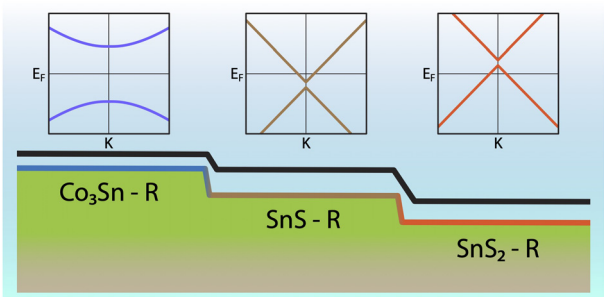

Proximity effects in the graphene–$Co_3Sn_2S_2$ interface

Jiaxin Zhang, Beate Paulus, Yuriy Dedkov* and Elena Voloshina*

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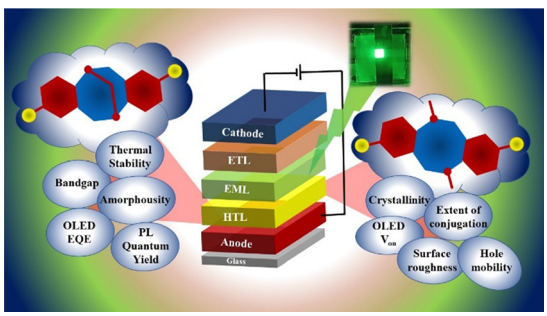

π-Functionalized 1,5-diazocines with diverse intramolecular connectivities to modulate photophysical and electroluminescence properties

Anjitha Sebastian, Simi Achankunju, Swetha Nair, Kavya Rajeev, Anju Vakakuzhiyil Gopinathan, Vijay Kumar Maka, Sooraj Kunnikuruvan,* Narayanan Unni K. N.,* Keshaba Nanda Parida and Ishita Neogi*

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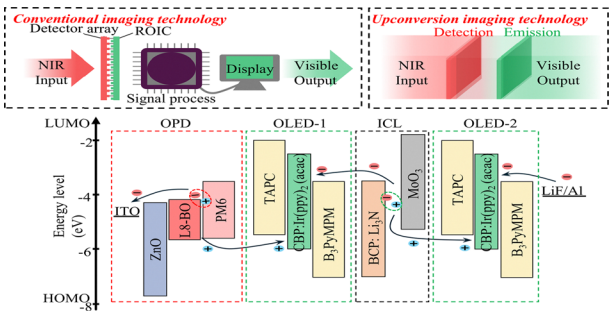

Achieving over 30% photon-to-photon efficiency with tandem OLED structures in organic upconversion devices

Xingwei Han, Jiayue Han, Meiyu He, Chao Han, Lei Guo, He Yu, Jun Gou and Jun Wang*

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PAPERS

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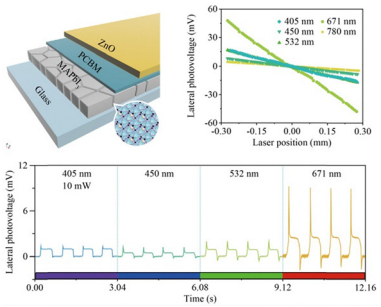
An electron-dominated lateral photovoltaic effect in ZnO-based perovskite heterojunctions and its performance tunability by pyroelectric effect

Haozhe Zhao, Siyang Guo, Zengkun Pu, Heqing Wen, Juan Wang, Jihong Liu,* Shufang Wang and Shuang Qiao*



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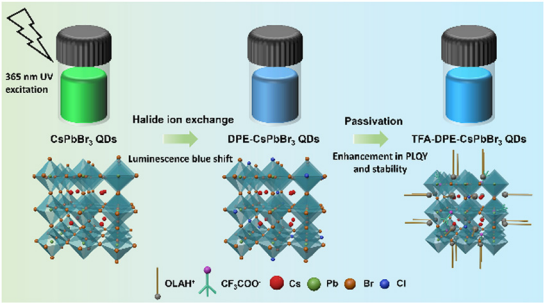
Two-step modification of high-performance inorganic perovskite quantum dots for blue light emission

