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See Helen Tran *et al.*, pp. 9638–9647. Image reproduced by permission of Abigail Clapperton, Ernest Tse and Helen Tran from *Chem. Sci.*, 2025, **16**, 9638.

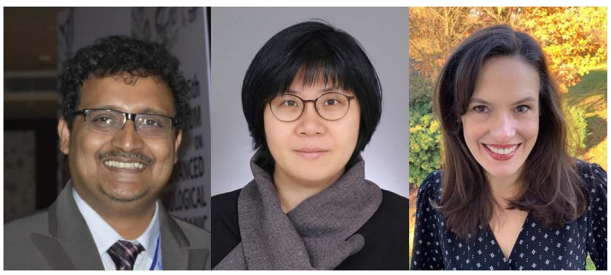
Inside cover
See Brad S. Pierce, Hannah S. Shafaat, Gayan B. Wijeratne *et al.*, pp. 9648–9661. Image reproduced by permission of Samith Jayawardana from *Chem. Sci.*, 2025, **16**, 9648.

EDITORIAL

9561

Introduction to the spotlight collection on bioinorganic chemistry

Abhishek Dey, Mi Hee Lim and Serena DeBeer

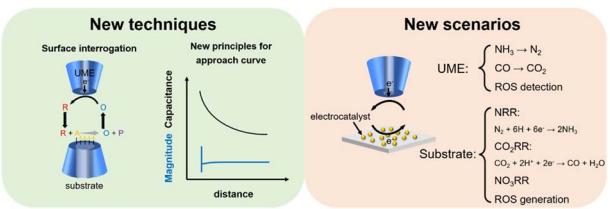


PERSPECTIVES

9564

Emerging techniques and scenarios of scanning electrochemical microscopy for the characterization of electrocatalytic reactions

Jinming Xu, Ran Chen,* Juanxian Song, Songqin Liu, Yanfei Shen and Yuanjian Zhang



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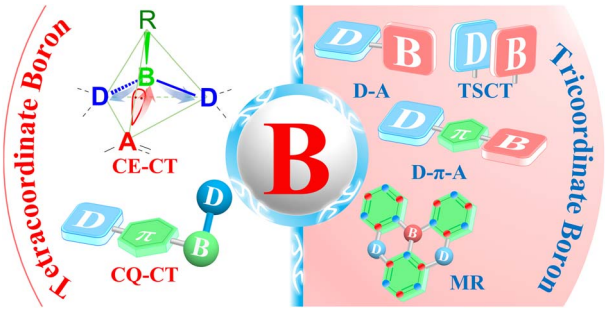
PERSPECTIVES

9577

Rethinking boron's role in intramolecular charge transfer: from an acceptor to a donor–acceptor regulator

Jiaqi Dong, Lingjuan Chen and Deng-Tao Yang*

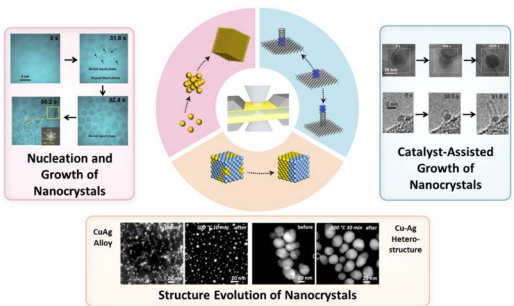


REVIEW

9604

***In situ* transmission electron microscopy characterization and manipulation of the morphology, composition and phase evolution of nanomaterials under microenvironmental conditions**

Na Li, Xinyang Li, Tian Wang, Bo Wen, Zicheng Yin, Jie Feng, Shengchun Yang,* Yawei Yang,* Guorui Yang and Shujiang Ding*

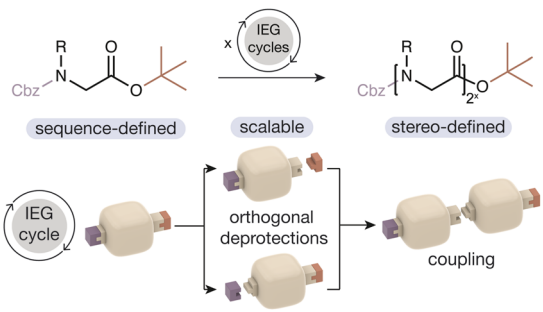


EDGE ARTICLES

9638

Sequence-defined peptoids *via* iterative exponential growth

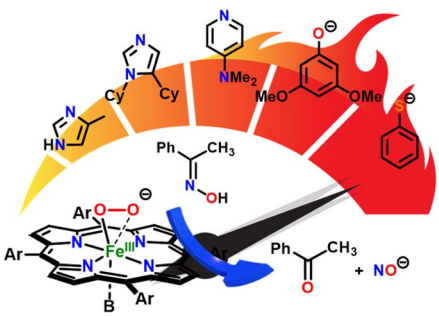
Abigail M. Clapperton, Christine Hood and Helen Tran*



