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See Brijith Thomas, Mahesh Hariharan *et al.*, pp. 16015–16024. Image reproduced by permission of Brijith Thomas from *Chem. Sci.*, 2024, **15**, 16015.

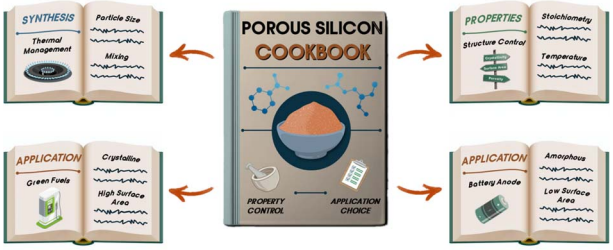
Inside cover
See Akihiko Kudo *et al.*, pp. 16025–16033. Image reproduced by permission of Akihiko Kudo from *Chem. Sci.*, 2024, **15**, 16025.

PERSPECTIVE

15954

Key developments in magnesiothermic reduction of silica: insights into reactivity and future prospects

Maximilian Yan, Sarah Martell, Siddharth V. Patwardhan and Mita Dasog*

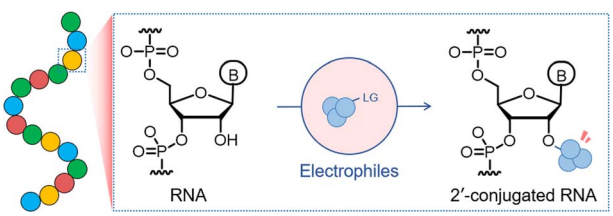


REVIEWS

15968

Chemical diversity of reagents that modify RNA 2′-OH in water: a review

Ryuta Shioi and Eric T. Kool*



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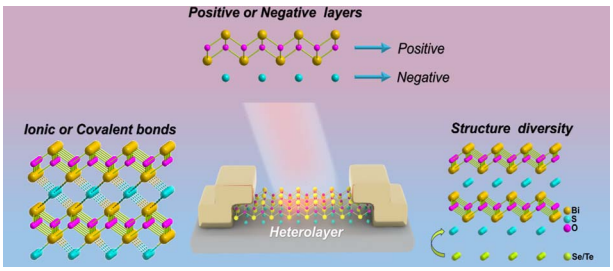
REVIEWS

15983

2D compounds with heterolayered architecture for infrared photodetectors

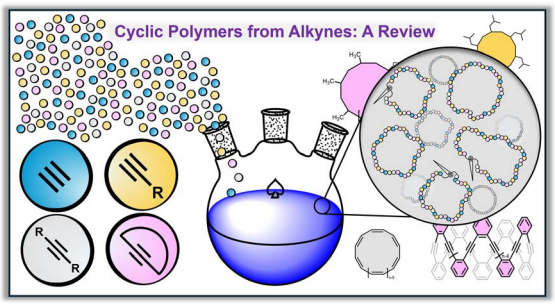
Hao Gu, Tianshuo Zhang, Yunluo Wang, Tianrui Zhou and Haijie Chen*



16006

Cyclic polymers from alkynes: a review

Parker T. Boeck and Adam S. Veige*

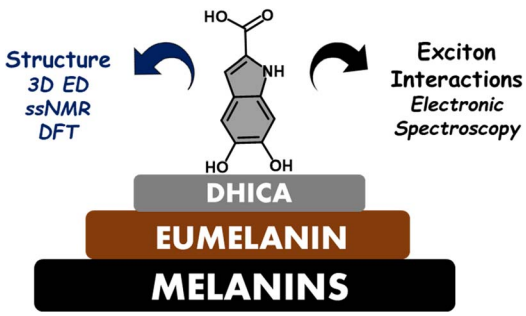


EDGE ARTICLES

16015

Electron diffraction and solid-state NMR reveal the structure and exciton coupling in a eumelanin precursor

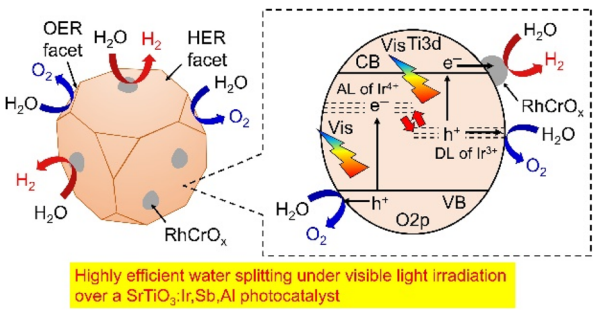
Kavya Vinod, Renny Mathew, Christian Jandl, Brijith Thomas* and Mahesh Hariharan*



