Open Access Article. Published on 30 May 2024. Downloaded on 2/13/2026 9:37:07 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

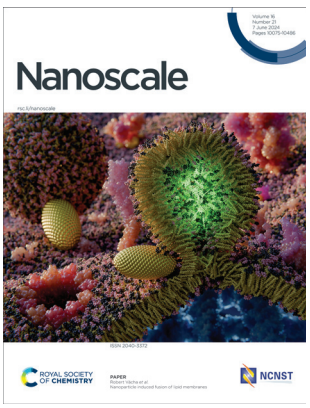
Nanoscale

rsc.li/nanoscale

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

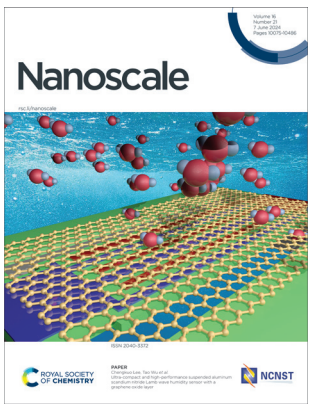
IN THIS ISSUE

ISSN 2040-3372 CODEN NANOHL 16(21) 10075–10486 (2024)



Cover
See Robert Vácha *et al.*, pp. 10221–10229.

Image reproduced by permission of Lukáš Sukeník from *Nanoscale*, 2024, **16**, 10221.



Inside cover
See Chengkuo Lee, Tao Wu *et al.*, pp. 10230–10238.

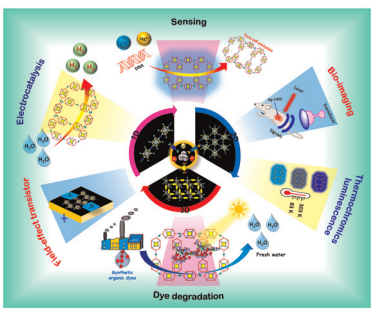
Image reproduced by permission of Zhifang Luo from *Nanoscale*, 2024, **16**, 10230.

REVIEWS

10087

Recent progress in atomically precise silver nanocluster-assembled materials

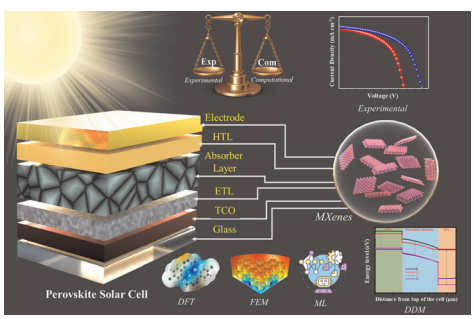
Noohul Alam, Anish Kumar Das, Priyanka Chandrashekar, Priyadarshini Baidya and Sukhendu Mandal*



10108

The dawn of MXene duo: revolutionizing perovskite solar cells with MXenes through computational and experimental methods

Sathish Marimuthu, Arunkumar Prabhakaran Shyma, Shriswaroop Sathyanarayanan, Tamilselvi Gopal, Jaimson T. James, Suruthi Priya Nagalingam, Bharath Gunaseelan, Sivasri Babu, Raja Sellappan* and Andrews Nirmala Grace*



View Article Online

ROYAL SOCIETY OF CHEMISTRY

GOLD OPEN ACCESS

RSC Applied Polymers

The application of polymers, both natural and synthetic

Interdisciplinary and open access

rsc.li/RSCApplPolym

Fundamental questions
Elemental answers

Registered charity number: 207890

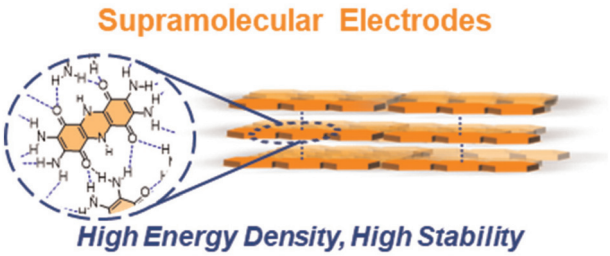
Open Access Article. Published on 30 May 2024. Downloaded on 2/13/2026 9:37:07 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