9648

Modulation of heme peroxo nucleophilicities with axial ligands reveal key insights into the mechanistic landscape of nitric oxide synthase

Shanuk Rajapakse, Yuri Lee, Samith B. Jayawardana, Joshua Helms, Pritam Mondal, Akhil Singh, Brad S. Pierce,* Hannah S. Shafaat* and Gayan B. Wijeratne*



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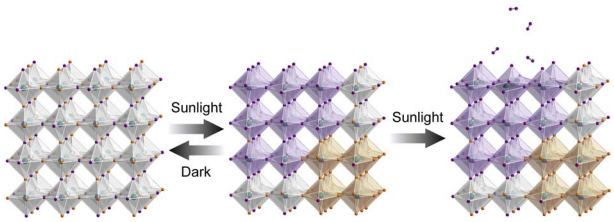
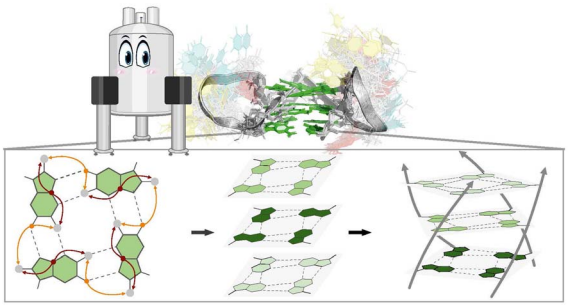


Evidence for I_2 loss from the perovskite–gas interface upon light-induced halide segregation

Michael Lee, Julian A. Vigil, Zhiqiao Jiang and Hemamala I. Karunadasa*

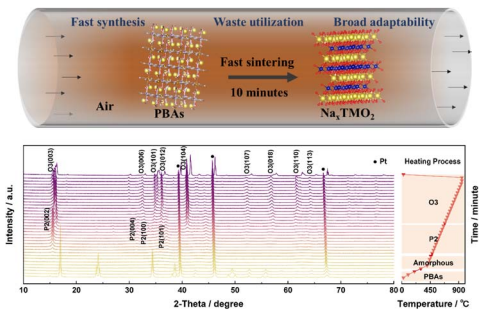
9669



Elucidating the solution structure of the monomolecular *BCL2* RNA G-quadruplex: a new robust NMR assignment approach

Zenghui Wang, Carla Ferreira Rodrigues, Simon Jurt, Alicia Domínguez-Martín, Silke Johannsen* and Roland K. O. Sigel*

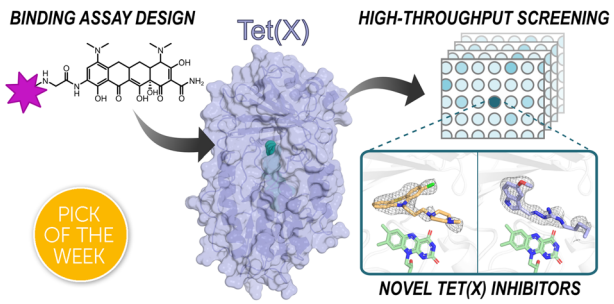
9679



A universal strategy for bridging Prussian blue analogues and sodium layered oxide cathodes: direct fast conversion, dynamic structural evolution, and sodium storage mechanisms

Hong-Wei Li, Jingqiang Wang,* Jing Yu, Jia-Yang Li, Yan-Fang Zhu,* Huanhuan Dong, Zhijia Zhang,* Yong Jiang, Shi-Xue Dou and Yao Xiao*

9691



Binding assays enable discovery of Tet(X) inhibitors that combat tetracycline destructase resistance

Matthew J. Beech, Edmond C. Toma, Helen G. Smith, Maria M. Trush, Jit H. J. Ang, Mei Y. Wong, Chung H. J. Wong, Hafiz S. Ali, Zakia Butt, Viha Goel, Fernanda Duarte, Alistair J. M. Farley, Timothy R. Walsh and Christopher J. Schofield*

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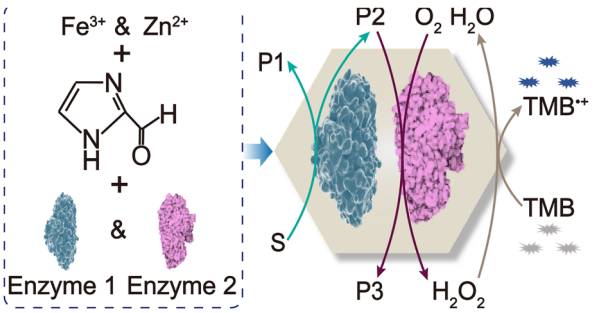
EDGE ARTICLES