16025

Water splitting over transition metal-doped $SrTiO_3$ photocatalysts with response to visible light up to 660 nm

Kyohei Kaiya, Yoshiya Ueki, Hiromasa Kawamoto, Kenta Watanabe, Shunya Yoshino, Yuichi Yamaguchi and Akihiko Kudo*



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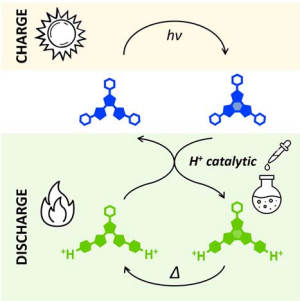
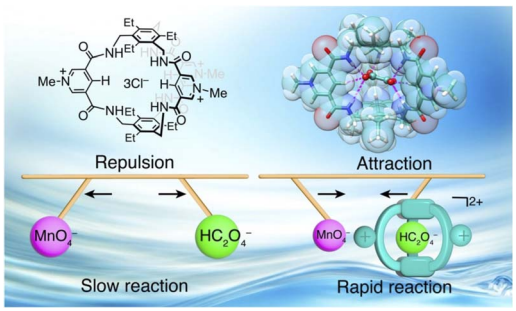


Acid-sensitive photoswitches: towards catalytic on-demand release of stored light energy

Léa Chocron, Nicolò Baggi, Enrique Ribeiro, Vincent Goetz, Pei Yu, Keitaro Nakatani* and Rémi Métivier*

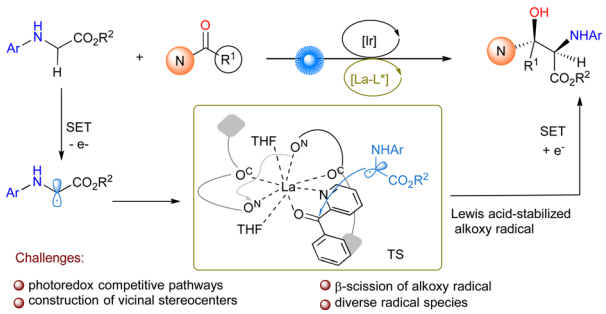
16040



Charge-assisted hydrogen bonding in a bicyclic amide cage: an effective approach to anion recognition and catalysis in water

Chengkai Xu, Quy Gia Tran, Dexin Liu, Canjia Zhai, Lukasz Wojtas and Wenqi Liu*

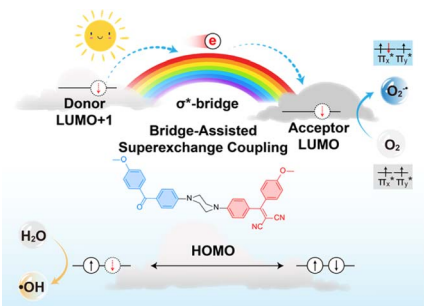
16050



Visible-light-driven asymmetric aldol reaction of ketones and glycinates *via* synergistic Lewis acid/photoredox catalysis

Jiuqi Tan, Longqing Yang, Hanyu Su, Yuntian Yang, Ziwei Zhong, Xiaoming Feng* and Xiaohua Liu*

16059



Boosting type-I ROS production of molecular photosensitizers using bridge-assisted superexchange coupling

Lei Chen, Shirong Yan, Wu-Jie Guo, Lu Qiao, Xinyue Zhan, Bin Liu* and Hui-Qing Peng*

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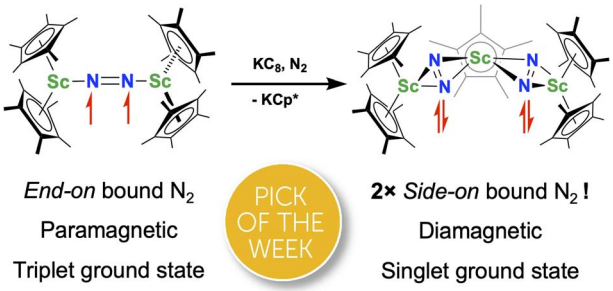
EDGE ARTICLES

