

IN THIS ISSUE

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Cover

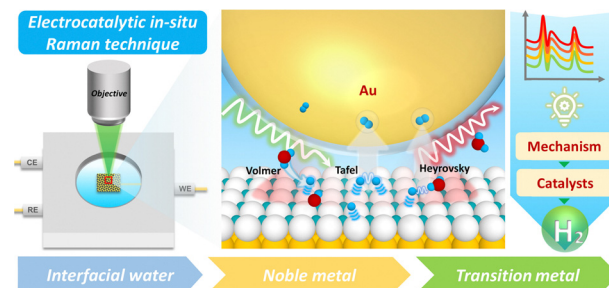
See Takeshi Ueki, Yukiteru Katsumoto *et al.*, pp. 8843–8846. Image reproduced by permission of Takeshi Ueki from *Chem. Commun.*, 2025, 61, 8843.

HIGHLIGHTS

8778

Unraveling the mechanism of hydrogen evolution reactions in alkaline media: recent advances in *in situ* Raman spectroscopy

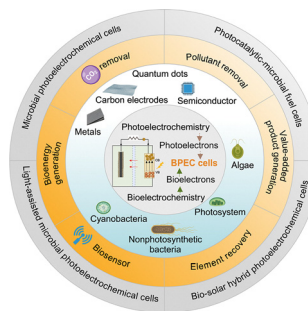
Jiafeng Wen, Siyuan Tang, Xiaoyi Wu, Linlin Xu,* Yufang Xie, Yin Yin* and Fuzhan Song*



8790

Engineering strategies in bio-photoelectrochemical cells for sustainable energy and environmental applications

Arti Sharma and Lital Alfonta*



Environmental Science: Atmospheres

GOLD
OPEN
ACCESS

Connecting communities
and inspiring new ideas



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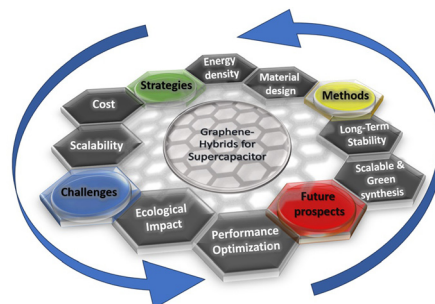
Fundamental questions
Elemental answers



FEATURE ARTICLES

8803

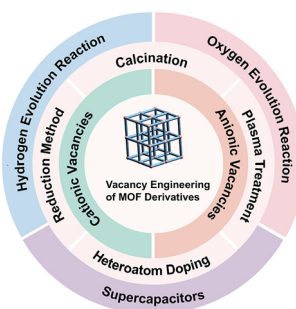
Graphene hybrids for supercapacitor applications

Mansi Pathak, Sang Mun Jeong and
Chandra Sekhar Rout*

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Vacancy engineering of metal–organic framework derivatives for supercapacitors and electrochemical water splitting

Liuliu Zhang, Hongbo Yu,* Lei Han* and Kai Tao*



COMMUNICATIONS

8843

From LCST to crystals: structural modulation of ionic liquids drives the phase transition of poly(2-isopropyl-2-oxazoline)

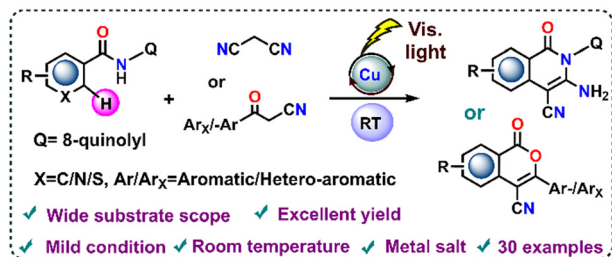
Mai Kamiyama-Ueda, Takeshi Ueki,* Yuji Kamiyama,
Ryota Tamate, Keisuke Watanabe and
Yukiteru Katsumoto*

8847

Catalytic imidazolysis of PET plastic waste using self-assembled NbO_x nanorodsBhattu Swapna, Chullikulavan Fiba,
Madam Bobby Barnabas, Regulagadda Suryanarayana
and Putla Sudarsanam*