9705

Enzyme-loaded Fe^{3+}-doped ZIF-90 particles as catalytic bioreactor hybrids for operating catalytic cascades

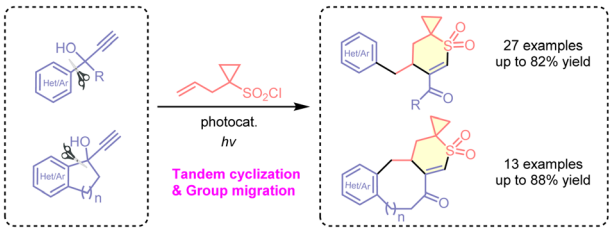
Jin Wang, Yunlong Qin, Raanan Carmieli, Vitaly Gutkin, Eli Pikarsky, Zhen Zhang,* Xinghua Chen* and Itamar Willner*



9715

Access to spirocyclic vinyl sulfones *via* radical cyclization and functional group migration

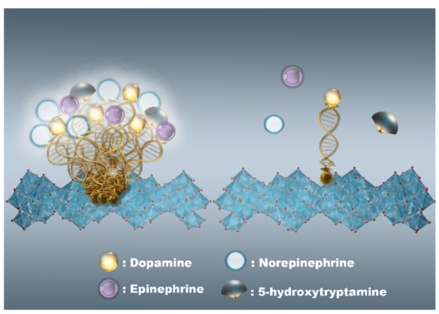
Shan Yang, Yasu Chen and Chen Zhu*



9720

Aptamer single-molecule dispersion on single-atom anchoring sites for high-selectivity *in vivo* detection

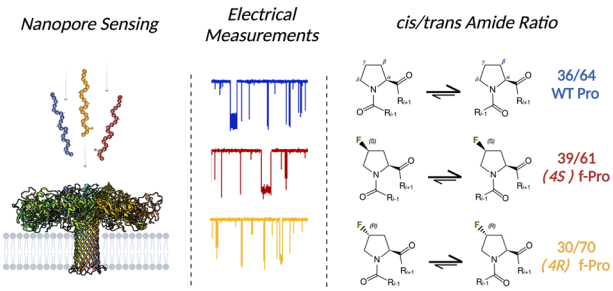
Jing Huang, Shiting Gu, Xue Zhou, Yibin Liu and Zhonghai Zhang*



9730

Single-molecule nanopore sensing of proline *cis*/*trans* amide isomers

Luca Iesu, Mariam Sai, Vladimir Torbeev, Bruno Kieffer,* Juan Pelta* and Benjamin Cressiot*



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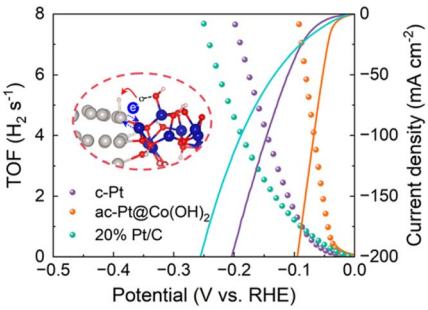
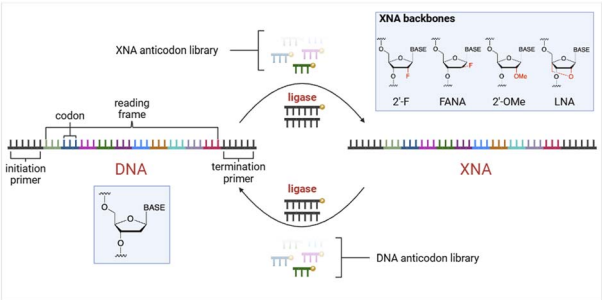


Electron rearrangement at the crystalline–amorphous heterogeneous interface boosts alkaline hydrogen production

Meihuan Liu, Yuke Gu, Hui Su,* Xuanzhi Liu, Juan Luo, Pengfei Tan,* Feng Liu and Jun Pan*

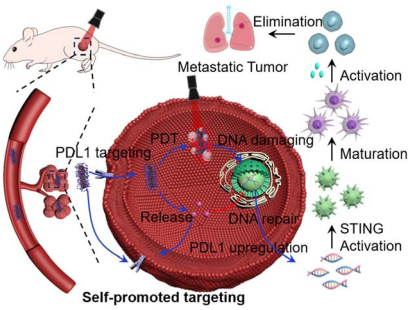
9749



Ligase-catalyzed transcription and reverse-transcription of XNA-containing nucleic acid polymers using T3 DNA ligase