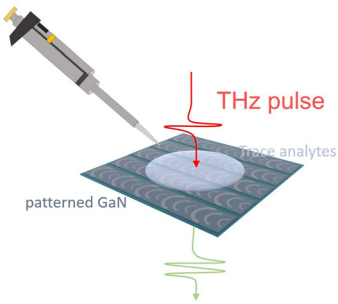
Bufeng Liang, Tianhao Xia, Muhammad Usman, Dao Chen, Dejia Hu, Danyang Xiao, Zeqiong Li, Chunxiao Wu, Chenxu Cao, Hengshuo Liang and Yan Li*



11841

An advanced terahertz gallium nitride metasensor for enhanced molecular absorption spectrum analysis of analytes

Qing Liu, Tigang Ning, Jing Li, Zhouyi Hu, Lanju Liang,* Haiyun Yao, Xin Yan, Yongzhen Chen, Qingyi Wang and Shanghui Guan



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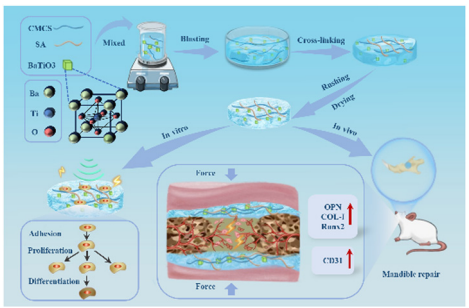
Piezoelectric composites with $BaTiO_3$ NPs as guiding membranes: reconstructing the bioelectric microenvironment for enhanced bone regeneration

Lu Tian, Shanshan Yong, Zhenrui Jiao, Wanhao Zhang, Yiran Xi, Dezhi Huang, Xiaomei Bie, Chen Li, Guoliang Shi, Yantao Zhao,* Lingzhou Zhao* and Gaoyi Wu*



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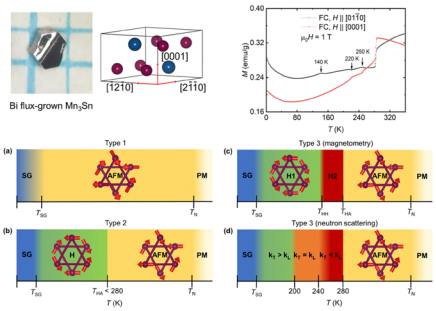
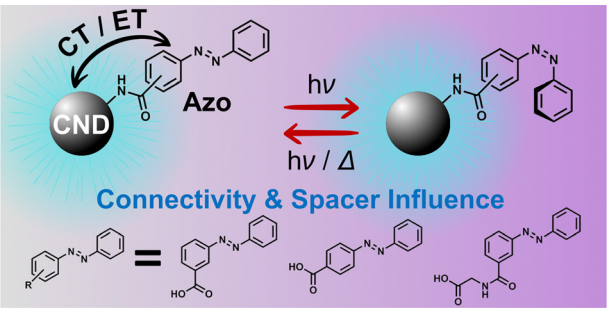


Nominal kagome antiferromagnetic Mn_3Sn: effects of excess Mn and its novel synthesis method

Jaemun Park, Woo-Yong Kim, Beopgil Cho, W. J. Choi, Yong Seung Kwon, Jungpil Seo and Keeseong Park*

11879



Covalent carbon nanodot-azobenzene hybrid photoswitches: the impact of *meta*/*para* connectivity and sp^3 spacer on photophysical properties

Paul P. Debes, Dominic Schatz, Yagmur Aydogan-Sun, Juan Pablo Martínez, Michal Langer, Janis Hessling, Jaime Gallego, Enzo Menna, Bernd M. Smarsly, Monika Schönhoff, Silvio Osella, Josef Wachtveitl, Hermann A. Wegner* and Teresa Gatti*

