

IN THIS ISSUE

ISSN 2041-6539 CODEN CSHCBM 16(33) 14825–15282 (2025)



Cover
See Liang Zhang *et al.*, pp. 14884–14893. Image reproduced by permission of Liang Zhang from *Chem. Sci.*, 2025, 16, 14884.



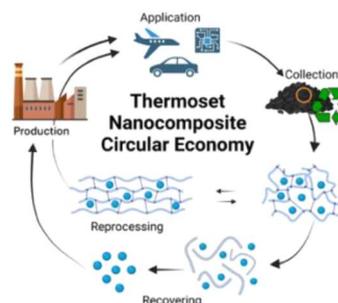
Inside cover
See Fubo Tian, Zhiyao Duan *et al.*, pp. 14894–14904. Image reproduced by permission of Zhiyao Duan from *Chem. Sci.*, 2025, 16, 14894.

PERSPECTIVE

14839

Pathways towards a circular economy for thermoset nanocomposites

Zahra Rezaei and Elisabeth Prince*

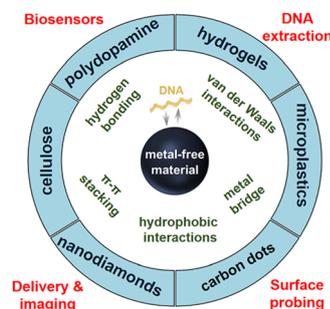


REVIEW

14865

DNA attachment to polymeric, soft and quantum materials: mechanisms and applications

Mohamad Zandieh, Jung Heon Lee and Juewen Liu*



EES Catalysis

GOLD
OPEN
ACCESS

Exceptional research on energy
and environmental catalysis

Open to everyone. Impactful for all

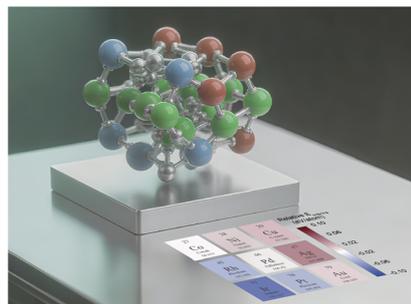
rsc.li/EESCatalysis

Fundamental questions
Elemental answers

14884

Unraveling disorder-to-order transitions and chemical ordering in PtCoM ternary alloys using machine learning potential

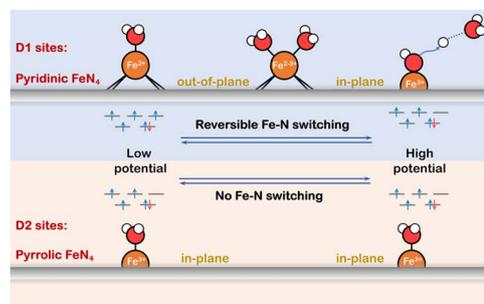
Xiangfu Niu, Shiyu Zhen, Rui Zhang, Jianqiu Li and Liang Zhang*



14894

Deciphering potential-driven dynamics in Fe–N–C catalysts: *ab initio* insights into Fe–N switching and spin-state transition

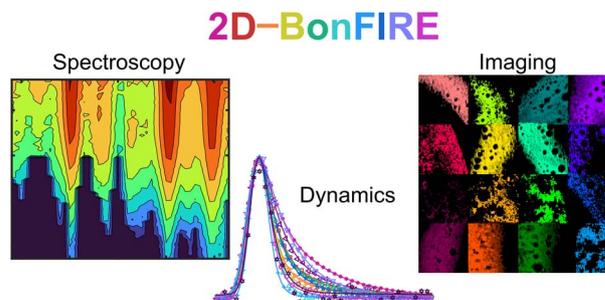
Haobo Li, Fubo Tian* and Zhiyao Duan*



14905

Two-dimensional bond-selective fluorescence spectroscopy: violations of the resonance condition, vibrational cooling rate dispersion, and super-multiplex imaging