COMMUNICATIONS

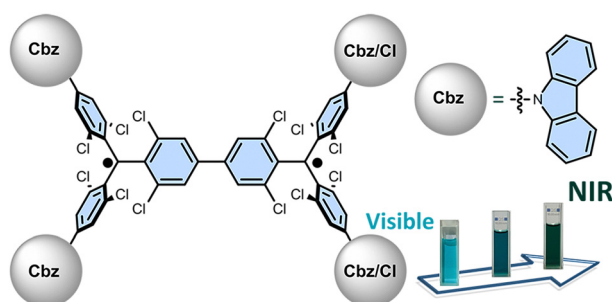
8851



Visible-light triggered Cu-catalyzed C–H bond activation to afford isocoumarin and isoquinolinone scaffolds at room temperature

Subham Sau, Krishna Mohan Das and Arunabha Thakur*

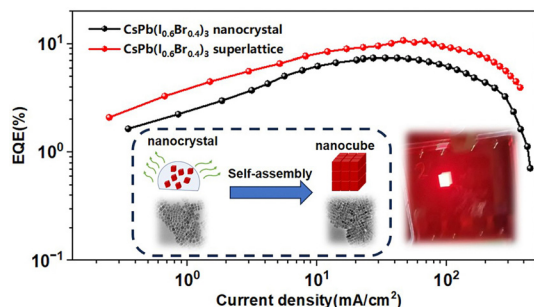
8855



Carbazole-functionalized Chichibabin diradicaloids with redshifted absorption and enhanced photoluminescence

Vivek Chandrakant Wakchaure, Xingmao Chang, Julia Zolg, Rémi Blinder, Mona E. Arnold, Fedor Jelezko,* Alexander J. C. Kuehne* and Max von Delius*

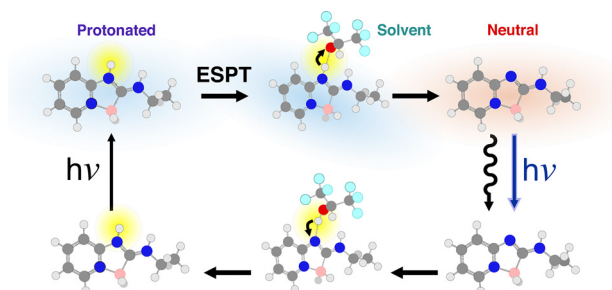
8859



Nanocubic mixed-halide perovskite superlattices for bright red light-emitting diodes

Yi Li and Fei Zhang*

8863



Boramidine: a boron-based photoacidic fluorophore

Estefanía Sucre-Rosales, Nidal Saleh, Jérôme Lacour* and Eric Vauthey*

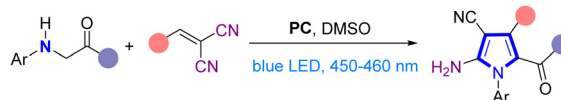


COMMUNICATIONS

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Radical [3+2] cycloaddition enables polysubstituted pyrrole synthesis *via* a visible-light-mediated reaction

Heyun Sheng,* Dabo Guo, Yibo Shi, Huanping Xie, Weiguang Kong,* Wenguang Li, Yongqi Yu and Ting Li*



♦ High atom economy

♦ Readily available starting materials

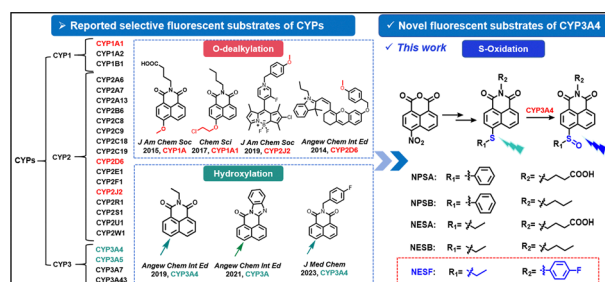
♦ Excellent functional group compatibility

♦ 35 examples, up to 78% yield

8871

Discovery and evaluation of a novel selective fluorescent substrate for CYP3A4 based on sulfoxidation characteristics

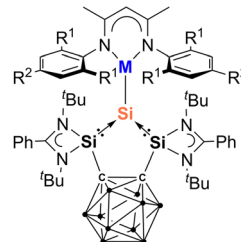
Chao-Hua Yan, Gui-Lin Wei, Zhuo-An Jin‡, Tian-Chi Lu, Xiao-dong Li, Ji-Cong Wu, Chun-Yang Yu, Li-Wei Zou* and Ling Yang*



8875

Unprecedented bis(silylene)-supported silylone-metal complexes with $\text{Si}^0 \rightarrow \text{Cu}^{\text{I}}$, $\text{Si}^0 \rightarrow \text{Ni}^{\text{I}}$, and $\text{Si}^0 \rightarrow \text{Ni}^{\text{II}}$ dative bonds

