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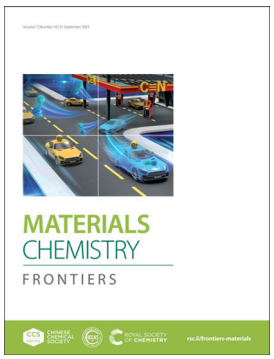
ISSN 2052–1537 CODEN MCFAC5 7(18) 3787–4166 (2023)



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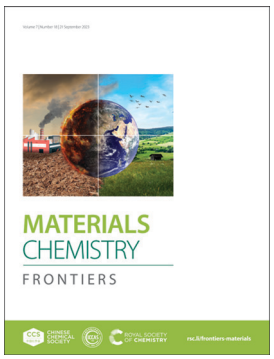

Inside cover
See Uttam Kumar Ghorai *et al.*, pp. 3820–3854. Image reproduced by permission of Uttam Kumar Ghorai from *Mater. Chem. Front.*, 2023, **7**, 3820.

CHEMISTRY FRONTIERS

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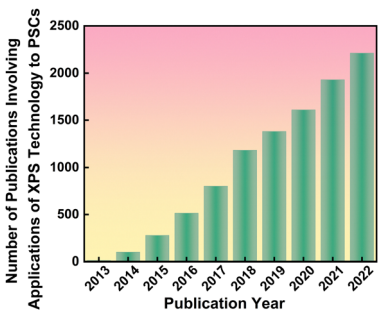
Lessons learned: how to report XPS data incorrectly about lead-halide perovskites

Chi Li, Ni Zhang and Peng Gao*

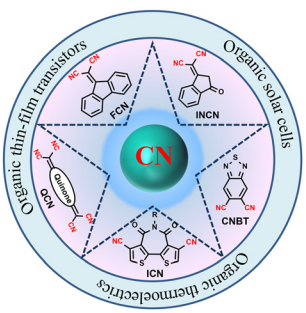


REVIEWS

3803

Cyano-functionalized organic and polymeric semiconductors for high-performance n-type organic electronic devices

Yongchun Li, Enmin Huang, Xugang Guo* and Kui Feng*



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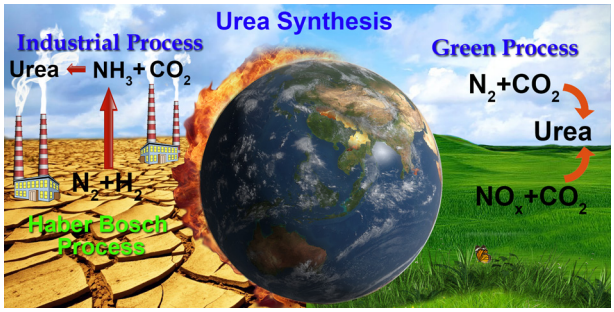
Progress of electrocatalytic urea synthesis: strategic design, reactor engineering, mechanistic details and techno-commercial study

Sourav Paul, Ashadul Adalder and Uttam Kumar Ghorai*



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Versatile π-bridges in nonfullerene electron acceptors of organic solar cells

Fan Feng, Pengchao Wang, Yonghai Li* and Xichang Bao*

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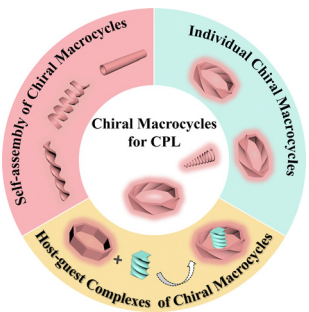
Circularly polarized luminescence from chiral macrocycles and their supramolecular assemblies

Tiejun Li, Xuefeng Zhu, Guanghui Ouyang* and Minghua Liu*



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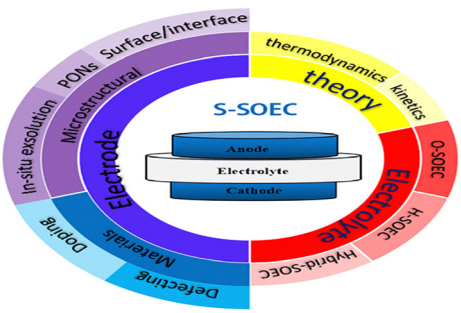
Advances and challenges in symmetrical solid oxide electrolysis cells: materials development and resource utilization

Jiamin Gu, Xiaoxin Zhang, Yunxia Zhao, Abdullah Alodhayb, Yifei Sun* and Yunfei Bu*



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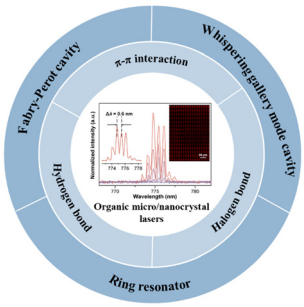