16069

Dinitrogen reduction chemistry with scandium provides a complex with two side-on $(N{=}N)^{2-}$ ligands bound to one metal: $(C_5Me_5)Sc[(\mu\text{-}\eta^2{:}\eta^2\text{-}N_2)Sc(C_5Me_5)_2]_2$

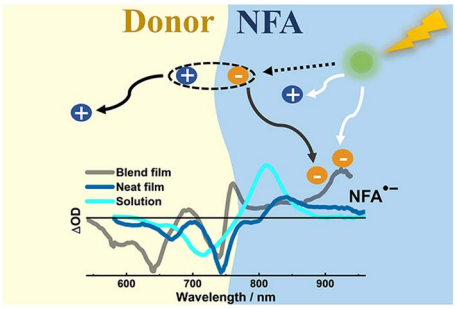
Joshua D. Queen, Ahmadreza Rajabi, Quinn E. Goudzwaard, Qiong Yuan, Dang Khoa Nguyen, Joseph W. Ziller, Filipp Furche,* Zhenfeng Xi* and William J. Evans*



16079

Electron, hole, and energy transfer dynamics in non-fullerene small-molecule acceptors

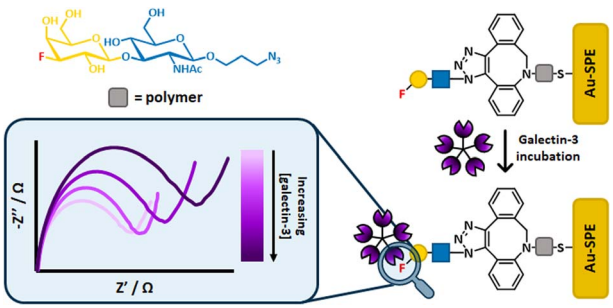
Guangliu Ran, Bo Zhuang, Jiulong Huang, Hao Lu, Yahui Liu, Zhishan Bo, Feng Gai* and Wenkai Zhang*



16086

Harnessing glycofluoroforms for impedimetric biosensing

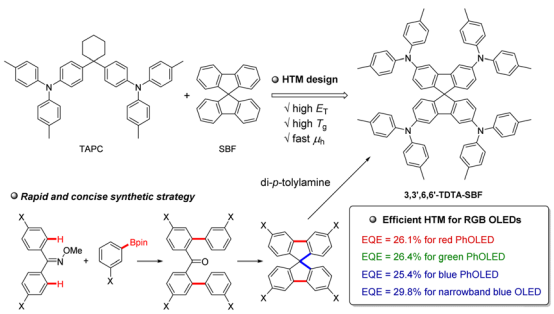
Alice R. Hewson, Henry O. Lloyd-Laney, Tessa Keenan, Sarah-Jane Richards, Matthew I. Gibson, Bruno Linclau, Nathalie Signoret, Martin A. Fascione* and Alison Parkin*



16096

Spirobifluorene-based hole-transporting materials for RGB OLEDs with high efficiency and low efficiency roll-off

Qian Li, Yusong Guo, Jingbo Lan,* Yudong Yang, Di Wu* and Zhengyang Bin*



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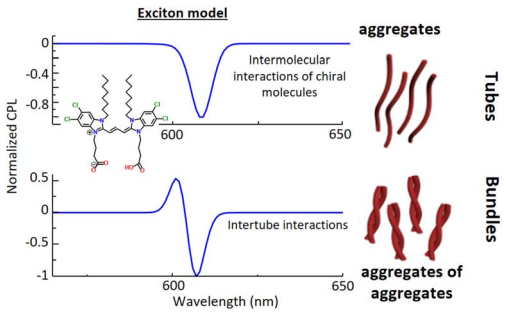
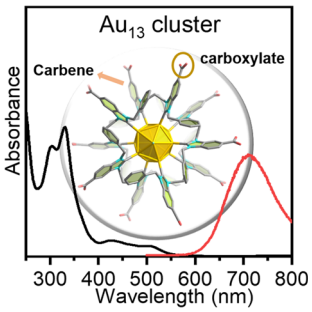