MINIREVIEWS

10142

Supramolecular design as a route to high-performing organic electrodes

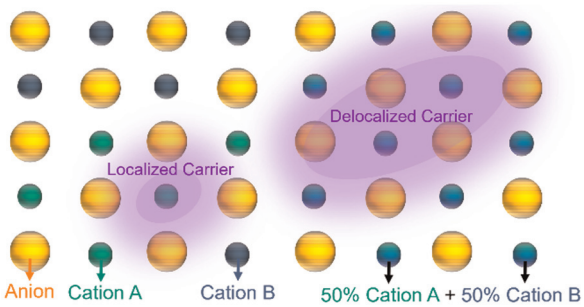
Ani N. Davis, Kausturi Parui, Megan M. Butala and Austin M. Evans*



10155

Tuning the optoelectronic properties of emerging solar absorbers through cation disorder engineering

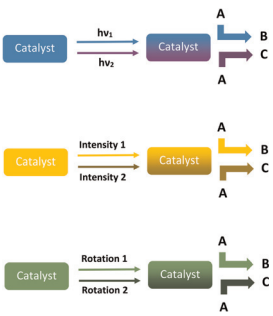
Yi-Teng Huang and Robert L. Z. Hoye*



10168

Light switching for product selectivity control in photocatalysis

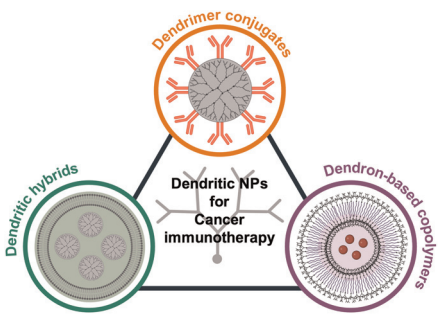
Bayan G. D. Peelikuburage, Wayde N. Martens and Eric R. Waclawik*



10208

Dendritic nanoparticles for immune modulation: a potential next-generation nanocarrier for cancer immunotherapy

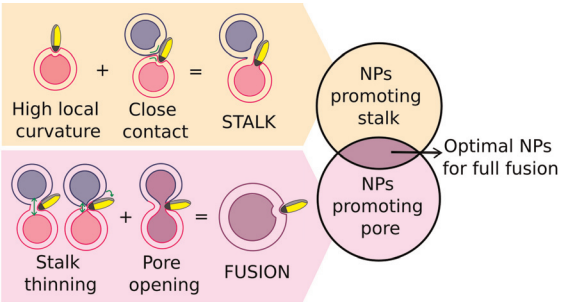
DaWon Kim, Kaila Javius-Jones, Narsimha Mamidi and Seungpyo Hong*



Open Access Article. Published on 30 May 2024. Downloaded on 2/13/2026 9:37:07 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

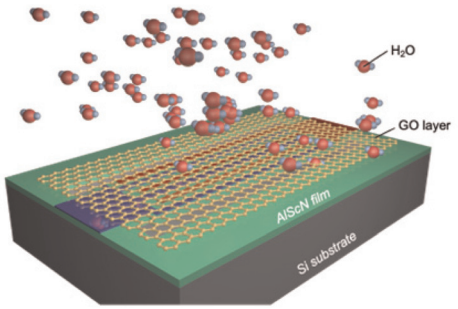
10221



Nanoparticle induced fusion of lipid membranes

Sofía Blasco, Lukáš Sukeník and Robert Vácha*

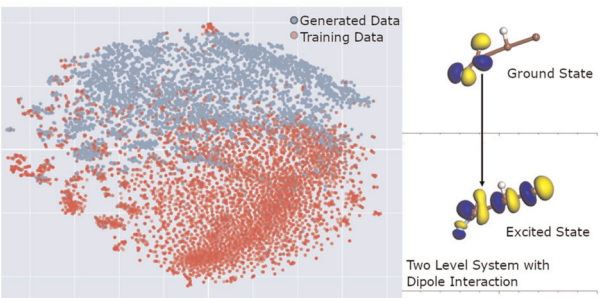
10230



Ultra-compact and high-performance suspended aluminum scandium nitride Lamb wave humidity sensor with a graphene oxide layer

Zhifang Luo, Dongxiao Li, Xianhao Le, Tianyiyi He, Shuai Shao, Qiaoya Lv, Zhaojun Liu, Chengkuo Lee* and Tao Wu*