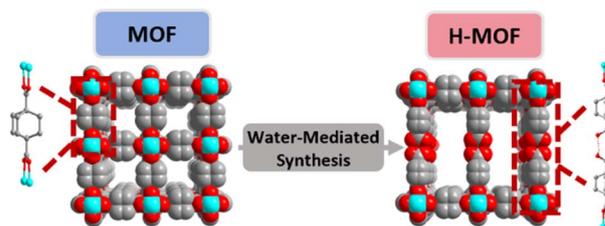
Philip A. Kocheril, Jiajun Du, Haomin Wang, Ryan E. Leighton, Dongkwan Lee, Ziguang Yang, Noor Naji, Adrian Colazo and Lu Wei*



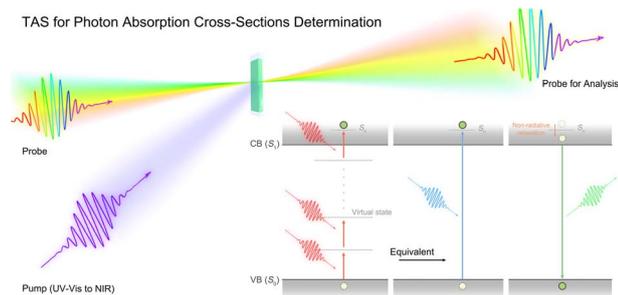
14919

Water-mediated synthesis of hydrogen-bonded metal–organic frameworks

Zongjing Xiao, Pengfei Li, Beibei Sun, Xinrui Bao, Lei Gan and Huajun Yang*



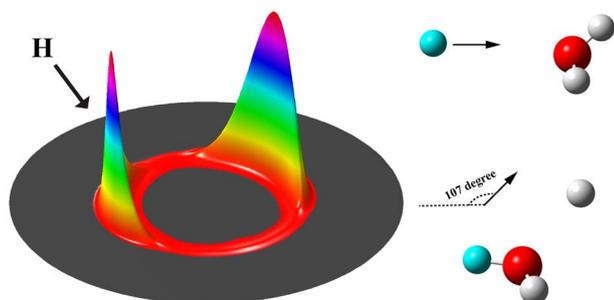
14924



Direct determination of multiphoton absorption cross-sections by transient absorption spectroscopy

Huajun He, Jia Wei Melvin Lim, Minjun Feng, Zengshan Xing and Tze Chien Sum*

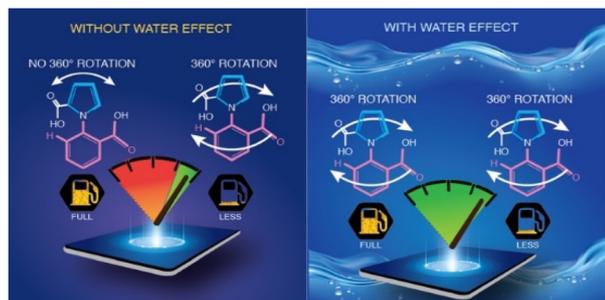
14931



Unusual differential cross sections for the $H + D_2O \rightarrow D + HOD$ exchange reaction induced by the C_{3v} transition state and quantum interference

Shu Liu,* Qun Chen, Kejie Shao, Bina Fu and Dong H. Zhang*

14940

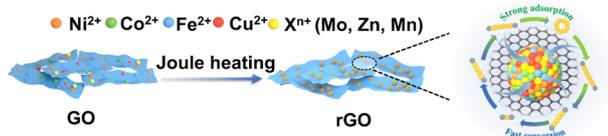


The critical helping hand of water: theory shows the way to obtain elusive, granular information about kinetic asymmetry driven systems

Priyam Bajpai, Shrivatsa Thulasiram and Kumar Vanka*

14956

Table of Contents



High-entropy alloy catalysts with tunable electronic configurations for enhanced sulfur reduction electrocatalysis

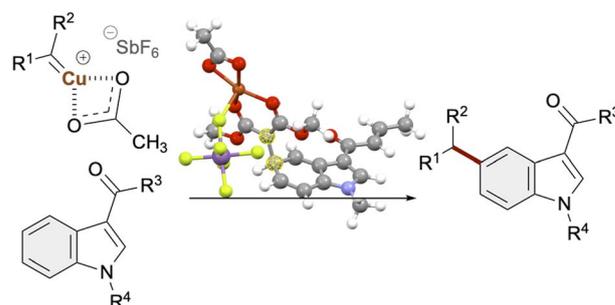
Jingge Shi, Xu He, Hao Zhang, Wei Jiang, Ruizheng Zhao, Manman Wu, Yongzheng Fang, Menggai Jiao, Yiyang Liu* and Zhen Zhou*