Chiroptical properties of cyanine aggregates: hierarchical modelling from monomers to bundles

Francesco Bertocchi, Shahana Nizar, Cristina Sissa, Minghao Li, Thomas W. Ebbesen, Cyriaque Genet* and Anna Painelli*

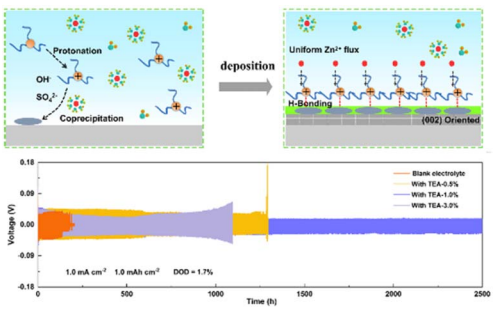
16112



Synthesis and crystallization of a carboxylate functionalized *N*-heterocyclic carbene-based Au_{13} cluster with strong photo-luminescence

Xiting Yuan, Zichen Ye, Sami Malola, Osama Shekhah, Hao Jiang, Xinyan Hu, Jian-Xin Wang, Hong Wang, Aleksander Shkurenko, Jiangtao Jia, Vincent Guillerm, Omar F. Mohammed, Xiaolan Chen, Nanfeng Zheng, Hannu Häkkinen and Mohamed Eddaoudi*

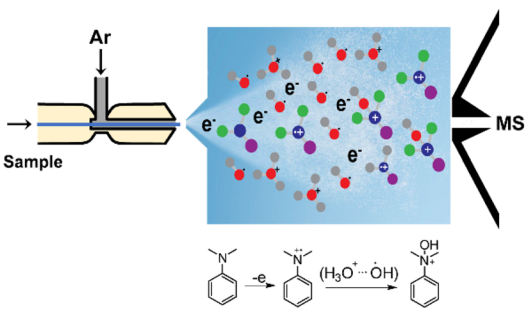
16118



In situ construction of a static-dynamic hybrid interface toward stable Zn anodes for aqueous Zn-ion batteries

Baohua Liu, Luyan Yu, Qinghua Xiao, Shilin Zhang,* Guanjie Li, Kaixin Ren, Yuxuan Zhu, Chao Wang* and Qinghong Wang*

16125



Ambient catalyst-free oxidation reactions of aromatic amines using water radical cations

Xiaoping Zhang,* Pinghua Hu, Minmin Duan, Konstantin Chingin, Roman Balabin, Xinglei Zhang* and Huanwen Chen*

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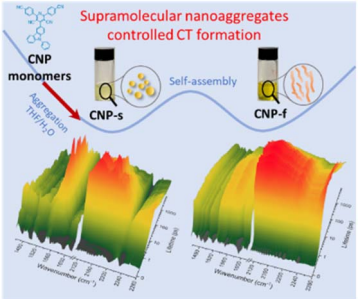
16133

Time-resolved vibrational spectroscopic study of molecular nanoaggregate photocatalysts

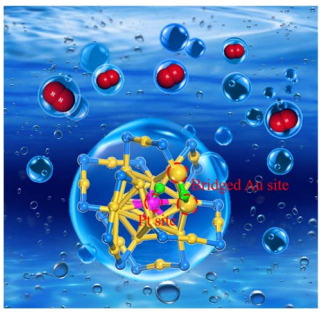
Chao Li, Tao Liu, Owen Thwaites, Adrian M. Gardner, Igor V. Sazanovich, Haofan Yang, Xiaobo Li, Andrew I. Cooper and Alexander J. Cowan*



16142

Revisiting the activity origin of the $PtAu_{24}(SR)_{18}$ nanocluster for enhanced electrocatalytic hydrogen evolution by combining first-principles simulations with the experimental *in situ* FTIR technique

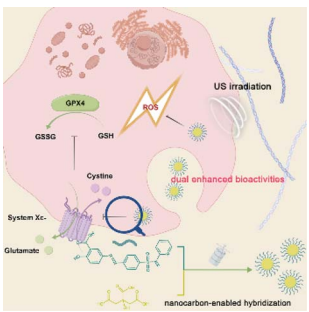
Fang Sun, Lubing Qin, Zhenghua Tang* and Qing Tang*