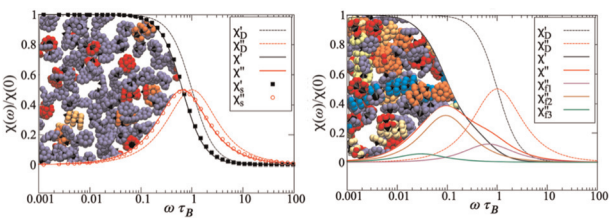
10239



Autonomous generation of single photon emitting materials

Robert Tempke and Terence Musho*

10250



Structure and dynamics in suspensions of magnetic platelets

Margaret Rosenberg,* Sofia S. Kantorovich, Alexey O. Ivanov and Philip J. Camp

This journal is © The Royal Society of Chemistry 2024

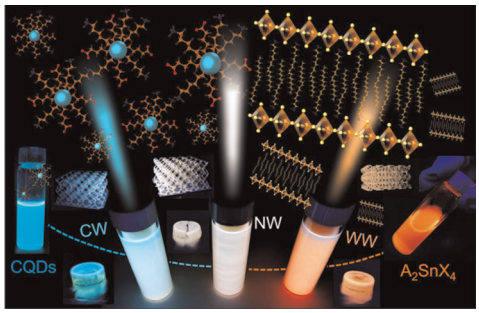
Open Access Article. Published on 30 May 2024. Downloaded on 2/13/2026 9:37:07 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

10262

Enabling white color tunability in complex 3D-printed composites by using lead-free self-trapped exciton 2D perovskite/carbon quantum dot inks

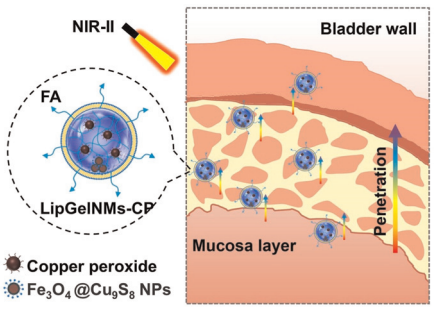
Tawanwit Luangwanta, Silver-Hamil Turren-Cruz,* Sofia Masi, Samrat Das Adhikari, Ileana B. Recalde, Marcileia Zanatta, Diego Iglesias, Jhonatan Rodríguez-Pereira, Santi Gené-Marimon, Eugenia Martinez-Ferrero, Sulawan Kaowphong, Emilio Palomares, Victor Sans, Andrés F. Gualdrón-Reyes* and Iván Mora-Seró*



10273

NIR-II light powered hydrogel nanomotor for intravesical instillation with enhanced bladder cancer therapy

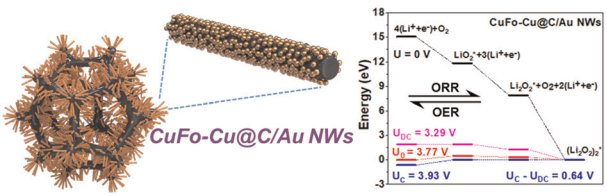
Wei Chen, Yingfei Wang, Hao Hu, Yu Zhu, Hongxia Zhao, Jie Wu, Huangxian Ju, Qing Zhang,* Hongqian Guo* and Ying Liu*



10283

Multi-functional integrated design of a copper foam-based cathode for high-performance lithium–oxygen batteries

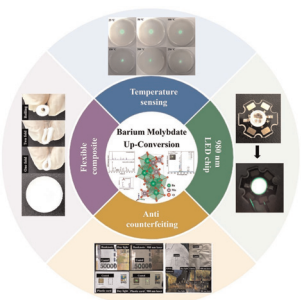
Jing Lan, Yuran Yu, Fujun Miao,* Peng Zhang* and Guosheng Shao*



10292

Barium molybdate up-conversion nanoscale particles with IR-LED chip, temperature sensing, and anti-counterfeiting applications

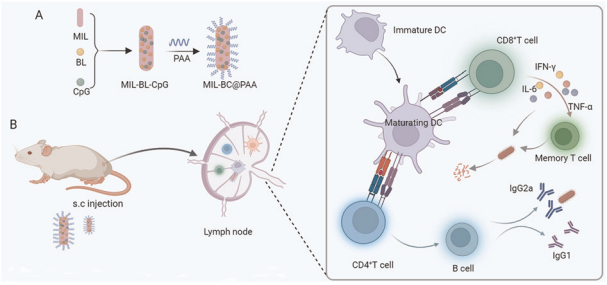
Jae Yong Jung, Jin Young Park, Soung Soo Yi and Hyun Kyoung Yang*



Open Access Article. Published on 30 May 2024. Downloaded on 2/13/2026 9:37:07 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