14967

Copper-catalyzed direct regioselective C5–H alkylation reactions of functionalized indoles with α -diazomalونات

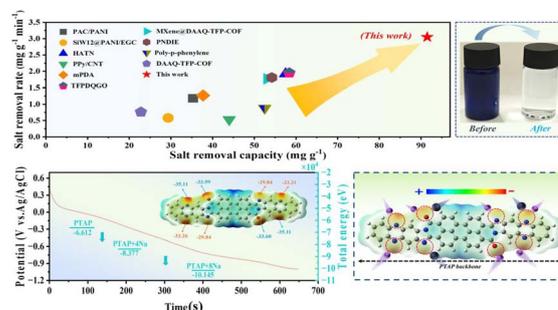
Tomohiro Isono, Shingo Harada,* Mai Yanagawa and Tetsuhiro Nemoto*



14976

Molecularly bridged design of an electron-delocalized dual redox-active organic electrode for high-efficiency capacitive deionization and water treatment

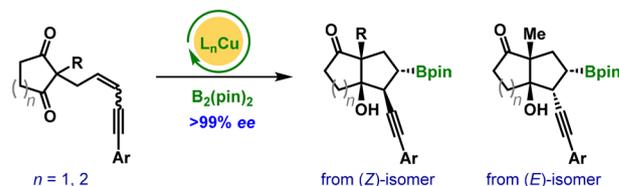
Xinyue Zhang, Haoyuan Qiu, Zhiyong Han, Lei Ke, Mugilan Narayanasamy, Can Cui, Jun Yang,* Minjie Shi and Edison Huixiang Ang*



14988

Cu(I)-catalyzed enantioselective and stereospecific borylative annulation of cyclic 1,3-dione-tethered 1,3-enynes

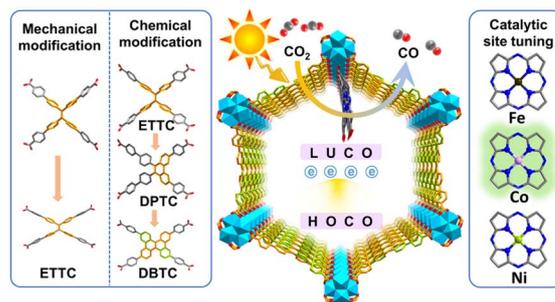
G. Raghu Ramudu, Vaibhav B. Patil, Jagadeesh Babu Nanubolu and Rambabu Chegondi*



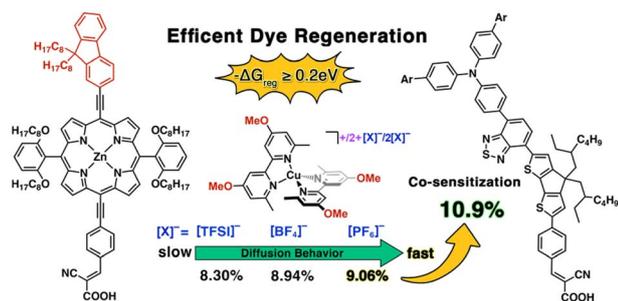
14995

Chemical and mechanical modifications of flexible metal–organic frameworks for enhancing photocatalysis

Yi-Fan Liu, Huihui He, Lei Gao, Rong-Ran Liang, Ji Li, Jinyi Huang, Ya Yin, Yuxuan Meng, Yuxiu Zhong, Rengan Luo, Liang-Liang Zhang,* Hong-Cai Zhou* and Shuai Yuan*



