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See Sylvain Chambon, Alexander Kuhn *et al.*, pp. 10691–10700. Image reproduced by permission of Naïs Coq and Alexander Kuhn from *Chem. Sci.*, 2025, **16**, 10691.

Inside cover
See Qingyun Wan, Chi-Ming Che *et al.*, pp. 10701–10713. Image reproduced by permission of Minying Xue from *Chem. Sci.*, 2025, **16**, 10701.

PERSPECTIVE

10642

Synergistic effects of atomically precise Au-based bimetallic nanocluster on energy-related small molecule catalysis

Yuanxin Du,* Yi Fang, Pei Wang and Manzhou Zhu*

REVIEW

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Role of chemistry in nature-inspired skin adhesives

Xiao Yang, Xiaonan Liu, Yeung Yeung Chau, Xuezhi Qin, Hong Zhu, Liang Peng, Kannie W. Y. Chan and Zuankai Wang*

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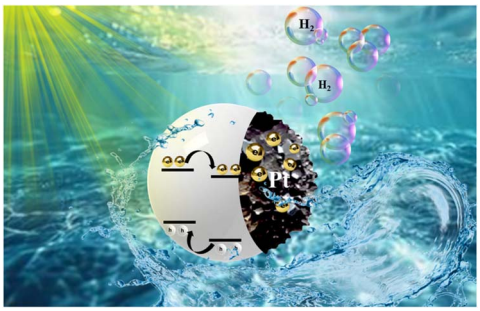
EDGE ARTICLES

10691

Targeted design of organic Janus particles for improved photocatalytic hydrogen evolution

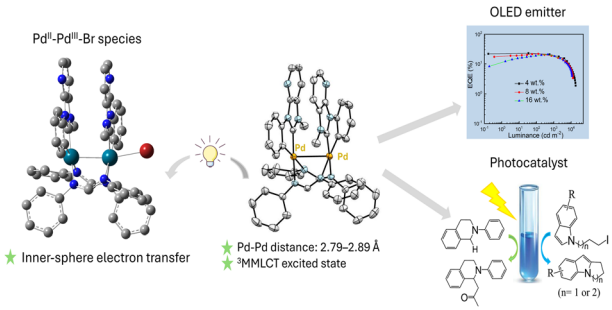
Khaoula Missaoui, Guillaume Wantz, Thierry Toupance, Sylvain Chambon* and Alexander Kuhn*



10701

^{3}MMLCT excited states of luminescent binuclear Pd^{II} complexes: excited state inner-sphere electron-transfer reactions and application

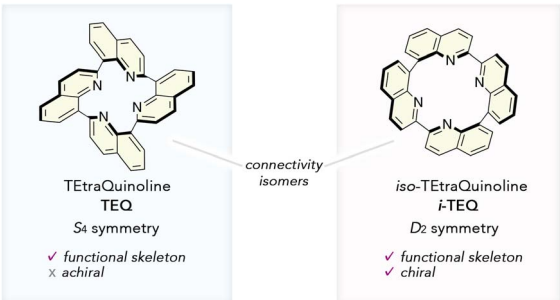
Minying Xue, Wai-Pong To, Gang Cheng, Yuzhen Zhang, Zhou Tang, Lili Du, Kam-Hung Low, Qingyun Wan* and Chi-Ming Che*



10714

***iso*-TEtraQuinoline (*i*-TEQ): an inherently chiral N4 macrocyclic quinoline tetramer**

Ryota Yagami, Wei Xu, Toi Kobayashi, Yuuya Nagata and Naoya Kumagai*



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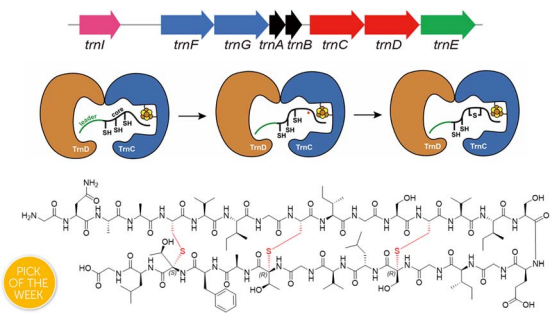
Synergistic action of two radical SAM enzymes in the biosynthesis of thuricin CD, a two-component sactibiotic

Yifei Jia, Yuanjun Han, Xuxue Liu and Qi Zhang*



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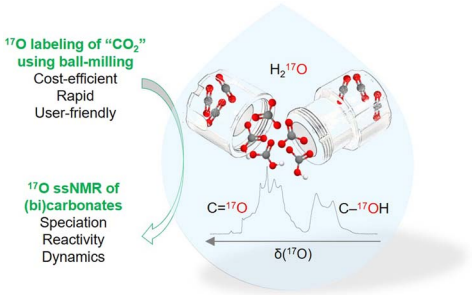
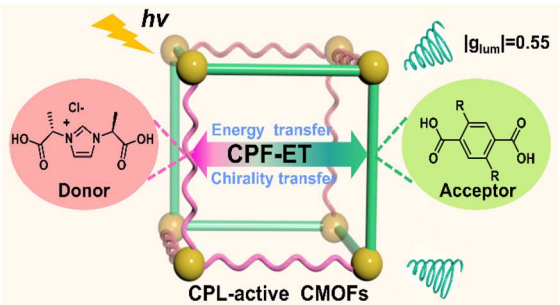
10731