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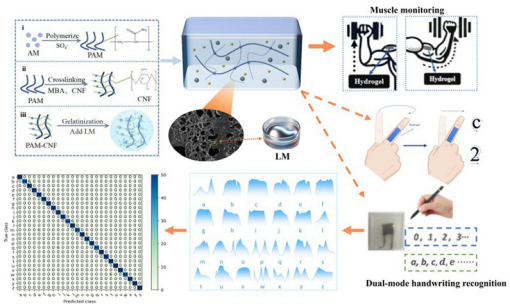
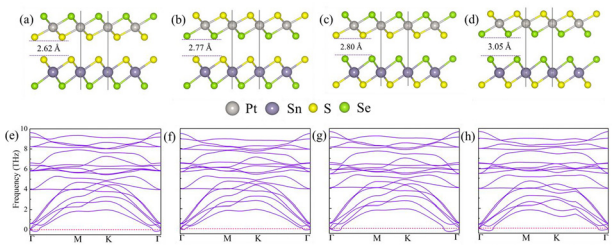


A multifunctional, double network cellulose-acrylamide based hydrogel sensor reinforced using a liquid metal for human motion detection and dual-mode handwriting recognition *via* a transfer learning algorithm

Song Xuqing, Chen Tianchi,* Shao Yufan, Sheng Lianchao and Lu Xiangning*

11904



Theoretical insights into PtSSe–SnSSe heterostructures for renewable energy applications

C. Karthikeyan, G. Tejaswini, Anjana E. Sudheer, M. Vallinayagam, M. Posselt, M. Zschornak and D. Murali*

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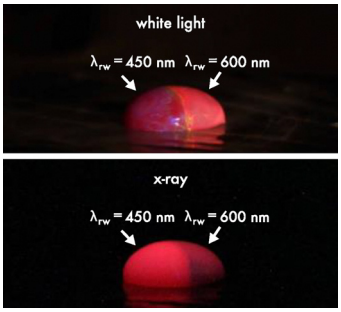
11917

The intersection of field-limited density of states and matter in radioluminescence: nanophotonic control of energy transfer

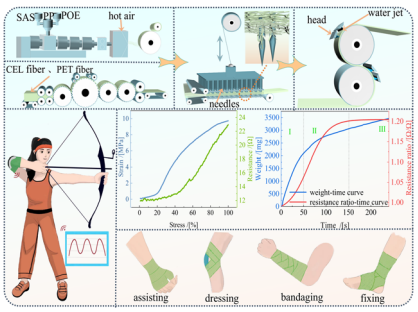
Haley W. Jones, Yuriy Bandera and Stephen H. Foulger*



11925

Design and fabrication of elastic bilayer fabrics with dual functions: superior asymmetric liquid management and real-time wearable monitoring

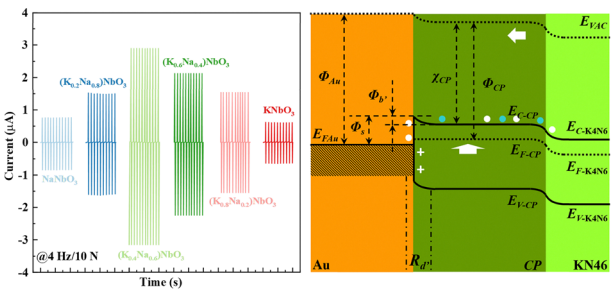
Qian Zhai, Heng Zhang,* Qi Zhen, Peng Lu, Ke Zhao and Ziqiang Yang



11938

Enhanced output performance in paper-based piezoelectric nanogenerators *via* polarization-engineered Schottky barrier contacts