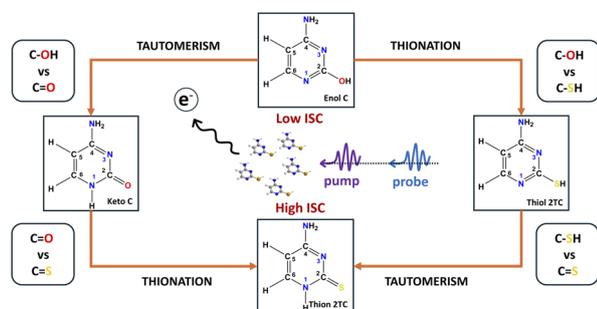
15004



Molecular engineering of porphyrin dyes and copper complexes for enhanced dye regeneration toward high-performance dye-sensitized solar cells using copper(I/II) redox shuttles

Yuzhe Zhang, Tomohiro Higashino,* Keigo Namikawa, W. Ryan Osterloh and Hiroshi Imahori*

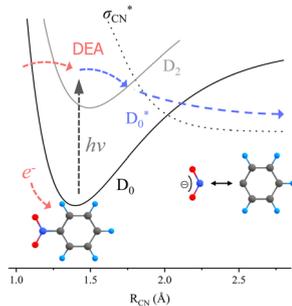
15015



Tautomer aspects in the excited-state dynamics in 2-thiocytosine: intersystem crossing in the absence of the thiocarbonyl group

Bijay Duwal, Isabel Eder, Leticia González, Sebastian Mai* and Susanne Ullrich*

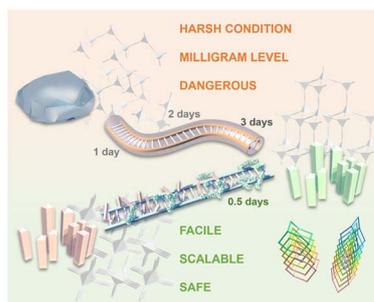
15029



Femtosecond real-time fragmentation dynamics of the nitrobenzene anion reveal the dissociative electron attachment mechanism

Sejun An, Jun Won Choi, Junggil Kim, Dabin Kim and Sang Kyu Kim*

15037



Facile and scalable synthesis of high-quality three-dimensional imine-linked covalent organic frameworks via crystalline intermediate transformation

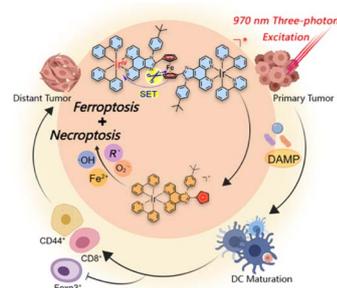
Jiaqiang Liu, Xin Su, Yan Xu, Weiwei Tang,* Taimin Yang* and Junbo Gong*



15045

Photo-uncaging of a ferrocene-bridged dinuclear iridium(III) complex for three-photon photoimmunotherapy against hypoxic melanoma

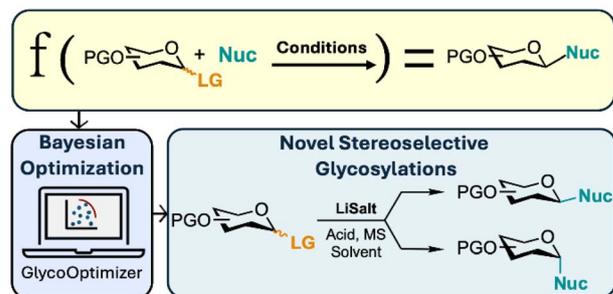
Lina Xie, Zhuoli Chen, Tianying Wang, Jinzhe Liang, Qiaoshan Lie, Chengzhi Jin, Xiting Zhang,* Yu Chen* and Hui Chao*



15056

Discovery of novel glycosylation methods using Bayesian optimization: lithium salt directed stereoselective glycosylations

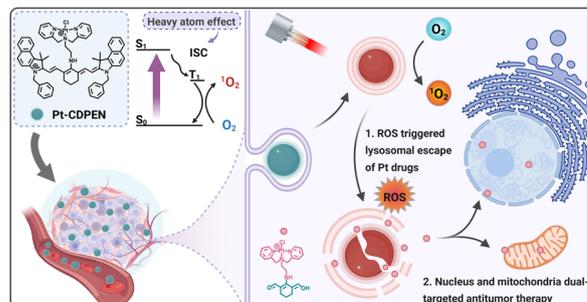
Natasha Videcrantz Faurschou and Christian Marcus Pedersen*