Capturing and labeling CO_2 in a jar: mechanochemical ^{17}O-enrichment and ssNMR study of sodium and potassium (bi)carbonate salts

Austin Peach,* Nicolas Fabregue, Célia Erre, Thomas-Xavier Métro, David Gajan, Frédéric Mentink-Vigier, Faith Scott, Julien Trébosc, Florian Voron, Nicolas Patris, Christel Gervais and Danielle Laurencin*

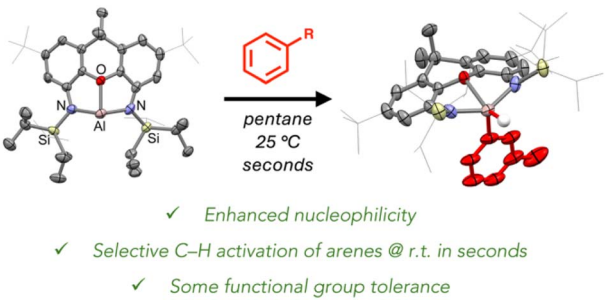
10742



Rational design of circularly polarized luminescence active chiral metal–organic frameworks for logic devices

Hongrui Zheng, Qingqing Wang, Fei Wang,* Shangda Li* and Jian Zhang*

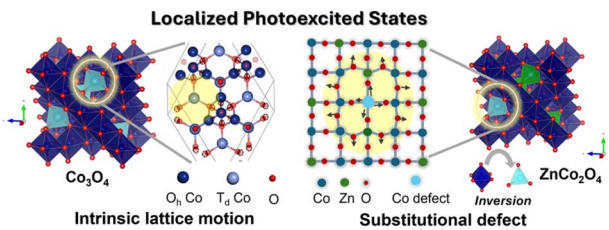
10750



Enhancing the nucleophilicity of aluminyl anions: targeting selective C–H activation

Fabian Kallmeier, Gareth R. Nelmes, Claire L. McMullin, Alison J. Edwards and Jamie Hicks*

10759



Local coordination geometry within cobalt spinel oxides mediates photoinduced polaron formation

Erica P. Craddock, Jacob L. Shelton, Michael T. Ruggiero and Kathryn E. Knowles*

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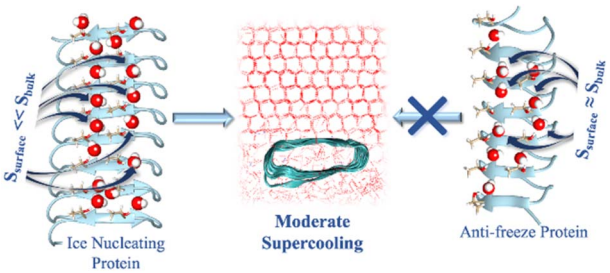
10771

Water entropy at the threonine-rich surface of antifreeze and ice-nucleating proteins: small changes make a big difference

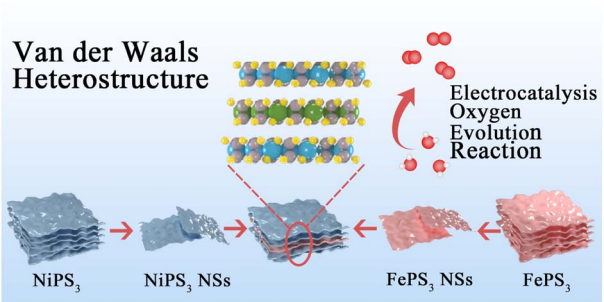
Deabsis Saha, Rahul Aich, Arnab Mukherjee* and Biman Jana*



10785

Van der Waals heterostructures *via* spontaneous self-restacked assembling for enhanced water oxidation

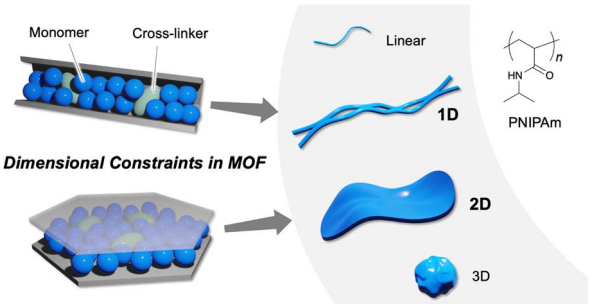
Rui Wang, Shuhui Li, Yang Hu, Shanshan Wu, Jiamin Zhu, Li An,* Pinxian Xi* and Chun-Hua Yan



10796

Fabrication of low-dimensional network polymers with thermoresponsive properties using MOF scaffolds

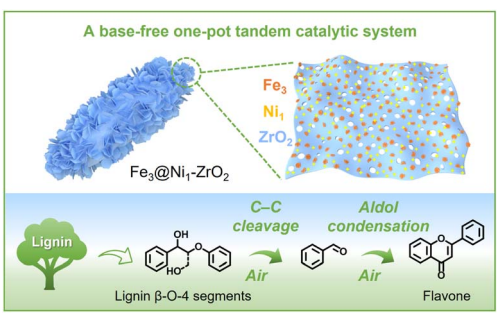
Yuki Kametani, Ami Nishijima, Shu Hiramoto and Takashi Uemura*