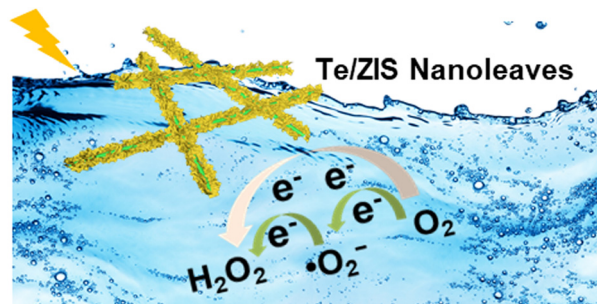
Changkai Shan, Chenshu Dai, Shenglai Yao,* Jun Zhu and Matthias Driess*

dative $\text{Si}^0\text{-TM}$ bonds σ -donation from Si^0 to TM
 π -backdonation from TM to Si^0 M = Cu, $\text{R}^1 = \text{R}^2 = \text{Me}$
M = Ni, $\text{R}^1 = \text{tPr}$, $\text{R}^2 = \text{H}$

8879

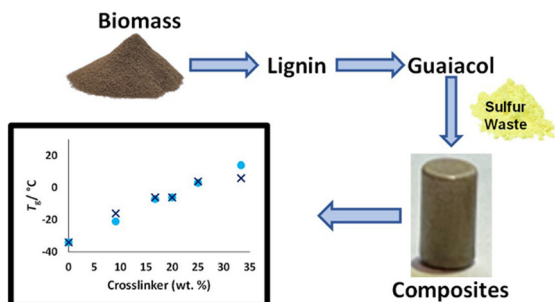
Te/ZnIn₂S₄ nanoleaves with rich charge transport and high electron-hole separation efficiency for augmented visible-light-mediated hydrogen peroxide generation

Fangzheng Qi, Zengsheng Guo,* Cuiping Lin, Chenchen Wang, Guihua Jiang, Yiqiang Sun,* Cuncheng Li* and Lifeng Hang*



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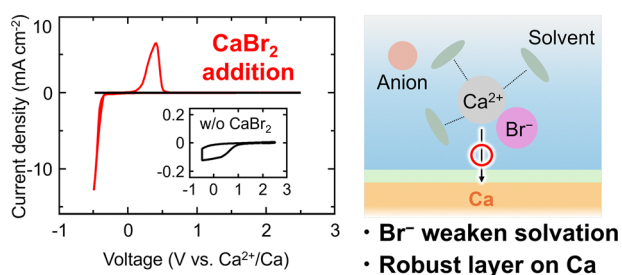
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Tailoring the properties of guaiacol-derived high sulfur-content materials through post-polymerization modification with dithiols

Nawoda L. Kapuge Dona, Rhett C. Smith* and Andrew G. Tennyson*

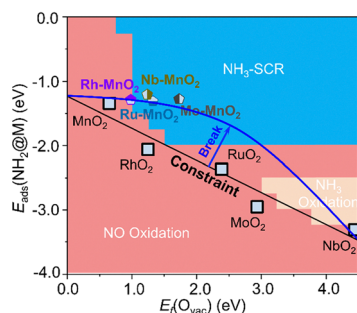
8887



Enabling Ca plating and stripping by electrolyte manipulation in low-volatility solvents for Ca metal batteries

Kohei Shibuya, Kazuaki Kisu,* Arunkumar Dorai, Yukiya Shinoda, Takara Shinohara and Shin-ichi Orimo*

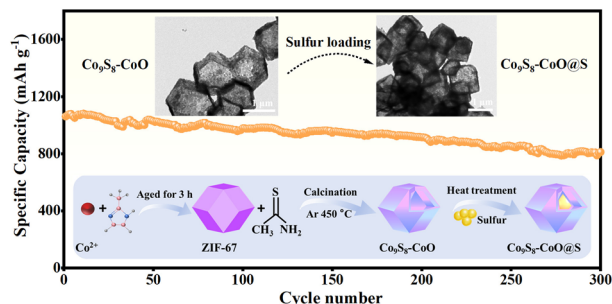
8891



Resolving the activity and selectivity trends for NH₃-SCR on metal oxides by microkinetic simulation

Ying Liu, Yinkai Wu, Haifeng Wang* and Haiyang Yuan*

8895



Synergistic adsorption and catalysis enabled by hollow Co₉S₈-CoO heterostructures for high-performance lithium-sulfur batteries