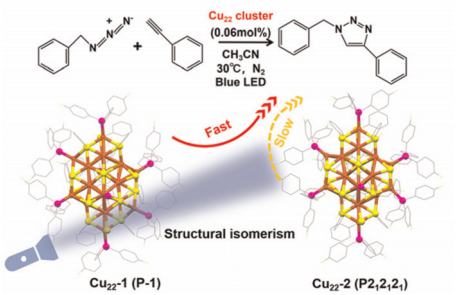
10306



Palmitic acid-capped MIL-101-Al as a nano-adjuvant to amplify immune responses against *Pseudomonas aeruginosa*

Lingming Chen, Shuai Liu, Yunting Zhang, Qiling Tang, Chunyu Quan, Jundan Wang, Xinsheng Peng and Xiaofang Zhong*

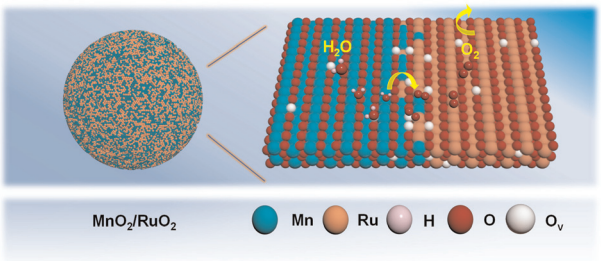
10318



An insight, at the atomic level, into the structure and catalytic properties of the isomers of the Cu_{22} cluster

Huimin Zhou, Tao Yang, Huijuan Deng, Yapei Yun, Shan Jin,* Lin Xiong* and Manzhou Zhu*

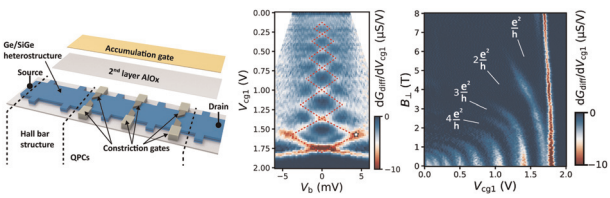
10325



Heterointerface MnO_2/RuO_2 with rich oxygen vacancies for enhanced oxygen evolution in acidic media

Zhiming Guan, Qian Chen, Lin Liu, Chenghui Xia,* Lixin Cao* and Bohua Dong*

10333



Gate-defined quantum point contacts in a germanium quantum well

Han Gao, Zhen-Zhen Kong, Po Zhang, Yi Luo, Haitian Su, Xiao-Fei Liu, Gui-Lei Wang,* Ji-Yin Wang* and H. Q. Xu*

This journal is © The Royal Society of Chemistry 2024

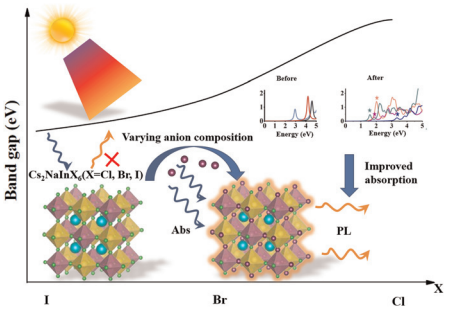
Open Access Article. Published on 30 May 2024. Downloaded on 2/13/2026 9:37:07 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

10340

Modulating luminescence through anion variation in lead-free Cs_2NaInX_6 (X = Cl, Br, and I) perovskites: a first-principles study

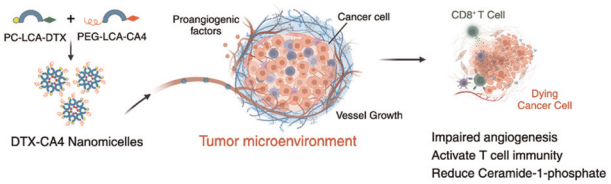
Desheng Yin, Zhenren Gao,* Changfu Xu, Pengbo Lyu* and Lizhong Sun*



10350

Engineered nanomicelles targeting proliferation and angiogenesis inhibit tumour progression by impairing the synthesis of ceramide-1-phosphate

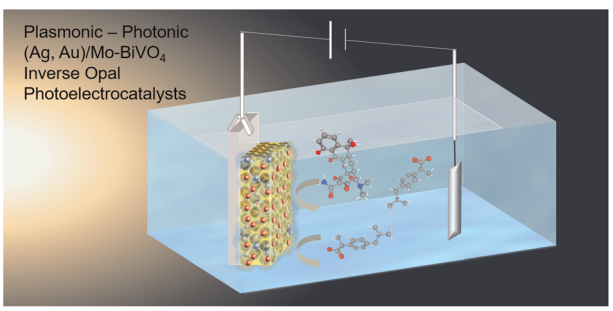
Poonam Yadav, Kajal Rana, Ruchira Chakraborty, Ali Khan, Devashish Mehta, Dolly Jain, Bharti Aggarwal, Somesh K. Jha, Ujjaini Dasgupta and Avinash Bajaj*