Natalie Khamissi, Christopher Korfmann, Areeba Chaudhry and Ryan Hili*

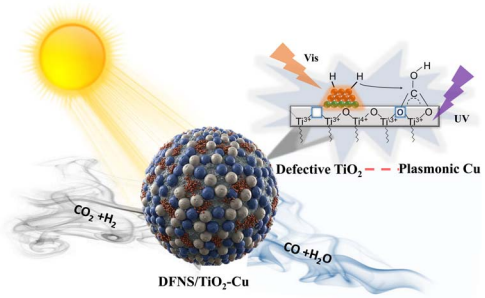
9756



Self-promoted tumor-targeting nanomedicine activates STING-driven antitumor immunity *via* photodynamic DNA damage and PARP inhibition

Baixue Yu, Wei Zhang, Zhouchuan Shao, Xiayun Chen, Yi Cen, Yibin Liu, Ying Chen, Xinxuan Li, Ziqi Liang, Shiying Li* and Xiaoyuan Chen*

9766



Synthesis of synergistic catalysts: integrating defects, SMSI, and plasmonic effects for enhanced photocatalytic CO_2 reduction

Rajesh Belgamwar, Charvi Singhvi, Gunjan Sharma, Vinod K. Paidi, Pieter Glatzel, Seiji Yamazoe, Pradip Sarawade and Vivek Polshettiwar*

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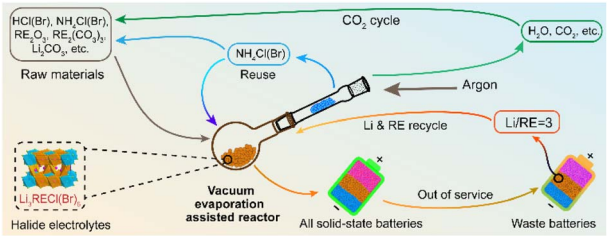
9785

Vacuum evaporation-assisted reaction: sustainable solution for application of rare earth-based halide solid-state electrolytes

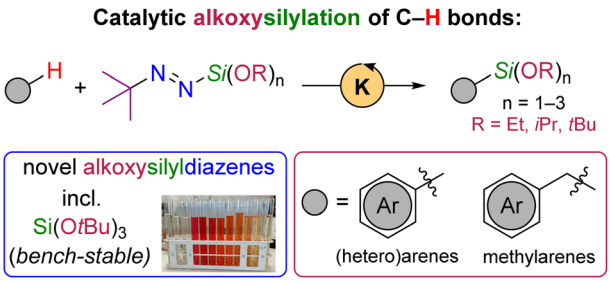
Zhichao Zeng, Xiaomeng Shi, Hongtu Zhang and Yaping Du*



9794

Catalytic alkoxysilylation of C–H bonds with *tert*-butyl-substituted alkoxysilyldiazenes

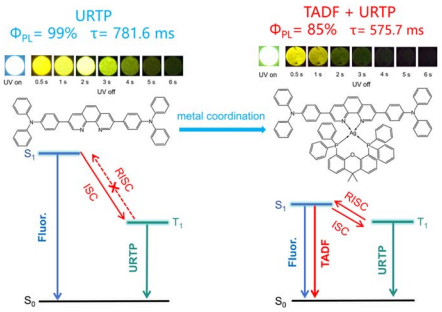
Lamine Saadi, Loïc Valade and Clément Chauvier*



9802

Achieving dual emission of thermally activated delayed fluorescence and ultralong room-temperature phosphorescence by controlling excited state dynamics through metal coordination

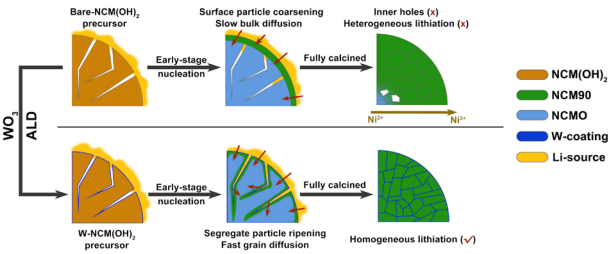
Xian-Bao Cai, Dong Liang, Deng-Chao Zhang, Ji-Hui Jia, Xiao-Yuan Wu and Can-Zhong Lu*



9809

Enabling uniform lithiation in solid-state synthesis by preventing pre-matured surface grain coarsening through grain boundary engineering

Yifan Wu, Xincan Cai, Weiyi Lin, Yingdong Deng, Qing Zhang, Haoyuan Li, Pu Yan, Guohui Zhong and Jin Xie*