16156

A nanocarbon-enabled hybridization strategy to construct pharmacologically cooperative therapeutics for augmented anticancer efficacy

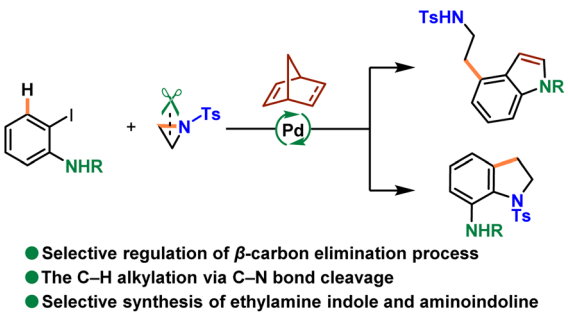
Huan Wang, Xinchen Liu, Xiangyu Yan, Yong Du, Fang Pu, Jinsong Ren* and Xiaogang Qu*



16169

A switch strategy for the synthesis of C4-ethylamine indole and C7-aminoindoline *via* controllable carbon elimination

Bo-Sheng Zhang,* Bao-Jie Deng, Yuan-Xin Zhi, Tian-Jiao Guo, Yi-Ming Wang, Xue-Ya Gou, Zheng-Jun Quan,* Xi-Cun Wang* and Yong-Min Liang



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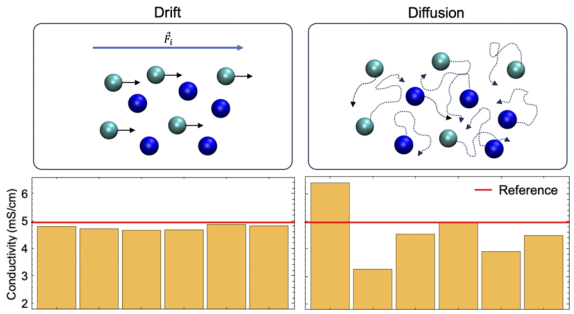
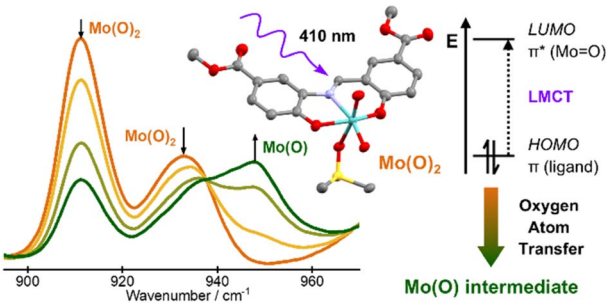


Efficient simulations of mobility matrices for electrolytes by applying forces

Pramudit Tripathi and Scott T. Milner*

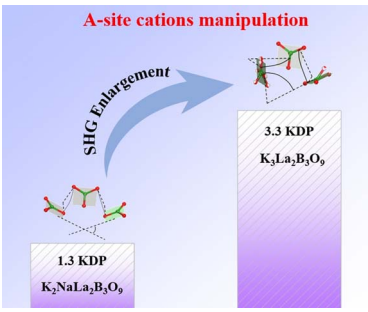
16186



Ligand-to-metal charge transfer facilitates photocatalytic oxygen atom transfer (OAT) with *cis*-dioxo molybdenum(VI)-Schiff base complexes

Thorsten Dreher, Lukas Geciauskas, Samuel Steinfeld, Barbara Procacci, Adrian C. Whitwood, Jason M. Lynam, Richard E. Douthwaite* and Anne-K. Duhme-Klair*

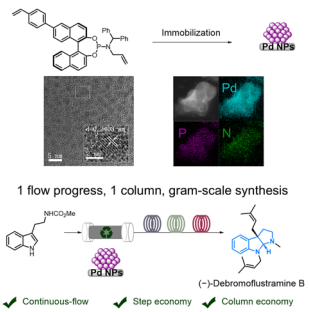
16196



A-site cation manipulation of exemplary second harmonic generation response and optical anisotropy in rare-earth borates

Jie Song, Huijian Zhao, Conggang Li,* Ning Ye, Zhanggui Hu* and Yicheng Wu

16205



Four-step continuous-flow total synthesis of (−)-debromoflustramine B using a chiral heterogeneous Pd NP catalyst