10803

Atomic Ni-doped ZrO_2 with subnanometric Fe clusters for tandem C–C bond cleavage and coupling

Xin Zhao, Jie Wen, Qian Qiang, Dawang Tang, Fengliang Wang, Ruiqi Fang,* Changzhi Li and Yingwei Li*



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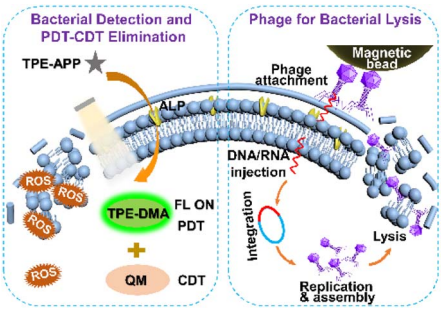
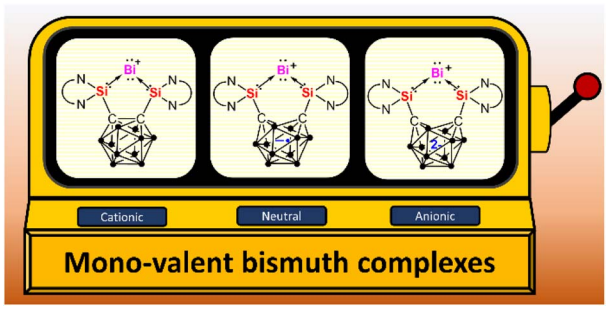


Targeted recognition, fluorescent tracking and augmented killing of multi-bacterial infections *via* synergizing a magnetic bead-armored phage cocktail with enzyme-activated AIE probes

Zhenyue Su, Ling-Hong Xiong,* Jing Zhang, Ben Zhong Tang* and Xuewen He*

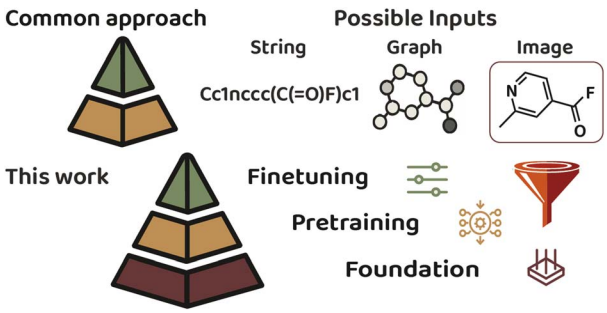
10826



Isolable monoatomic monovalent bismuth complexes with a redox non-innocent bis-silylenyl carborane ligand

Jian Xu, Shenglai Yao, Verònica Postils, Eduard Matito, Christian Lorent and Matthias Driess*

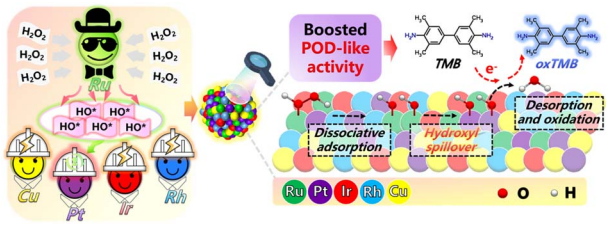
10833



Data efficient molecular image representation learning using foundation models

Yonatan Harnik, Hadas Shalit Peleg, Amit H. Bermano* and Anat Milo*

10842



Multi-site orbital coupling in Ru-based high-entropy alloy-enabled hydroxyl spillover for enhanced peroxidase-like activity

Qi Yang, Jiawei Zhang, Yuxi Tang, Yan Ju, Xuejiao Gao,* Chaoyang Chu, Huimin Jia* and Weiwei He*

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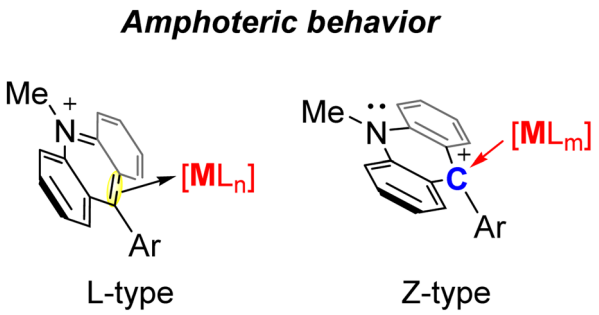
10852

L/Z-ligand type amphoterism of an acridinium unit

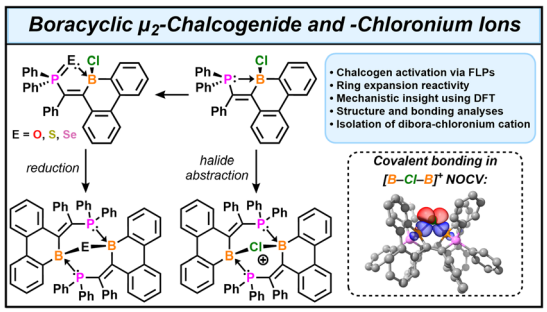
Elishua D. Litle, Shantabh Bedajna and François P. Gabbaï*