Construction of organic micro/nanocrystal lasers: from molecules to devices

Ying-Li Shi, Ling-Yi Ding, Yun Hu, Qiang Lv, Wan-Ying Yang and Xue-Dong Wang*

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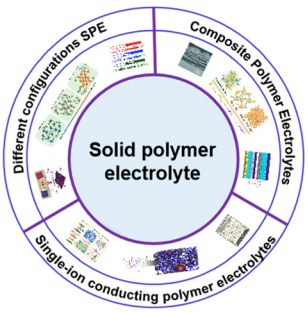

Designing polymer electrolytes for advanced solid lithium-ion batteries: recent advances and future perspectives

Tiantian Lu, Lixiang Guan, Qi Zhan, ZiYang Liang, Chang Liu, Lifeng Hou,* Huayun Du, Yinghui Wei, Shi Wang* and Qian Wang*

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Towards cost-efficient and stable perovskite solar cells and modules: utilization of self-assembled monolayers

Haoliang Cheng, Yungui Li and Yufei Zhong*

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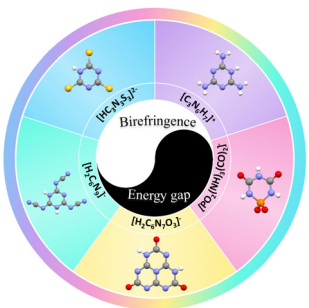

Design and synthesis of anisotropic crystals with π-conjugated rings toward giant birefringence

Yunqi Zhao, Liangmeng Zhu, Yanqiang Li, Xiaojun Kuang, Junhua Luo and Sangen Zhao*

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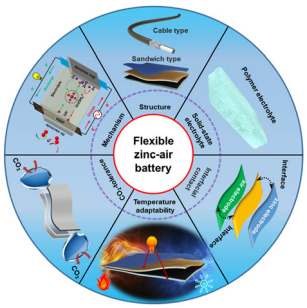
Advances in polymer electrolytes for solid-state zinc–air batteries

Pengfei Zhang, Zhuo Chen, Nuo Shang, Keliang Wang,* Yayu Zuo, Manhui Wei, Hengwei Wang, Daiyuan Zhong and Pucheng Pei



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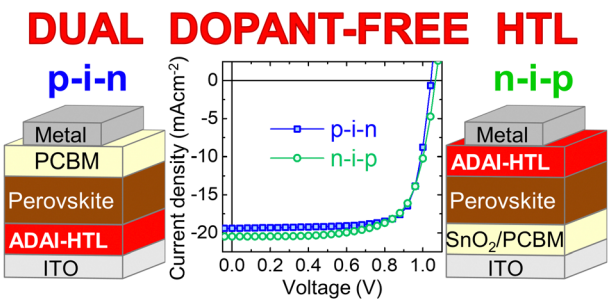
Small molecule dopant-free dual hole transporting material for conventional and inverted perovskite solar cells

Miriam Más-Montoya, Paula Gómez, Junke Wang, René A. J. Janssen* and David Curiel*



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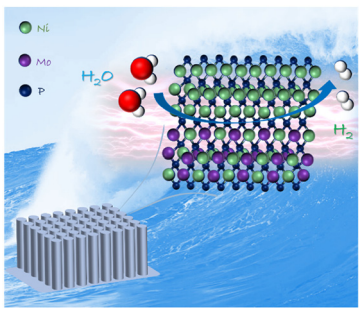
Constructing NiMoP nanorod arrays with a highly active $Ni_2P/NiMoP_2$ interface for hydrogen evolution in 0.5 M H_2SO_4 and 1.0 M KOH media

Mengyao Ma, Wei Xia, Wenhao Liu, Xiaoyan Guo, Dong Cao* and Daojian Cheng*



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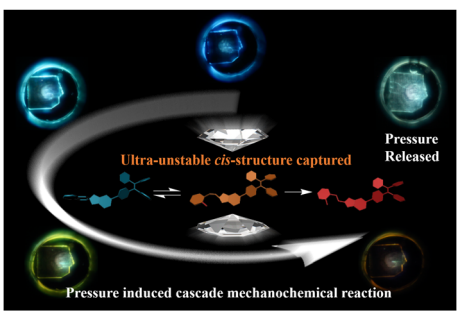
Real time optical monitoring of cascade mechanochemical reactions and capture of ultra-unstable intermediates under hydrostatic pressure

Xing Su, Nan Li, Kai Wang, Qian Li, Weiguang Shao, Lulu Liu, Binhong Yu, Yu-Mo Zhang, Tingting Lin,* Bo Zou,* Yifei Liu* and Sean Xiao-An Zhang