Junwen Wang, Feng Liang, Zhen Dong, Junrong Huang, Yuxiang Zhu,* Hengzhi You* and Fen-Er Chen*

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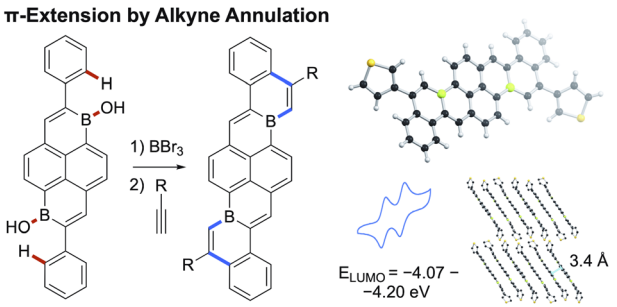
16210

Metal-free alkyne annulation enabling π-extension of boron-doped polycyclic aromatic hydrocarbons

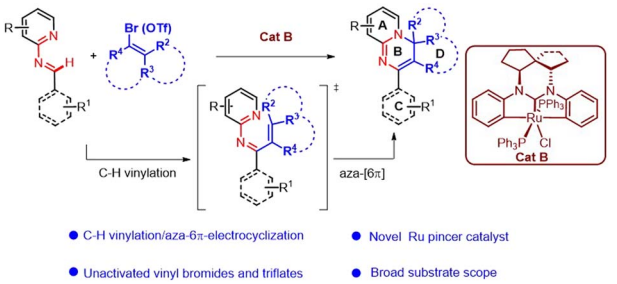
Mandala Anitha, To-Jen Chin, Guan-Cheng Liu, Chi-Tien Hsieh, Kuan-Hua Wang, Shu-Li Li, Mu-Jeng Cheng and Jeffrey M. Farrell*



16216

CCC pincer Ru complex-catalyzed C–H vinylation/6π-E-cyclization of aldimines for constructing 4*H*-pyrido[1,2-*a*]pyrimidines

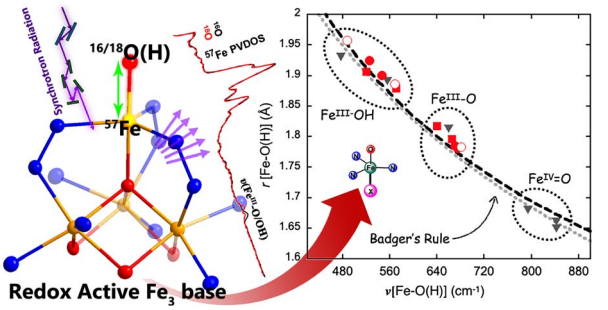
Heng Cai, Yong-Qiang Tu,* Qiang Niu, Wen-Ping Xie, Bin Wang, Ka Lu, Zi-Hao Li, Fu-Min Zhang and Xiao-Ming Zhang



16222

^{57}Fe nuclear resonance vibrational spectroscopic studies of tetranuclear iron clusters bearing terminal iron(III)–oxido/hydroxido moieties

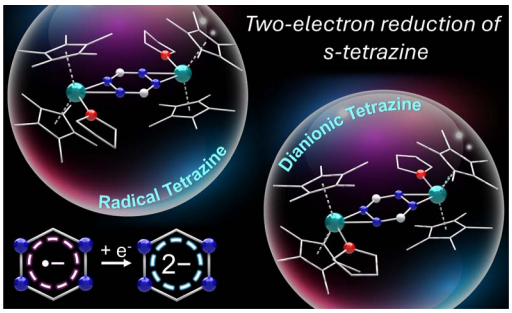
Jin Xiong, Christopher Reed, Barbara Lavina, Michael Y. Hu, Jiyong Zhao, Esen E. Alp, Theodor Agapie* and Yisong Guo*



16234

Stabilizing an exotic dianionic tetrazine bridge in a Ln_2 metallocene

Niki Mavragani, Alexandros A. Kitos, Akseli Mansikkamäki and Muralee Murugesu*



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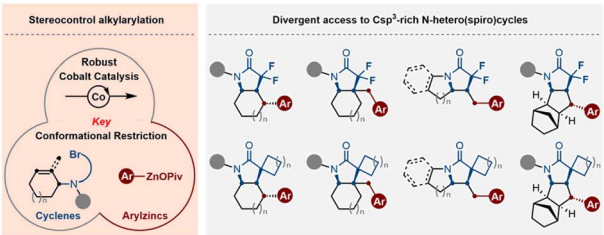
EDGE ARTICLES