10857

Borinine-FLP ring expansion: isolation of eight-membered B–P rings bridged by μ_2 chalcogenide and chloronium ions

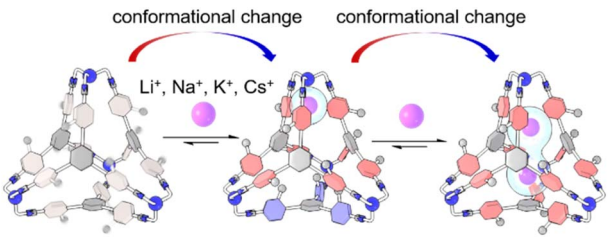
Nathan C. Frey, Samir Kumar Sarkar, Diane A. Dickie, Andrew Molino and Robert J. Gilliard, Jr*



10867

A conformationally adaptable tetrahedral cage with different guest encapsulation models

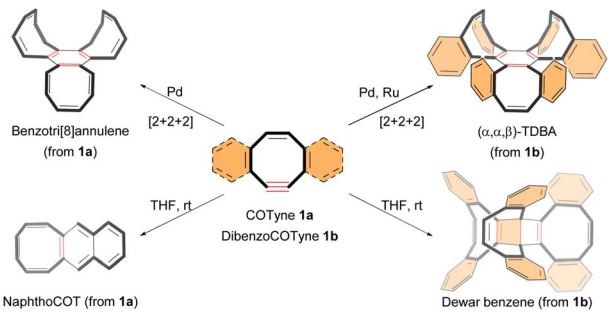
Hua Tang, Yuyang Lu, Yongwei Qian, Chenqi Ge, Jiyong Liu, Hongliang Chen* and Hao Li*



10874

Transition metal-free *vs.* metal-catalyzed cyclotrimerization of didehydro[8]annulenes (COTynes): a complex pathway to non-planar PAHs – Dewar benzenes *vs.* benzotri[8]annulenes

Jesús Bello-García, Jesús A. Varela* and Carlos Saá*



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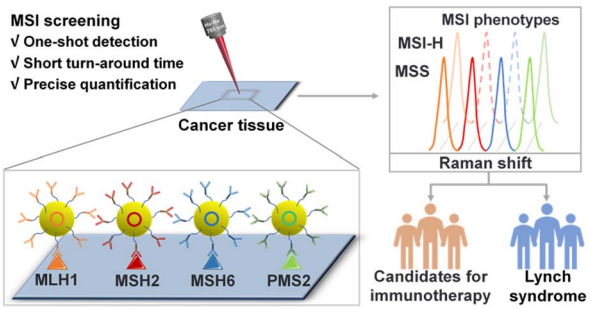
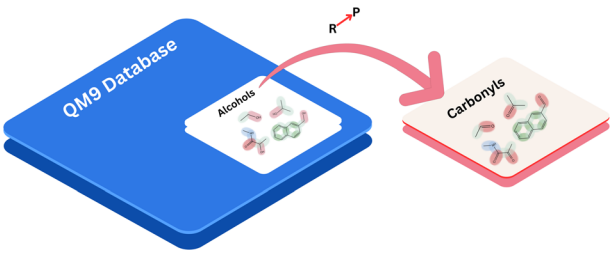


Detecting microsatellite instability in cancer *via* multiplexed orthogonal gap-enhanced Raman tags

Guowei Fu, Jin Li,* Qian Zhang, Changjun Lv, Zhiyang Zhang, Xiaoyan Wang, Rihui Wu* and Lingxin Chen*

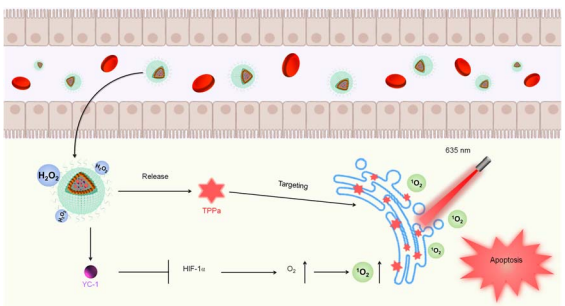
10895



"Amide − amine + alcohol = carboxylic acid." chemical reactions as linear algebraic analogies in graph neural networks

Amer Marwan El-Samman* and Stijn De Baerdemacker

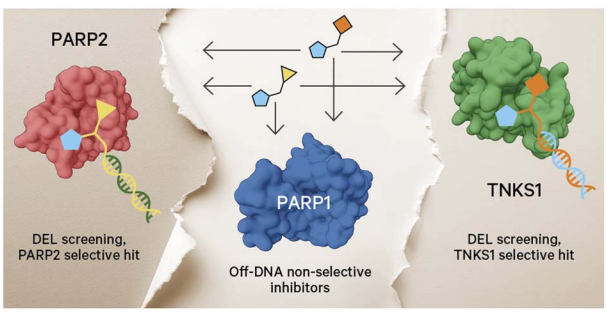
10909



Endoplasmic reticulum-targeting activatable nanophotosensitizers for hypoxia relief and enhanced photodynamic therapy

Shanchao Diao, Xiaowen He, Ying Wu, Likun Yin, Yuxin Huang, Wen Zhou,* Chen Xie* and Quli Fan*