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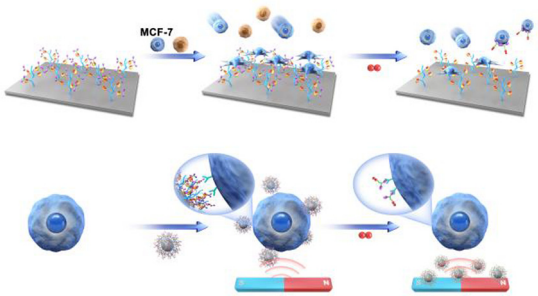

Dynamic display of cell targeting motifs *via* natural glycopeptide recognition for cancer cell isolation

Wenbo He, Zhaoyang Yao, Youlu Diao, Miao Wang* and Guoqing Pan*

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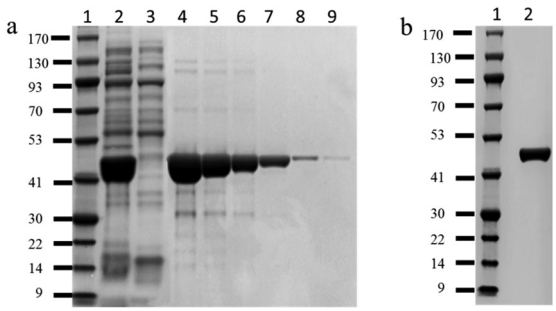

Gold nanoparticle-based immunochromatographic assay for the rapid detection of the SARS-CoV-2 Omicron variant

Liya Ye, Xianlu Lei, Liguang Xu, Hua Kuang, Chuanlai Xu and Xinxin Xu*

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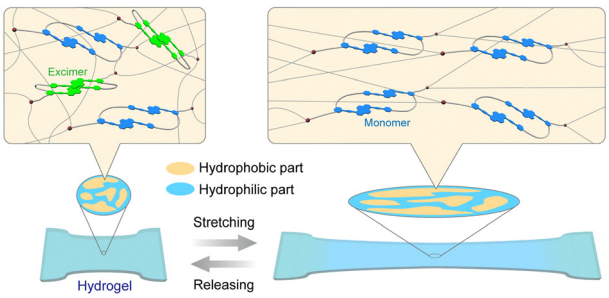

Mechanochromic luminescence of phase-separated hydrogels that contain cyclophane mechanophores

Shohei Shimizu, Hiroaki Yoshida, Koichi Mayumi, Hiroharu Ajiro and Yoshimitsu Sagara*

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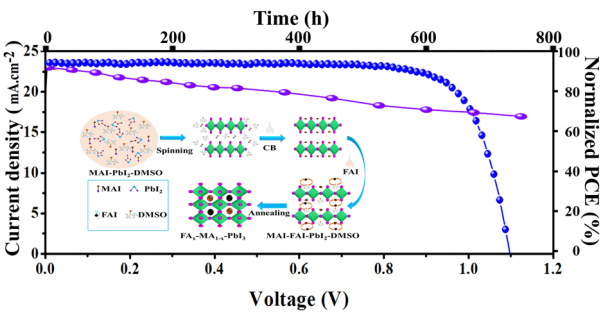

Engineering the intermediate adduct phase to control the crystallization of perovskites for efficient and stable perovskite solar cells

Muhammad Mateen, Ziyu Li, Hongxi Shi, Hao Huang, Danish Khan, Raja Azhar Ashraaf Khan, Muhammad Rafiq, Jawad Ali Shah Syed, Afshan Khaliq, Ghulam Abbas Ashraf, Jadel Matondo Tsiba, Zhangbo Lu, Dan Chi* and Shihua Huang*

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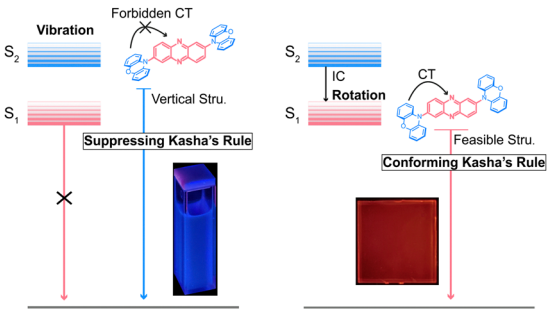
Suppression and utilization of Kasha's rule: realizing the transformation from blue to near-infrared emission

Mingchen Xie, Jia-Heng Cai, Guangyu Zhang, Sinyeong Jung, Dongfang Dong, Zhao-Yang Zhang, Dong-Ying Zhou,* Liang-Sheng Liao and Tao Li*



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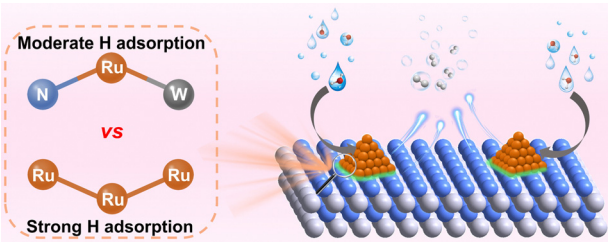
Optimizing the hydrogen adsorption strength on interfacial Ru sites with WN for high-efficiency hydrogen evolution