10366

Light concentration and electron transfer in plasmonic–photonic Ag,Au modified Mo-$BiVO_4$ inverse opal photoelectrocatalysts

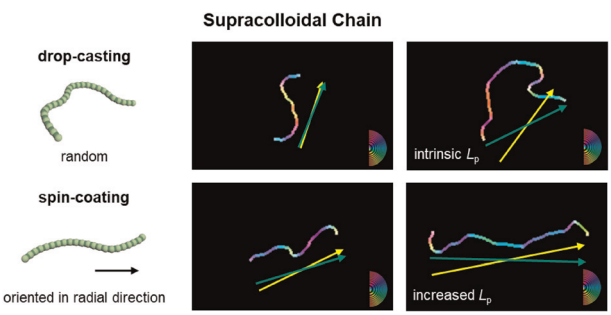
Martha Pylarinou, Elias Sakellis, Polychronis Tsipas, Spiros Gardelis, Vassilis Psycharis, Athanasios Dimoulas, Thomas Stergiopoulos and Vlassis Likodimos*



10377

Orientation and stretching of supracolloidal chains of diblock copolymer micelles by spin-coating process

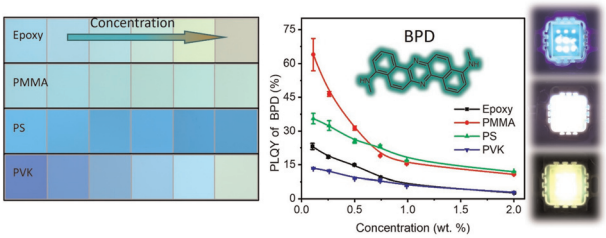
Jaemin Kim, Kyunghyeon Lee, Sangyoon Kim and Byeong-Hyeok Sohn*



Open Access Article. Published on 30 May 2024. Downloaded on 2/13/2026 9:37:07 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

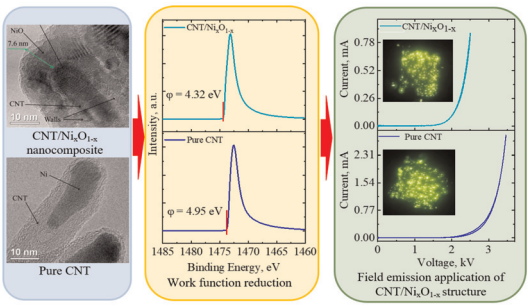
10388



High solid-state photoluminescence quantum yield of carbon-dot-derived molecular fluorophores for light-emitting devices

Nasir Javed,* Haydee Pacheco, Sneha Sreekumar, Jinyu Chong, Zhongkai Cheng and Deirdre M. O'Carroll*

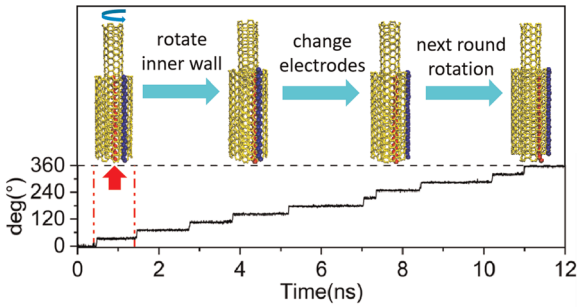
10398



Reducing and tuning the work function of field emission nanocomposite CNT/NiO cathodes by modifying the chemical composition of the oxide

Maksim A. Chumak,* Eugeni O. Popov, Sergei V. Filippov, Anatoly G. Kolosko, Demid A. Kirilenko, Nikolay A. Bert, Evgeniy V. Zhizhin, Alexandra V. Koroleva, Ilya S. Yezhov and Maxim Yu. Maximov

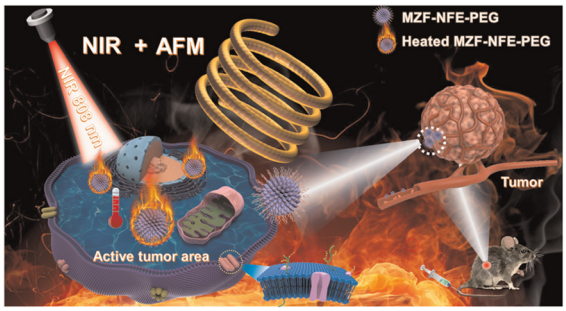
10414



Actuation mechanism of a nanoscale drilling rig based on nested carbon nanotubes

Wei Si,* Haonan Chen, Xiaojing Lin, Gensheng Wu, Jiajia Zhao and Jingjie Sha

10428



NIR and magnetism dual-response multi-core magnetic vortex nanoflowers for boosting magneto-photothermal cancer therapy