10918



Widespread false negatives in DNA-encoded library data: how linker effects impair machine learning-based lead prediction

Alba L. Montoya, Adam S. Hogendorf, Steven Tingey, Aadarsh Kuberan, Lik Hang Yuen, Herwig Schüler and Raphael M. Franzini*

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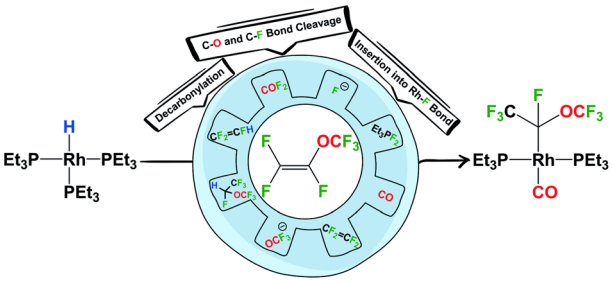
10928

Activation of perfluoro(methyl vinyl ether) at Rh(I) complexes: metal-centered *versus* phosphine-mediated decarbonylation

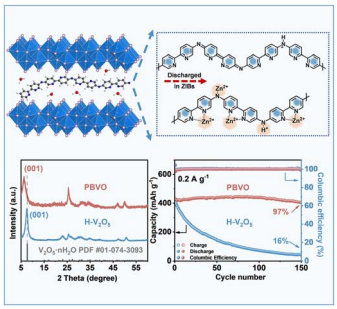
Soodeh Mollasalehi, Mike Ahrens and Thomas Braun*



10935

A multinitrogen π-conjugated conductive polymer stabilizing ultra-large interlayer spacing in vanadium oxides for high-performance aqueous zinc-ion batteries

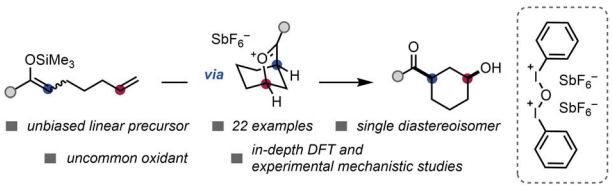
Weijian Li, Kaiyue Zhu,* Weikang Jiang, Hanmiao Yang, Weili Xie, Zhengsen Wang and Weishen Yang*



10944

Diastereoselective Umpolung cyclisation of ketones promoted by hypervalent iodine

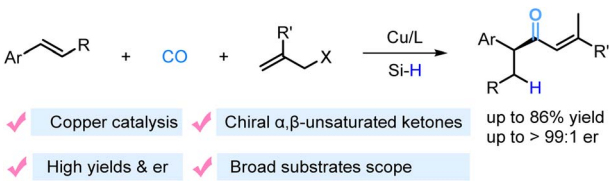
Giulia Iannelli, Philipp Spieß, Ricardo Meyrelles, Daniel Kaiser, Boris Maryasin, Leticia González and Nuno Maulide*



10951

Copper-catalyzed asymmetric carbonylative hydroallylation of vinylarenes

Sufang Shao, Yang Yuan, Alban Schmoll and Xiao-Feng Wu*



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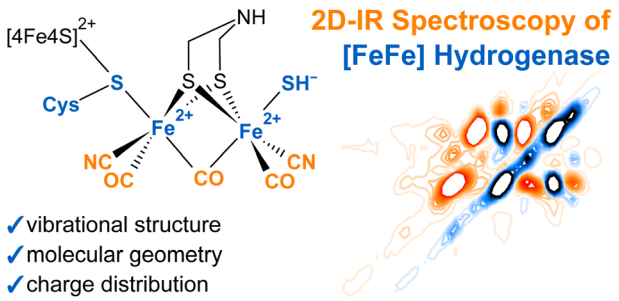
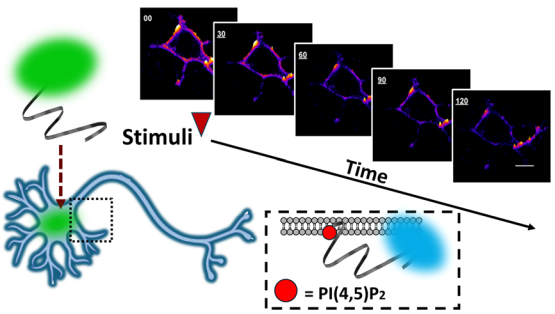
10957



Two-dimensional infrared spectroscopy as a tool to reveal the vibrational and molecular structure of [FeFe] hydrogenases

Cornelius C. M. Bernitzky, Yvonne Rippers, Denise Poire, Mathesh Vaithiyanathan, Solomon L. D. Wrathall, Barbara Procacci, Igor V. Sazanovich, Gregory M. Greetham, Patricia Rodríguez-Macía, Neil T. Hunt, James A. Birrell and Marius Horch*

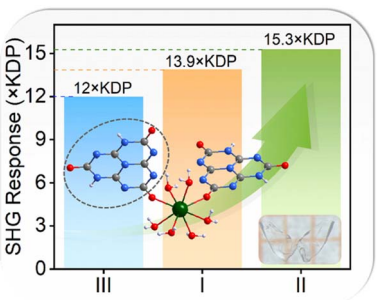
10970



A cell-permeable fluorescent probe reveals temporally diverse PI(4,5)P2 dynamics evoked by distinct GPCR agonists in neurons