Guocong Liu, Jiachen Zhang, Huanyu Ren, Yawen Tang* and Hanjun Sun*



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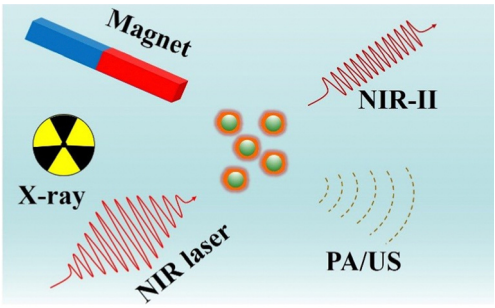
PVP-coated ultrasmall Nd-doped Gd_2O_2S nanoparticles for multimodal imaging

Qilin Zou, Luan Passini, Laure Gibot, Delphine Lagarde, Jie Hu, Haomiao Zhu, Franck Desmoulin, Pierre Sicard, Nitchawat Paiyabhroma, Marc Verelst, Robert Mauricot* and Clément Roux*



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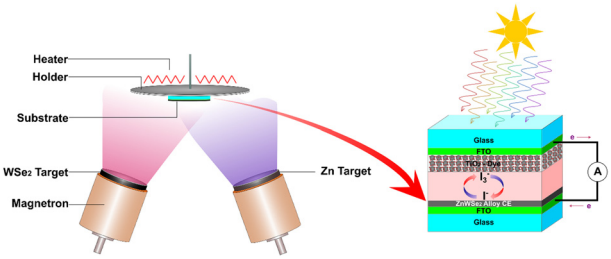
Design of an amorphous $ZnWSe_2$ alloy-based counter electrode for highly efficient dye-sensitized solar cells

D. A. Ari, A. Sezgin, M. Unal, E. Akman, I. Yavuz, F. C. Liang, M. Yilmaz* and S. Akin*



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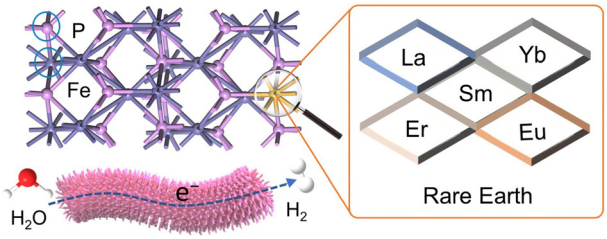

Universal synthesis of rare earth-doped FeP nanorod arrays for the hydrogen evolution reaction

Minnan Chen, Zijing Lin, Yi Ren, Xuan Wang, Meng Li, Dongmei Sun,* Yawen Tang* and Gengtao Fu*

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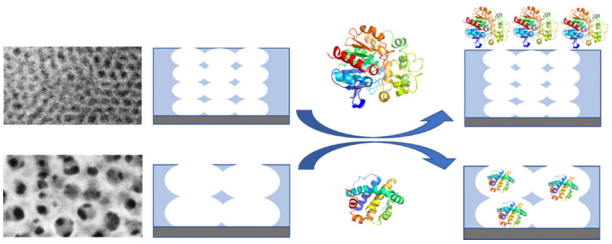

Large-pore mesoporous silica: template design, thin film preparation and biomolecule infiltration

Sebastián Alberti,* Sonja Schmidt, Simone Hageneder, Paula C. Angelomé, Galo J. A. A. Soler-Illia, Philipp Vana, Jakub Dostalek, Omar Azzaroni and Wolfgang Knoll

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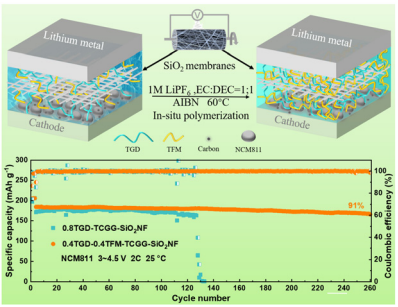

***In situ* fabrication of fluorine-modified acrylate-based gel polymer electrolytes for lithium-metal batteries**

Kun Yang, Zhichuan Shen, Junqiao Huang, Jiawei Zhong, Yuhan Lin, Junli Zhu, Jiashun Chen, Yating Wang, Tangtang Xie, Jie Li* and Zhicong Shi*

CORRECTION

4164

Correction: Highly efficient dual-state emission and two-photon absorption of novel naphthalimide functionalized cyanostilbene derivatives with finely tuned terminal alkoxyl groups

Yingyong Ni, Longmei Yang, Lin Kong, Chengyuan Wang,* Qichun Zhang and Jiaxiang Yang*

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