Shuang Yu, Yingying Song, Xueda Li and Hongqiang Wang*

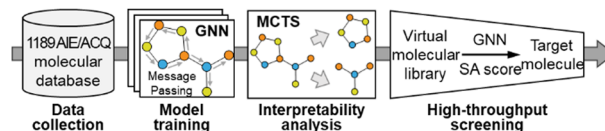


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Interpretable prediction of aggregation-induced emission molecules based on graph neural networks

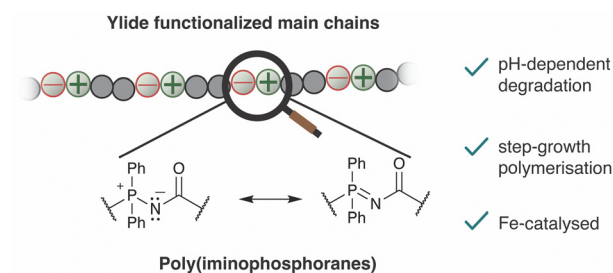
Shi-Chen Zhang, Jun Zhu, Yi Zeng, Hua-Qi Mai, Dong Wang* and Xiao-Yan Zheng*



8903

Poly(*N*-acyliminophosphoranes): main chain functionalized poly(ylides) with pH-dependent degradation

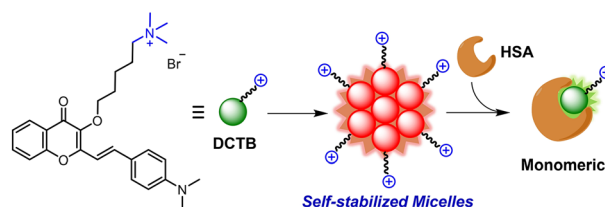
Kevin Neumann,* Dulce M. Sánchez-Cerrillo and Daria R. Galimberti



8907

A self-stabilized amphiphilic fluorescent sensor enables the ratiometric detection of human serum albumin in urine

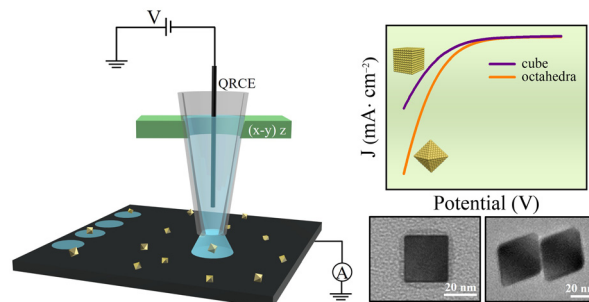
Mingwei Yan, Immanuel David Charles and Bin Liu*



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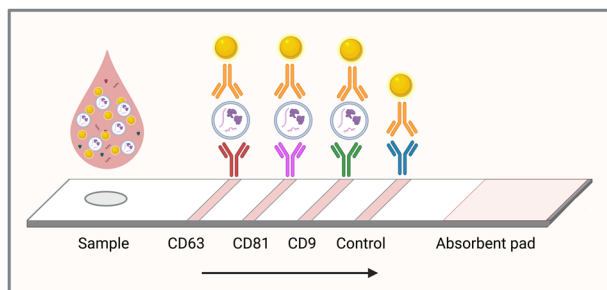
Shape-controlled hydrogen evolution reaction of single Pd nanocrystals

Li Shen, Zengyan Wu, Jiao Zhao, Mengling Wang, Jie Ni, Yao Liu, Jie Zeng* and Qianjin Chen*



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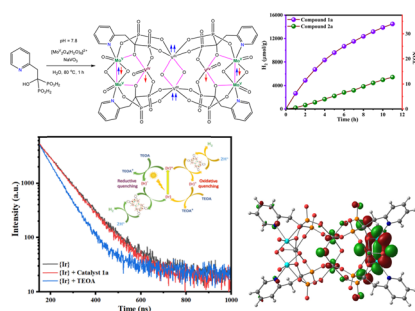
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Multi-line lateral flow immunoassay for the detection and subtyping of breast cancer-derived small extracellular vesicles

Chloe Duffield, Laura M. Rey Gomez, Su Su Thae Hnit, Wei Zhang, Simon Chang-Hao Tsao, David W. Inglis and Yuling Wang*