Rajasree Kundu, Samsuzzoha Mondal, Akshay Kapadia, Antara A. Banerjee, Oleksandr A. Kucherak, Andrey S. Klymchenko, Sandhya P. Koushika, Ravindra Venkatramani, Vidita A. Vaidya and Ankona Datta*

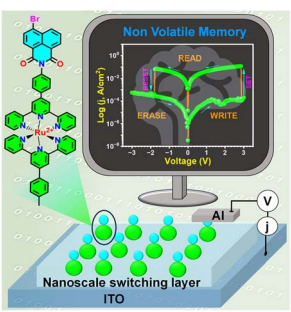
10983



"Three functions in one": multifunctional rare-earth cyamelurates with magnetism, luminescence, and giant optical nonlinearity

Jing Zhang, Yuxiao Liu, Fangyan Wang, Pifu Gong, Zhaoyi Li, Xinyuan Zhang,* Fei Liang,* Shu Guo, Zhanggui Hu and Yicheng Wu

10990



Electrosynthesis of molecular memory elements

Pradeep Sachan, Anwesha Mahapatra, Lalith Adithya Sai Channapragada, Rajwinder Kaur, Shubham Sahay and Prakash Chandra Mondal*

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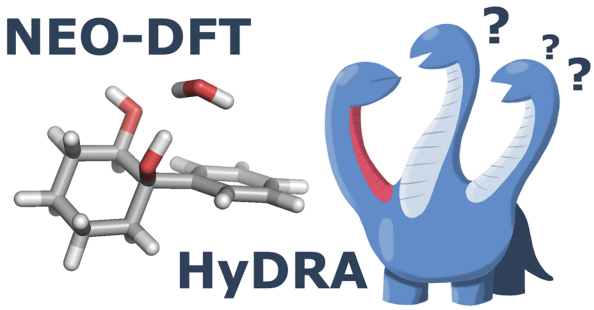
11002

Accurate vibrational hydrogen-bond shift predictions with multicomponent DFT

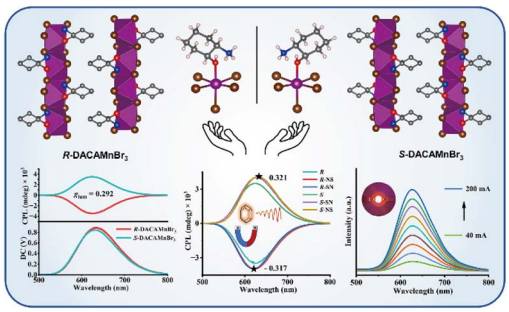
Martí Gimferrer, Lukas Hasecke, Margarethe Bödecker and Ricardo A. Mata*



11012

A strategy of chiral cation coordination to achieve a large luminescence dissymmetry factor in 1D hybrid manganese halides

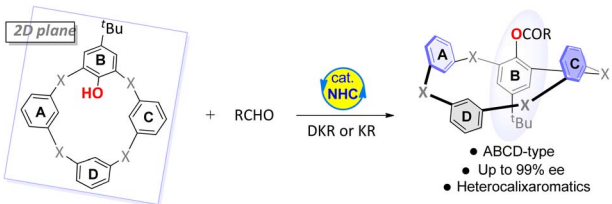
Fei Wang, Xingjun Li,* Tianqi Chen, Liqing Wang, Chenliang Li, Wei Zhang, Wen Yuan, Shan Lu, Lina Li and Xueyuan Chen



11021

***N*-Heterocyclic carbene-catalyzed enantioselective (dynamic) kinetic resolution for the assembly of inherently chiral macrocycles**

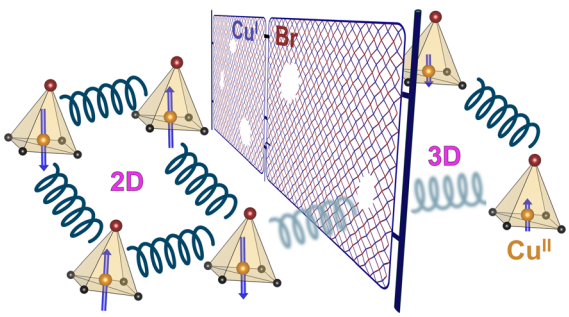
Zhipeng Li, Jingyang Zhang, Wanmeng Zhu, Tianyi Wang, Yefeng Tang and Jian Wang*



11027

A competition between 2D and 3D magnetic orderings in novel mixed valent copper frameworks

Yao Abusa, Joshua Greenfield, Gayatri Viswanathan, Smitakshi Goswami, Emma Ross, Philip Yox, Richeal Oppong, Iyanu Ojo, Jifeng Liu, Andrew Ozarowski and Kirill Kovnir*