Kaiming Shen, Lixian Li,* Funan Tan, Calvin Ching lan Ang, Tianli Jin, Zongguo Xue, Shuo Wu, Mun Yin Chee, Yunfei Yan* and Wen Siang Lew*

This journal is © The Royal Society of Chemistry 2024

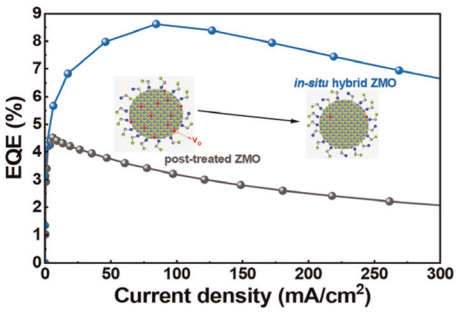
Open Access Article. Published on 30 May 2024. Downloaded on 2/13/2026 9:37:07 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

10441

Blue ZnSeTe quantum dot light-emitting diodes with low efficiency roll-off enabled by an *in situ* hybridization of ZnMgO nanoparticles and amino alcohol molecules

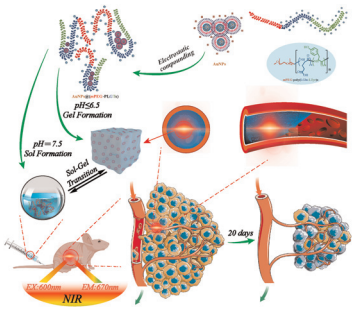
Shaolin Ma, Fan Cao, Guohua Jia, Qianqian Wu,* Sheng Wang* and Xuyong Yang*



10448

The biological response of pH-switch-based gold nanoparticle-composite polyamino acid embolic material

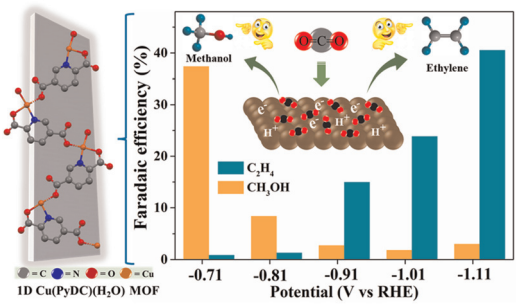
Feng Yang, Shiwen Gong, Die Hu, Lihua Chen, Wenyuan Wang, Bo Cheng, Jing Yang, Binbin Li* and Xinyu Wang*



10458

Electrochemical reconstruction of a 1D Cu(PyDC)(H_2O) MOF into *in situ* formed Cu–Cu_2O heterostructures on carbon cloth as an efficient electrocatalyst for CO_2 conversion

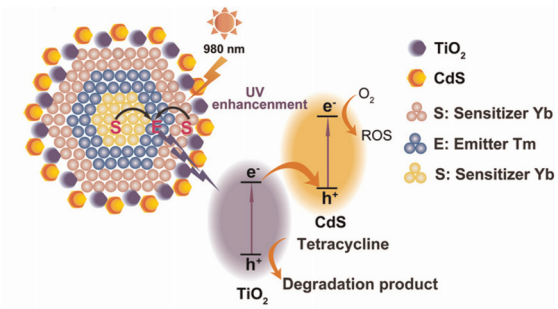
Manjunatha Kempasiddaiah, Rajib Samanta, Sonali Panigrahy, Ravi Kumar Trivedi, Brahmananda Chakraborty* and Sudip Barman*



10474

Luminescence enhancement through co-sensitization in lanthanide composites for efficient photocatalysis

Langtao Ren, Qing Zhao, Yan Su, Mingzhu Zhou* and Qianqian Su*



CORRECTION

10483

Correction: Promoter-regulated *in vivo* asymmetric self-assembly strategy to synthesize heterogeneous nanoparticles for signal amplification

Chen Chen, Juan Zhou, Dong Men* and Xian-En Zhang*

Open Access Article. Published on 30 May 2024. Downloaded on 2/13/2026 9:37:07 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

This journal is © The Royal Society of Chemistry 2024