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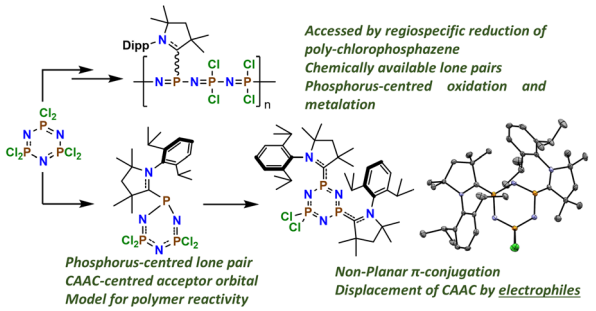
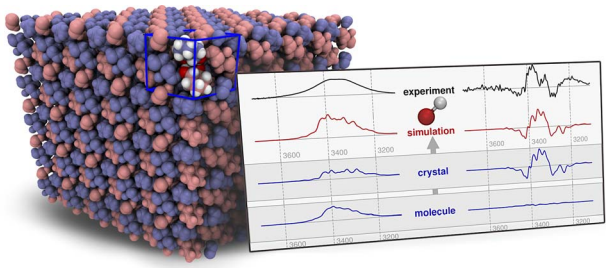


Multi-site reduction of hexachlorophosphazene to low-valent PN heterocycles and extension to the reduction of poly-chlorophosphazene

Etienne A. LaPierre,* Roope A. Suvinen, Brian O. Patrick, Heikki M. Tuononen* and Ian Manners

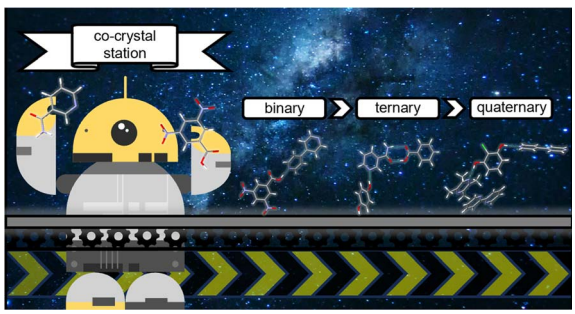
9833



The genesis of OH-stretching vibrational circular dichroism in chiral molecular crystals

Sascha Jähnigen,* Rodolphe Vuilleumier and Anne Zehnacker*

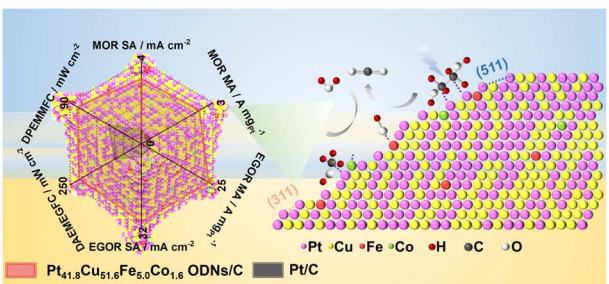
9843



High-throughput encapsulated nanodroplet screening for accelerated co-crystal discovery

Jessica P. Metherall, Philip A. Corner, James F. McCabe, Michael R. Probert and Michael J. Hall*

9854



High-index facet-rich quaternary PtCuFeCo octopods as anti-CO poisoning bifunctional electrocatalysts for direct methanol/ethylene glycol fuel cells

Kaiyu Dong and Qiang Yuan*

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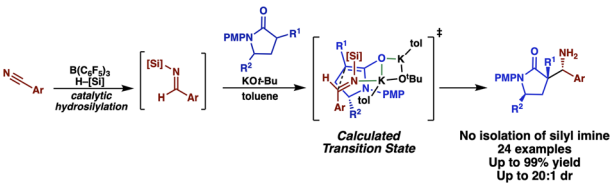
9863

Potassium *tert*-butoxide mediated stereoselective/direct Mannich reaction of α-substituted-γ-lactams with *in situ* generated aryl *N*-silyl imines

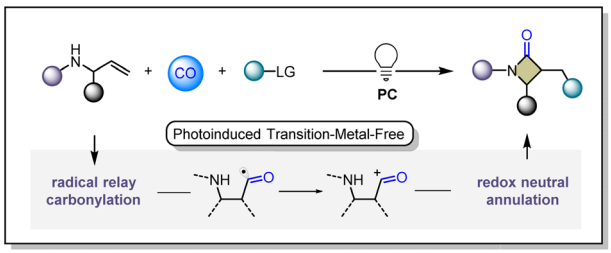
Tyler D. Casselman, Mithun C. Madhusudhanan, Binh Khanh Mai, Peng Liu and Brian M. Stoltz