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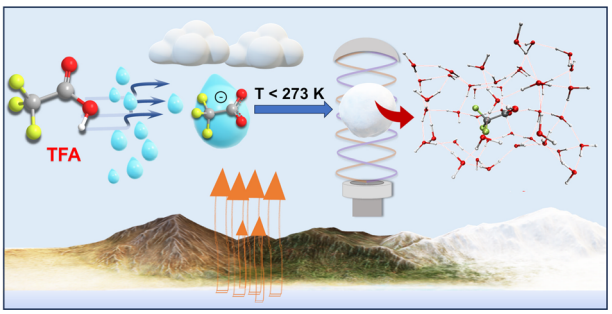
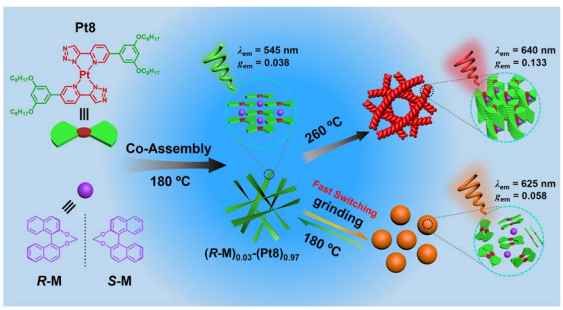
11039



Probing the freezing chemistry of singly levitated aqueous trifluoroacetic acid droplets in a cryogenically cooled simulation chamber relevant to Earth's upper troposphere

Koushik Mondal, Souvick Biswas, Nils Melbourne, Rui Sun* and Ralf I. Kaiser*

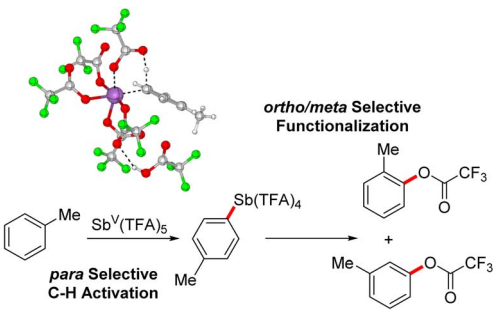
11049



Fast emission color switching of circularly polarized luminescence in platinum(II) liquid crystalline co-assembly

Guo Zou, Qihuan Li, Zhenhao Jiang, Wentong Gao and Yixiang Cheng*

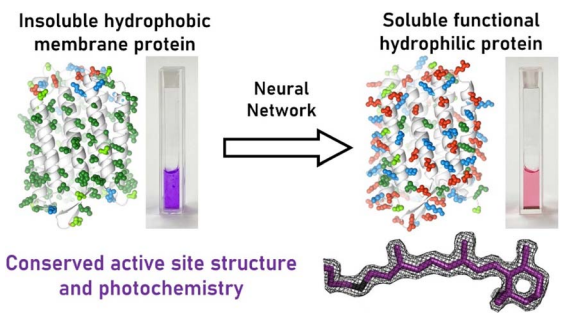
11058



Computational and experimental evidence for Sb(V) metal mediated C–H activation and oxidative functionalization of arenes

Anjaneyulu Koppaka,* Shu-Sen Chen, Dongdong Yang, Artem Marchenko, Sanaz Mohammadzadeh Koumleh, David J. Michaelis, Roy A. Periana* and Daniel H. Ess*

11067



Engineering of soluble bacteriorhodopsin

Andrey Nikolaev, Yaroslav Orlov, Fedor Tsybrov, Elizaveta Kuznetsova, Pavel Shishkin, Alexander Kuzmin, Anatolii Mikhailov, Yulia S. Nikolaeva, Arina Anuchina, Igor Chizhov, Oleg Semenov, Ivan Kapranov, Valentin Borshchevskiy, Alina Remeeva and Ivan Gushchin*

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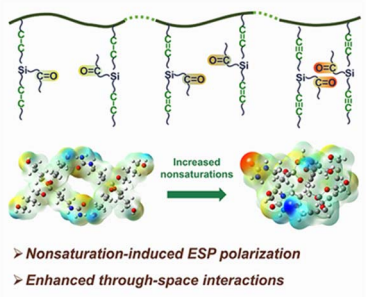
11077

Tunable luminescence of hyperbranched polysiloxanes by nonsaturation-induced electrostatic potential polarization for activatable fluorescent theranostics

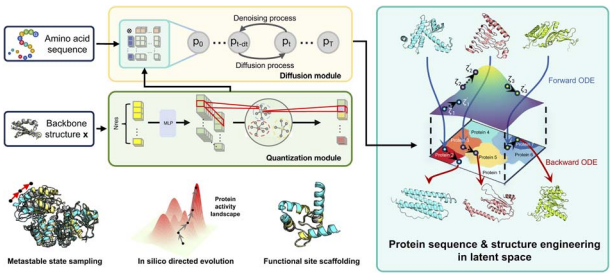
Yan Zhao, Zhixuan Feng, Miaomiao He, Xiangyi Wang, Weixu Feng, Wei Tian and Hongxia Yan*



11087

Unifying sequence-structure coding for advanced protein engineering *via* a multimodal diffusion transformer