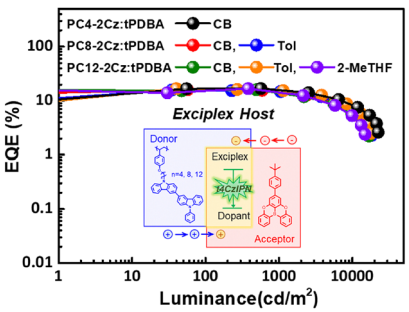
Ping Wang,* Haoyang Xin, Xiuli Wang,* Jingyu Luo, Ruiqi Xu, Zhigang Wang, Zhanhua Wang, Sufeng Zhang, Zixiong Sun* and Jong Hoon Jung



11950

Non-halogenated solvent-processed TADF OLEDs with polymer-based exciplex hosts

Subin Kwon, Ha Yeon Kim, Seunguk Cho, Haeun Kwak, Chae Yeong Park, Yeseo Lee, Shinyoung Kim, Jong Bin Park, Han Young Woo, Chang Seop Hong, Sungnam Park, Min Ju Cho* and Dong Hoon Choi*



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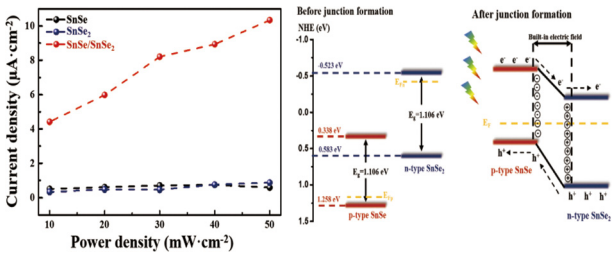
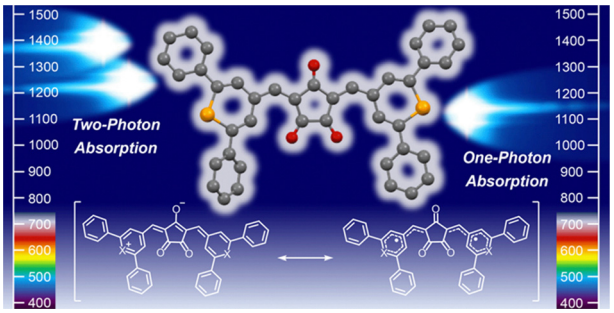
11962



Construction of a SnSe/$SnSe_2$ heterojunction for superior photoelectrochemical photodetectors

Yi Chen,* Jie Huang, Peng Hu,* Jie Sun, Qi Li, Zhibin Lei, Zong-huai Liu and Xuexia He*

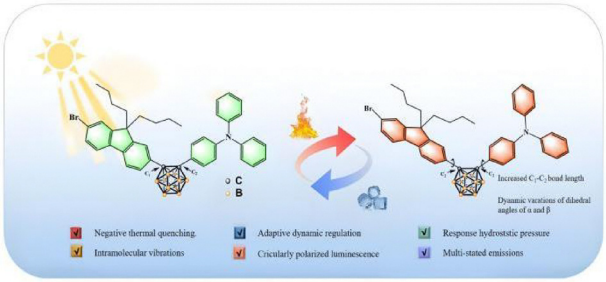
11970



Croconaine dyes with intermediate diradical character exhibiting intense one- and two-photon absorption in the short-wavelength infrared region

Taishi Oka, Takeshi Maeda,* Daisuke Sakamaki, Hideki Fujiwara,* Naoya Suzuki, Shintaro Kodama, Shigeyuki Yagi, Luca Mauri and Kenji Kamada*

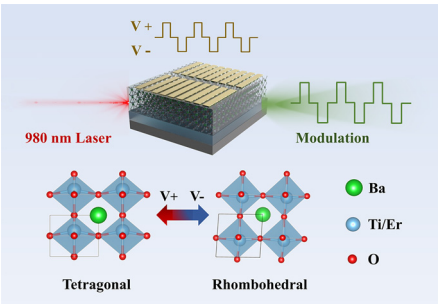
11979



Emergence of circularly polarized luminescence from achiral *o*-carborane-based molecules through molecular vibrations coupled with intramolecular charge transfer in solid states