9872

Photoinduced carbonylative annulation access to β-lactams

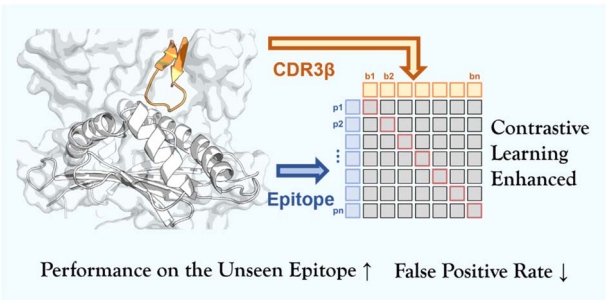
Yuanrui Wang, Xin Qi, Zhi-Peng Bao and Xiao-Feng Wu*



9881

TRAP: a contrastive learning-enhanced framework for robust TCR–pMHC binding prediction with improved generalizability

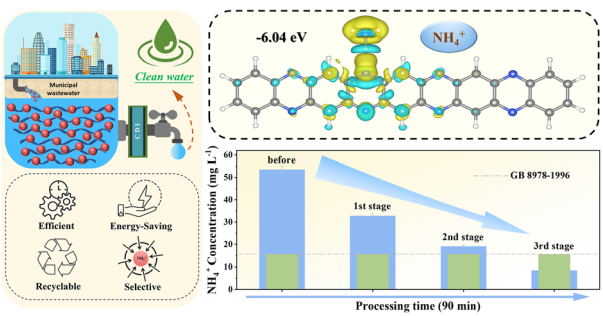
Jingxuan Ge, Jike Wang, Qing Ye, Liqiang Pan, Yu Kang, Chao Shen, Yafeng Deng, Chang-Yu Hsieh* and Tingjun Hou*



9895

An electron-delocalized sp^2-N hybridized organic electrode enables sustainable and high-efficiency electrochemical ammonium removal

Haoyuan Qiu, Minjie Shi,* Peipei Zhang, Yueheng Tao, Xinyue Zhang, Jun Yang, Jingxin Zhao* and Huan Pang*



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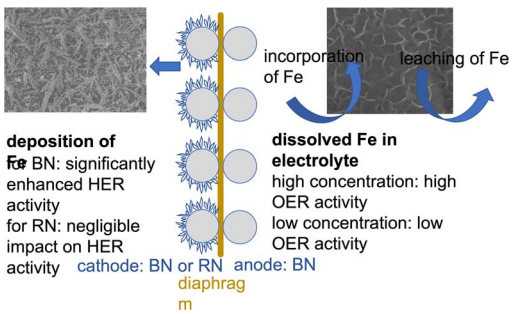
9905

Boosting hydrogen evolution *via* flexoelectric catalysis in gradient F-doped hydroxyapatite nanowires

Yucheng Zhang, Jiawei Huang, Lei Jiang, Jun Qiang, Zhouyang Zhang, Zhanfeng Liu, Yi Liu, Tingfang Tian,* Zhao Wang* and Linfeng Fei*

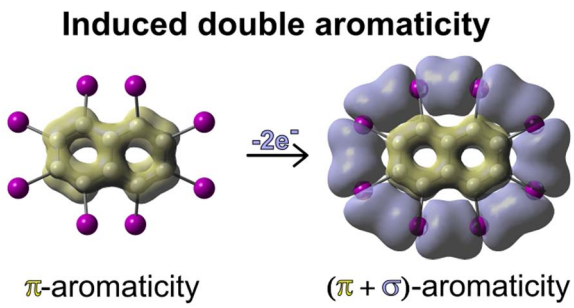
9913



Dynamic and interconnected influence of dissolved iron on the performance of alkaline water electrolysis

Fubiao Di, Cong Chen, Junxia Shen, Zhihe Wei, Wen Dong, Yang Peng, Ronglei Fan,* Mingrong Shen* and Pierre-Yves Olu*

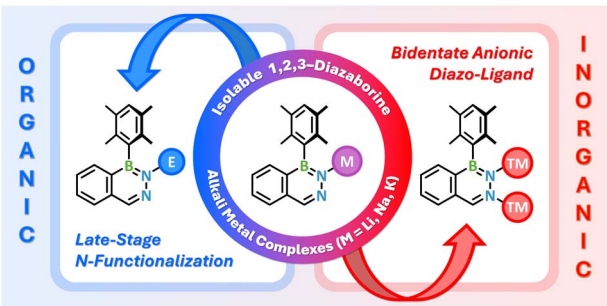
9920



Oxidation-induced double aromaticity in periodo-polycyclic hydrocarbons

Slađana Đorđević, Jordi Poater, Miquel Solà* and Slavko Radenković*

9934



Alkali metal salts of 1,2,3-benzodiazaborines: platforms for late-stage *N*-functionalization and metal complexation