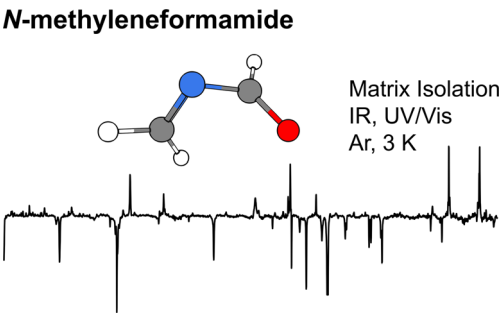
Xiaohan Lin, Zhenyu Chen, Yanheng Li, Zicheng Ma, Chuanliu Fan, Ziqiang Cao, Shihao Feng,* Jun Zhang* and Yi Qin Gao*



11103

Generation and UV-photolysis of *N*-methyleneformamide

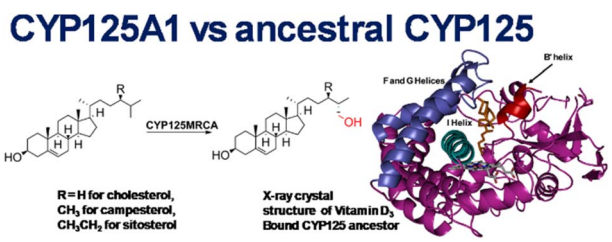
Viktor Paczelt, Vladimir D. Drabkin, Daniel Kühn and André K. Eckhardt*



11110

Evolutionary insights into the selectivity of sterol oxidising cytochrome P450 enzymes based on ancestral sequence reconstruction

Daniel Z. Doherty,* James J. De Voss, John B. Bruning and Stephen G. Bell*



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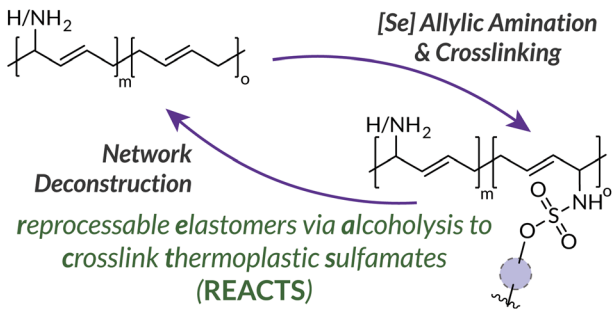
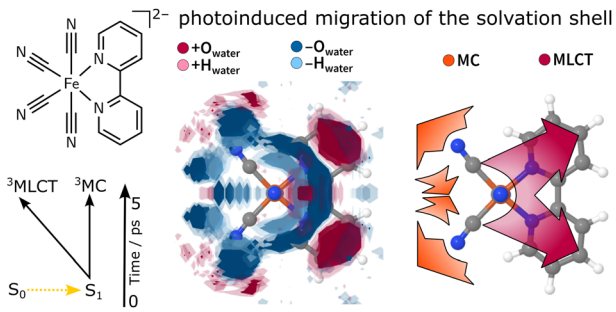


Crosslinking 1,4-polybutadiene *via* allylic amination: a new strategy for deconstructable rubbers

Mercie N. Hodges, Ana Paula Kitos Vasconcelos, Laura J. Reed and Matthew R. Golder*

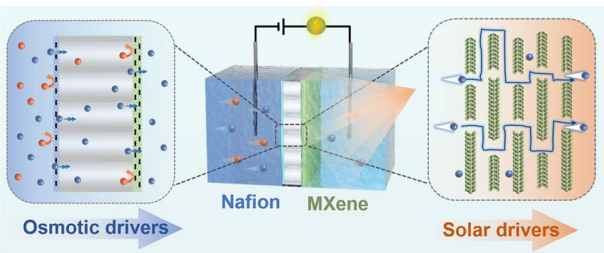
11128



Ultrafast solvent migration in an iron complex revealed by nonadiabatic dynamics simulations

Severin Polonius, Leticia González* and Sebastian Mai*

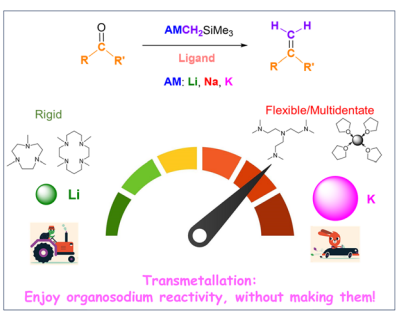
11138



Two-sided asymmetric nanofluidic membrane for enhanced ion transport and osmotic energy harvesting

Qijun Zheng, Yue Shen, Junjian Lu, Yan Xu, Xing-Hua Xia and Chen Wang*

11151



C═O methylenation mediated by organo-alkali metal reagents: metal identity and ligand effects

Xiao Yang, Nathan Davison,* Matthew E. Lowe, Paul G. Waddell, Roly J. Armstrong,* Claire L. McMullin,* Matthew N. Hopkinson and Erli Lu*

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CORRECTIONS

11161

Correction: Iron-catalyzed three-component 1,2-azidoalkylation of conjugated dienes *via* activation of aliphatic C–H bonds

Zhen-Yao Dai, Chenxi Lin, Derek B. Hu and Jennifer M. Schomaker*

11162

Correction: 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*

11163

Correction: On-surface synthesis of organometallic nanorings linked by unconventional intermediates of the Ullmann reaction

Xiaoyang Zhao, Liqian Liu, Zhipeng Zhang, Tianchen Qin, Jun Hu, Lei Ying, Junfa Zhu, Tao Wang* and Xinrui Miao*

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