15066

Photoactive monofunctional Pt(II)-cyanine complex for nucleus and mitochondria dual-targeted antitumor therapy

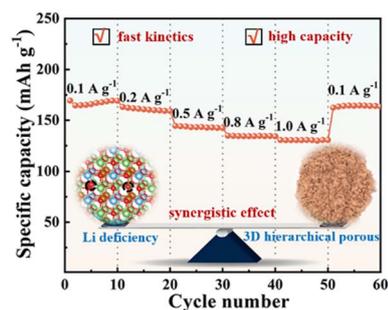
Ting He, Qiaojun Ren, Yu Zhang, Qinan Tang, Chao Jiang, Yurong Liu, Ziguang Wang, Shan Lei, Yifan Zhang, Peng Huang and Jing Lin*



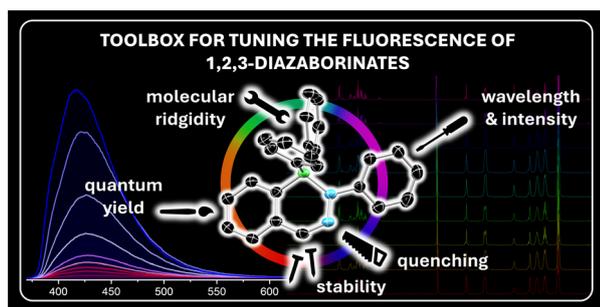
15075

Promoting cationic redox and stabilizing lattice oxygen in an Fe-based DRX cathode by the synergy of initial Li deficiency and 3D hierarchical porous architecture

Wenjie Ma, Yakun Tang,* Yue Zhang, Xiaohui Li, Lang Liu,* Xueting Wang and Yuliang Cao



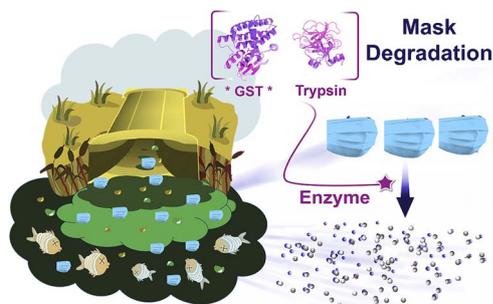
15086



Tuning the emission properties of luminescent 1,2,3-diazaborinates

Leonie Wüst, Johannes Chorbacher, Timo Keim, Tim Wellnitz, Julian Spieß, Nele Wieprecht, Maximilian Michel, Holger Helten* and Holger Braunschweig*

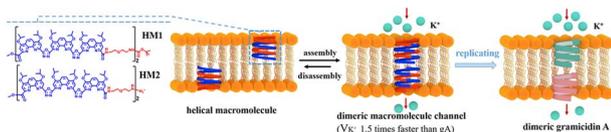
15097



High-efficiency enzymatic biodegradation of polypropylene-based melt-blown fabric debris

Xiu Huang, Li Huang, Qian Wang, Qiurong He, Zunzhen Zhang, Qian Liu* and Guibin Jiang

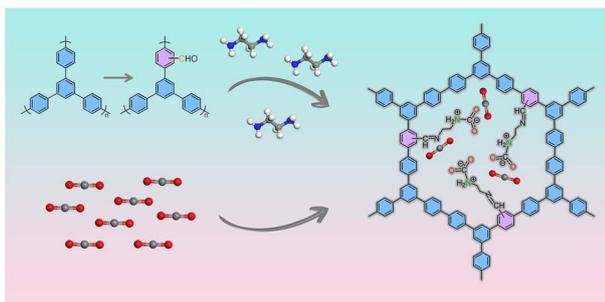
15111



Helical foldamers replicating membrane-spanning gramicidin a with pH responsiveness and ultrafast potassium permeability

Jun Tian, Lei Zhang, Ze Lin, Shizhong Mao and Zeyuan Dong*

15121



A new post-synthetic route to graft amino groups in porous organic polymers for CO₂ capture