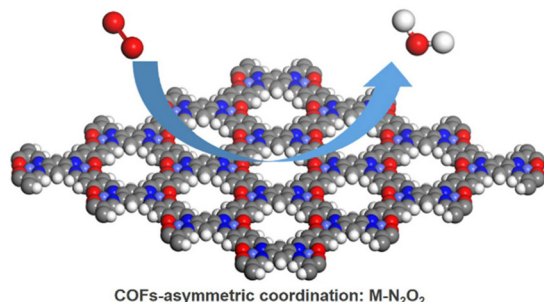
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A mixed metallic and mixed valence $\text{Mo}_4\text{V}_2\text{V}_2^{\text{IV/III}}$ complex as an electron transfer photo-catalyst for the hydrogen evolution reaction

Kalyankumar S. Morla, Dewendra Thakre, Adarsh K. Mourya, Piyush Singh, Harsha S. Karnamkott, Subuhan Ahamed, Subham Sahoo, Ishita Bhattacharya, Siddhartha Banerjee, Debajit Sarma, Kartik Chandra Mondal,* Sujit Kumar Ghosh,* Atul V. Wankhade* and Abhishek Banerjee*

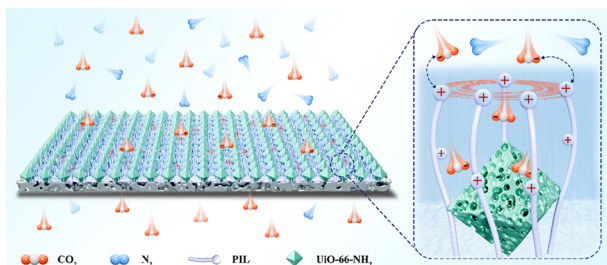
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A covalent organic framework with asymmetric coordination for the oxygen reduction reaction: a computational study

Aoshuang Pang, Bo-Cong Shi, Yu Wang,* Yu-Jia Tang* and Yafei Li*

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Engineering a molecular-sieving architecture on poly(ionic liquid)-functionalized UiO-66-NH₂ membranes toward CO₂/N₂ separation

Liangmei Luo, Yingjie Chang, Yutong Liao, Yanqing Wang* and Qi Li*

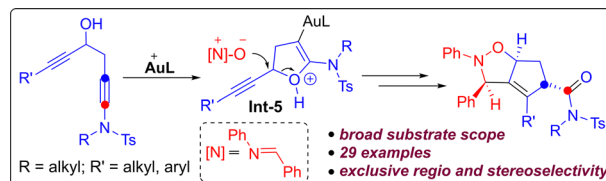


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Gold-catalyzed bicyclic annulations between 4-hydroxy-1,5-diynamides and nitrones for the synthesis of cyclopentene-fused isoxazole carboxamides

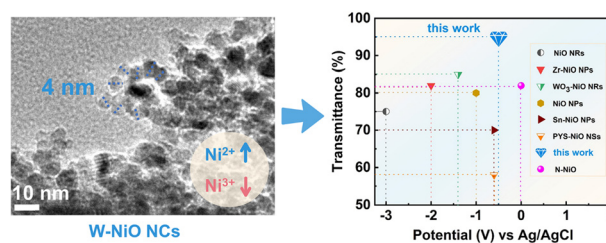
Chandrima Maitra, Ting-Yi Chuang, Tzuhsiung Yang* and Rai-Shung Liu*



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Designed growth of tungsten-doped nickel oxide nanocrystal films toward high electrochromic performance with a neutral color

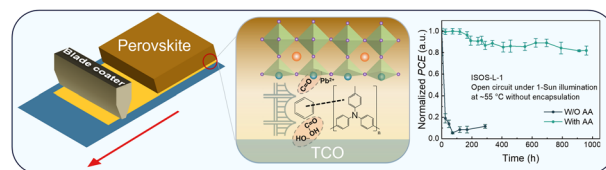
Feiyue Yao, Yong Zhang,* Jingzhi Li, Shangzhi Yao, Xueru Zhang, Jiewu Cui, Yan Wang, Jiaqin Liu and Yucheng Wu*



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Buried interfacial passivation by a multifunctional molecular bridge for blade-coating perovskite solar cells

Lin Zhang, Congtan Zhu, Hui Zhang, Xiangming Xiong, Conghua Zhou, Xueyi Guo and Ying Yang*



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Amorphous nickel boride facilitates active site generation for HMF electrooxidation

Yi Xiao Wu, Hao Guan Xu, Ji Kai Liu, Wenhan Jiang, Yi Zhou, Xin Yu Zhang,* Peng Fei Liu* and Hua Gui Yang