Leonie Wüst, Lea Scheuring, Tim Wellnitz, Krzysztof Radacki and Holger Braunschweig*

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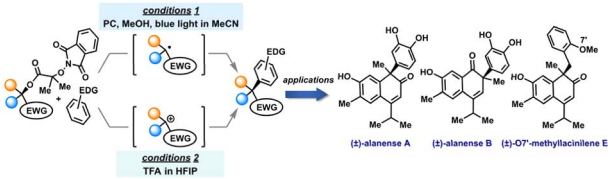
9943

α-*N*-phthalimido-oxy isobutyrate-mediated deoxygenative arylation: total synthesis of alanenses A and B

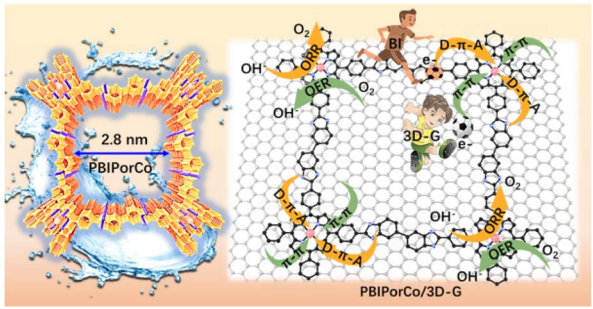
Young Eum Hyun, Jeonguk Kweon, Thi Hieu Linh Phan, Dongwook Kim and Sunkyu Han*



9951

A novel fully conjugated COF adorned on 3D-G to boost the "D–π–A" electron regulation in oxygen catalysis performance

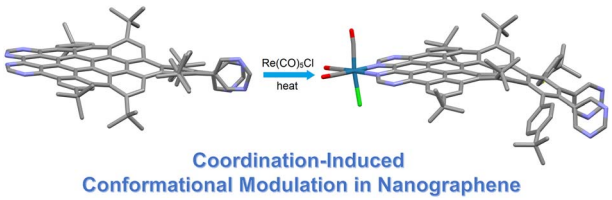
Yinggang Sun, Wenjie Duan, Jigang Wang, Peng Sun, Yanqiong Zhuang and Zhongfang Li*



9966

Rhenium coordination-induced conformational modulation in nitrogen-doped nanographene

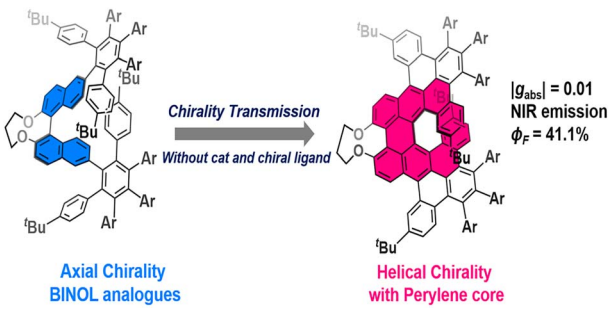
Eldhose V. Varghese, Yi-Hung Liu, Hsing-Yin Chen, Chien-Hung Li and Chia-Hsiang Chen*



9978

Enantiomer-enriched π-extended helicenes with a perylene core from binaphthol: axial-to-helical chirality transfer with a stepwise Scholl reaction mechanism

Zhi-Ao Li, Ke-Lin Zhu, Nai-Te Yao, Jiaqi Liang, Yi-Ling Shang, Ye Zhang and Han-Yuan Gong*



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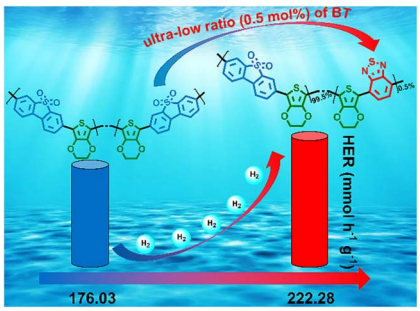
EDGE ARTICLES

9988

Multiple stimulus modulated organic crystal polymorphs with tunable luminescence behavior

Qian Zhou, Mingxia Feng, Caihong Shi, Mengqiu Qian, Xiurong Ma, Runying He, Xian Meng, Yonggang Shi, Qiue Cao and Liyan Zheng*