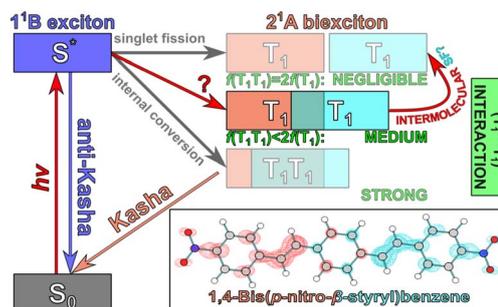
Qihao Yue Wang, Lin Lin, Li Jiang, Zihao Wang, Yina Zhang, Qiance Han, Xin Huang, Changyan Zhu, Jiangtao Jia*, Zheng Bian* and Guangshan Zhu*



15129

Uncovering intramolecular singlet fission at the root of the dual fluorescence of 1,4-bis(*p*-nitro- β -styryl) benzene in solution

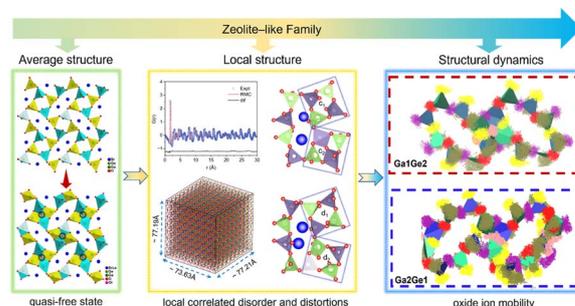
Letizia Mencaroni, Alexandr Zaykov,* Benedetta Carlotti, Fausto Elisei, Guillaume Bastien, Raimondo Germani, Zdeněk Havlas, Anna Spalletti* and Josef Michl



15141

Unlocking zeolite-like structures as a new family of interstitial oxide ion conductors: insights into carrier trapping, collective local distortion, and correlated disorder

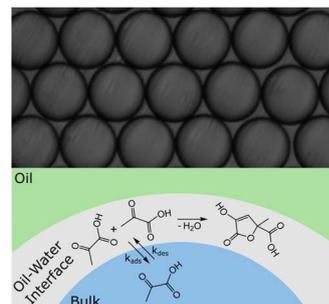
Xianyi Wei, Xiaohui Li,* Aydar Rakhmatullin, Xiaoge Wang, Cheng Li, Hankun Xu, Sihao Deng, Lunhua He, Kun Lin, Qiang Li, Junliang Sun, Xianran Xing and Xiaojun Kuang*



15155

Enhanced reactivity at the oil–water interface accelerates the synthesis of zymonic acid in microemulsions

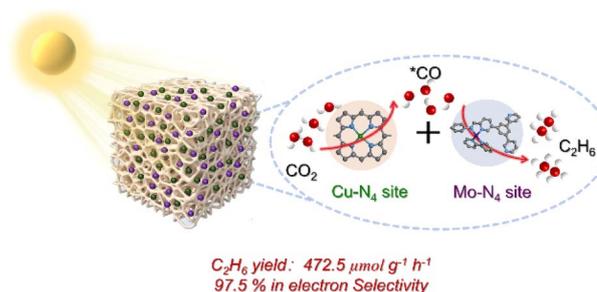
Brandon J. Wallace, Musarrat Makhnun, Rana Bachnak, Pyeongeun Kim, Musahid Ahmed, Cari S. Dutcher, Kevin R. Wilson* and Ashok Ajoy*



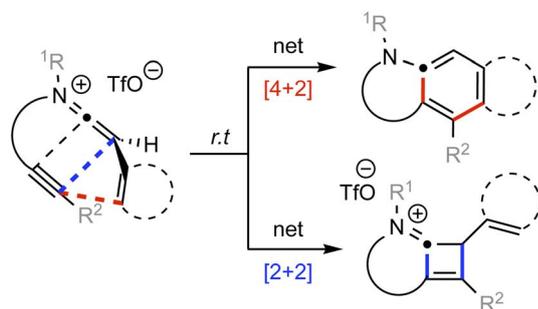
15166

Multi-enzyme reaction inspired photocatalysis for solar-driven CO₂ reduction to ethane