Junfeng Li,* Limin Zhang, Sijia Zhao, Yingjie Li, Tao Wang, Min Gao, Yuhang Deng and Shunan Shi

11989



Bidirectional luminescence modulation of BTO:Yb/Er ferroelectric films based on phase transition

Yu Qin, Yuping Jia,* Rui Sun, Entao Zhang, Hang Zang, Yulei Chang, Yitong Che, Mingrui Liu, Minchuan Liang, Xiaojuan Sun* and Dabing Li

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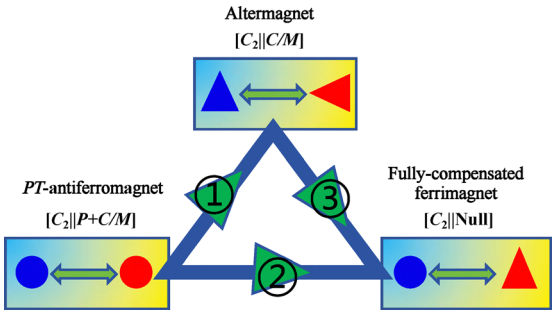
PAPERS

11997

Symmetry-breaking induced transition among net-zero-magnetization magnets

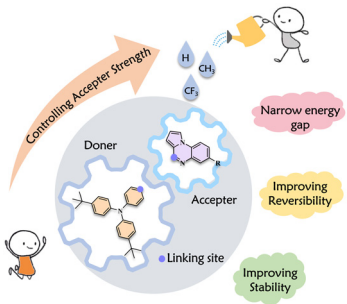
San-Dong Guo,* Xiao-Shu Guo, Dun-Cheng Liang and Guangzhao Wang



12005

Molecular engineering of π-extended pyrrolo[1,2-α]quinoxaline-based D–A materials for electrochromic devices

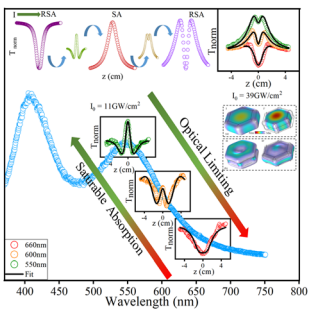
Kexin Zhao, Wenquan Wang, Chengyi Kang, Ziyi Zhang, Haitao Xu, Quan Liu* and Huiping Dai*



12013

Intensity-driven resurgence of reverse saturable absorption and vibrational modes in hexagonal silver nanoplates

Amit Kumar Pradhan, Ayon Jyoti Karmakar, Sayantan Bhattacharya,* Suman Kumar, Marco Gandolfi, Tara Singha, Amiya Priyam and Prasanta Kumar Datta*



CORRECTIONS

12024

Correction: Optoelectronic and NLO potential of styryl-functionalized nitroisoxazoles for OLED technologies

Karen Acosta-Quiroga, Efraín Polo-Cuadrado, M. Judith Percino, Edgard Blanco-Acuña, David Villaman, Enrique Pérez-Gutiérrez, María Eugenia Patiño, Joel B. Alderete, Ricelia Gonzalez, Jorge Saavedra-Olavarría, Edwin G. Pérez, Claudio Olea-Azar,* Mauricio Moncada-Basualto* and Cristian Rojas-Peña*

CORRECTIONS

12025

Correction: Ultrathin high-performance electromagnetic wave absorbers with facilely fabricated hierarchical porous Co/C crabapples

Nannan Wu, Chang Liu, Dongmei Xu, Jiurong Liu,* Wei Liu, Hu Liu, Jiaoxia Zhang, Wei Xie and Zhanhu Guo

12027

Correction: Space charge-induced electrofluorochromic behavior for C12-BTBT-based thin-film devices

Yuanwei Zhu,* Yihang Jiang, Fenghua Cao, Pengju Wang, Junxin Ke, Jie Liu, Yongjie Nie, Guochang Li, Yanhui Wei, Guanghao Lu* and Shengtao Li*

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