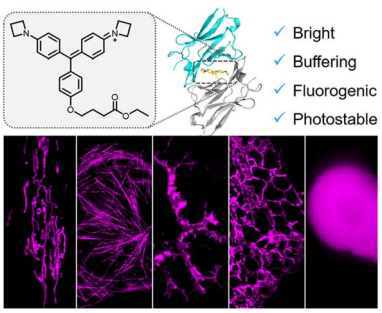
9998



Ultrahigh photocatalytic hydrogen evolution of linear conjugated terpolymers enabled by an ultra-low ratio of the benzothiadiazole monomer

Zheng-Hui Xie, Gang Ye, Hao Gong, Pachaiyappan Murugan, Can Lang, Yi-Fan Dai, Kai Yang and Shi-Yong Liu*

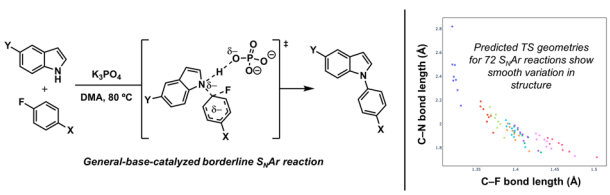
10010



Azetidinyl Malachite Green: a superior fluorogen-activating protein probe for live-cell and dynamic SIM imaging

Fei Deng, Xiangning Fang, Qinglong Qiao,* Guoli Han, Lu Miao, Shuangshuang Long and Zhaochao Xu*

10019



A mechanistic continuum of nucleophilic aromatic substitution reactions with azole nucleophiles

Harrison W. Toll, Xiaoyi Zhang, Tong Gao, Guilherme Dal Poggetto, Mikhail Reibarkh, Joshua J. Lee, Katherine J. Yang, Eugene E. Kwan* and Amanda K. Turek*

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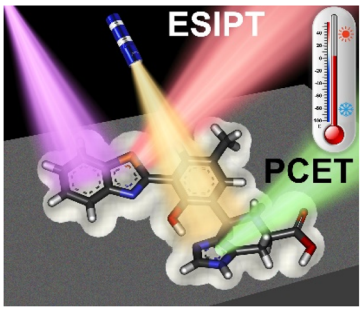
EDGE ARTICLES

10030

An excitation-wavelength-dependent organic photoluminescent molecule with high quantum yield integrating both ESIPT and PCET mechanisms

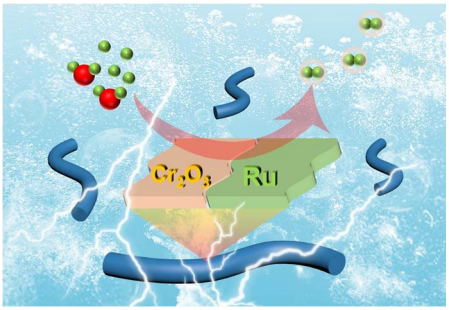
Mengyuan Song, Meng Liu, Xue Zhang, Haijuan Qin, Jinglu Sun, Juanjuan Wang,* Qian Peng, Zhiwei Zhao, Guohui Zhao, Xianchang Yan, Yongxin Chang, Yahui Zhang, Dongdong Wang, Junhui Wang,* Jianzhang Zhao* and Guangyan Qing*



10042

Interfacial engineering of a nanofibrous Ru/Cr_2O_3 heterojunction for efficient alkaline/acid-universal hydrogen evolution at the ampere level

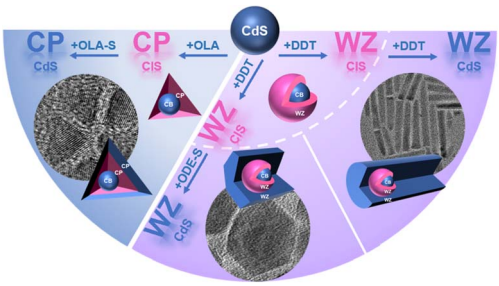
Xianqiang Yu, Mingze Xia, Ruikai Qi, Yuezhu Wang, Mingbin Gao,* Mengxiao Zhong* and Xiaofeng Lu*



10051

Colloidal $CuInS_2$ quantum well nanostructures with II–VI semiconductors as barrier layers

Yue Qin, Xuerong Song, Hanzhuang Zhang, Wenyu Ji* and Jiajia Ning*



CORRECTIONS

10061

Correction: Absolute standard hydrogen electrode potential and redox potentials of atoms and molecules: machine learning aided first principles calculations

Ryosuke Jinnouchi,* Ferenc Karsai and Georg Kresse

CORRECTIONS

10063

Correction: Uncovering diverse reactivity of NHCs with diazoalkane: C–H activation, C=C bond formation, and access to N-heterocyclic methylenehydrazine

Kajal Balayan, Himanshu Sharma, Kumar Vanka, Rajesh G. Gonnade* and Sakya S. Sen*

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