Qian Zhang, Shuaiqi Gao, Xiao Zhao, Huiyong Wang,* Yingying Guo, Zhimin Liu* and Jianji Wang*



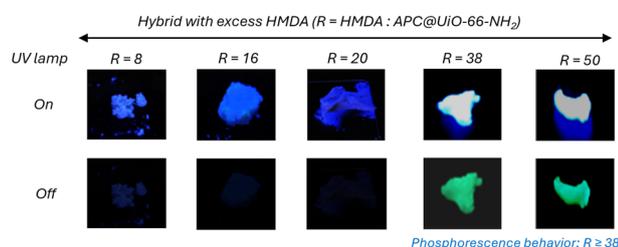
15177



Divergent reactivity of intramolecular cycloadditions of keteniminium ions with alkynes: [4+2] or [2+2]?

Sangjun Lee and Thomas R. Hoye*

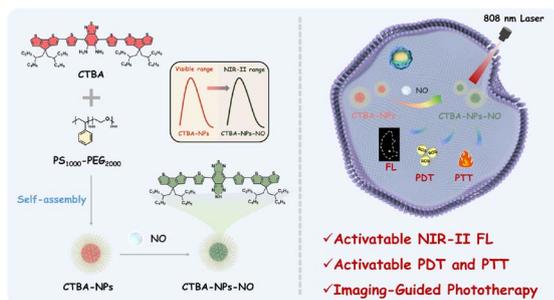
15185



Modulating ultralong room-temperature phosphorescence through mechanical confinement of tailored polymer/MOF hybrid interfaces

Samraj Mollick, Vishal Kachwal, Benjamin Hupp, Yogeshwar D. More, Michele Tricarico, Andreas Steffen and Jin-Chong Tan*

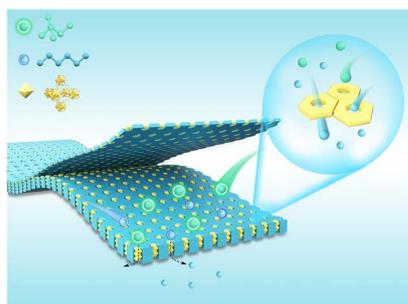
15194



Nitric oxide-activatable NIR-II organic small molecule for fluorescence imaging-guided synergistic photodynamic and photothermal therapy

Xinyi Zhang, Ling Li, Yuxin Ren, Meiqi Li, Xinyi Ma, Yajie Long, Junqing Wang and Yanli Tang*

15206



Confined growth of UiO-66 into ultrahigh-loading membranes for efficient hexane isomer separation

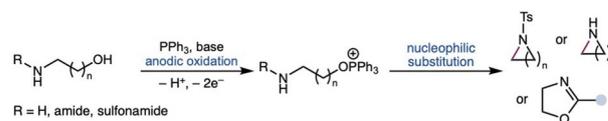
Pan-Pan Zhang, Jing-Ran Yu, Jia-Yu Ding, Wei-Hai Lin, Zhen Chen, Wei Shao, Shu-Chang Wang, Yi-Le Chen, Yi Li,* Qi-Han Gong,* Ming Xue* and Xiao-Ming Chen



15216

Electrochemical synthesis of aziridines, pyrrolidines and oxazolines enabled by azo-free alcohol amination

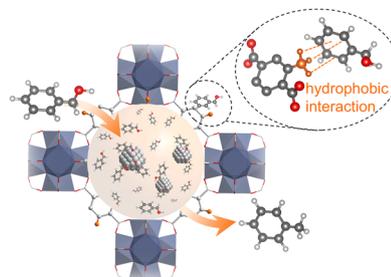
Emma A. Hale and Qilei Zhu*



15223

Creating hydrophobic nanopockets in metal–organic frameworks to promote hydrodeoxygenation of lignin derivatives under ambient conditions

Yan Liang, Hongru Zhou, Yuanxia Zhao, Xiaoyu Liang, Zhiwei Chen, Min Ji* and Min Wang*

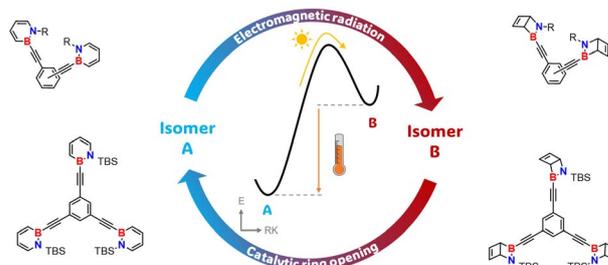


Nanopocket Promotes Hydrodeoxygenation

15231

High energy density dihydroazaborinine dyads and triad for molecular solar thermal energy storage

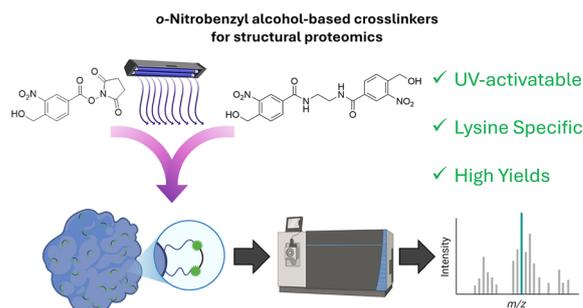
Sonja M. Biebl, Robert C. Richter, Markus Ströbele, Ivana Fleischer* and Holger F. Bettinger*



15239

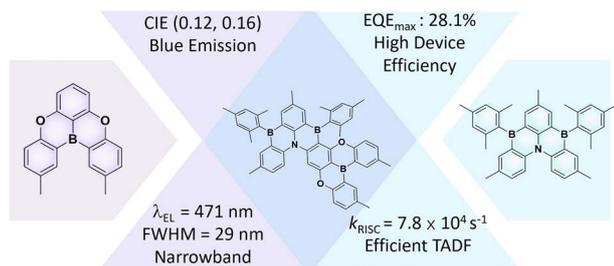
Design and characterisation of photoactivatable and lysine reactive *o*-nitrobenzyl alcohol-based crosslinkers

Adam Cahill, Martin Walko, Benjamin Fenton, Sri Ranjani Ganji, Anne Herbert, Sheena E. Radford, Nikil Kapur, Keith Livingstone,* Megan H. Wright* and Antonio N. Calabrese*



EDGE ARTICLES

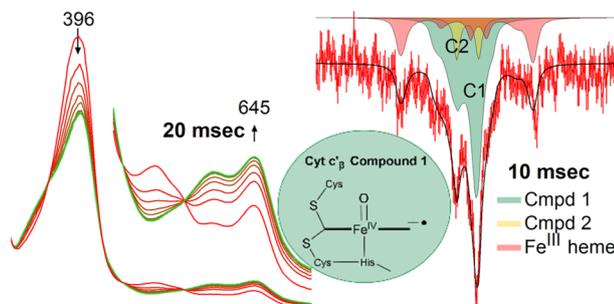
15256



A three boron doped B/O/N multi-resonant TADF emitter for improved reverse intersystem crossing rate and efficient pure blue organic light-emitting diodes

Sen Wu, Dongyang Chen, Mathilde Seinfeld, Aidan P. McKay, David B. Cordes, Xiaohong Zhang and Eli Zysman-Colman*

15265



Detection and characterization of a compound 1 species from the c-type heme enzyme cytochrome c'β

Jared C. Paris, Joline Nguyen, Hyung J. Kim and Michael P. Hendrich*

CORRECTIONS

15276

Correction: A supramolecular nanovehicle toward systematic, targeted cancer and tumor therapy

Ruizheng Liang, Shusen You, Lina Ma, Chunyang Li, Rui Tian, Min Wei,* Dan Yan,* Meizhen Yin,* Wantai Yang, David G. Evans and Xue Duan

15278

Correction: Arylazobenzimidazoles: versatile visible-light photoswitches with tuneable Z-isomer stability

Sophie A. M. Steinmüller, Magdalena Odaybat, Giulia Galli, Davia Prischich, Matthew J. Fuchter* and Michael Decker*