16243

Lewis acid-catalyzed (3 + 2) annulation of bicyclobutanes with ynamides: access to 2-amino-bicyclo[2.1.1]hexenes

Deeptanu Sarkar, Shiksha Deswal, Rohan Chandra Das and Akkattu T. Biju*

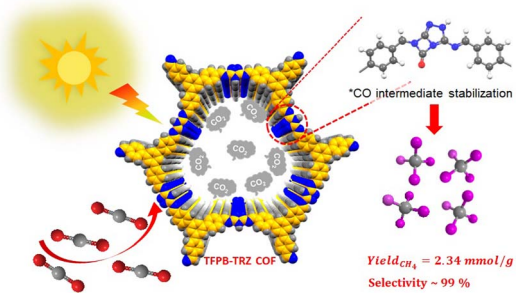
16250



Cobalt-catalyzed conformationally restricted alkylarylation enables divergent access to Csp^3-rich N-heterocycles

Kaixin Chen, Jie Lin, Jing Jing, Junda Wang, Jiayu Hu, Hong Yi,* Aiwen Lei* and Jie Li*

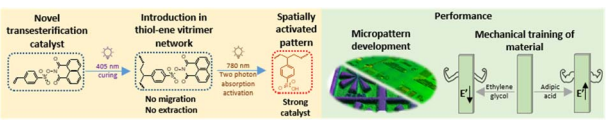
16259



A triazole-based covalent organic framework as a photocatalyst toward visible-light-driven CO_2 reduction to CH_4

Sandip Biswas, Faruk Ahamed Rahimi, R. Kamal Saravanan, Anupam Dey, Jatin Chauhan, Devika Surendran, Sukhendu Nath and Tapas Kumar Maji*

16271



Microscale manipulation of bond exchange reactions in photocurable vitrimers with a covalently attachable photoacid generator

Roman Korotkov, Walter Alabiso, Alexander Jelinek, Max Schmallegger, Yang Li, Sandra Schlögl* and Elisabeth Rossegger*

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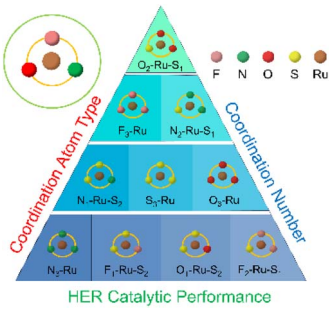
16281

Coordination engineering of single-atom ruthenium in 2D MoS_2 for enhanced hydrogen evolution

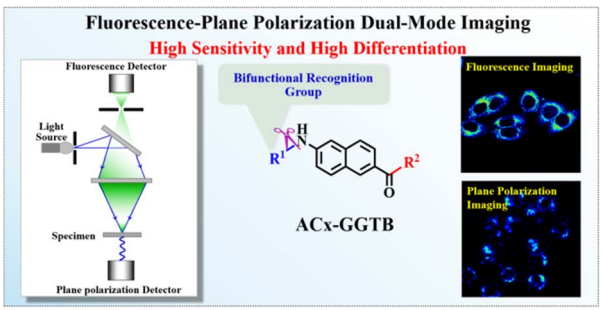
Dong Guo, Xiong-Xiong Xue, Menggai Jiao, Jinhui Liu, Tian Wu, Xiandi Ma, Die Lu, Rui Zhang, Shaojun Zhang, Gonglei Shao* and Zhen Zhou*



16291

Fluorescence-plane polarization for the real-time monitoring of transferase migration in living cells

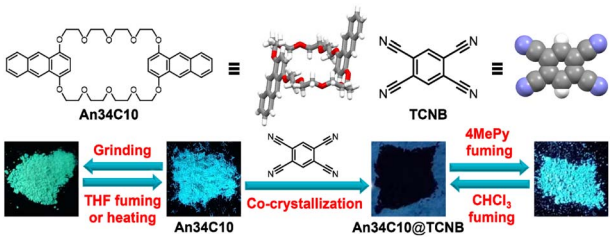
Yafu Wang, Huiyu Niu, Kui Wang, Liu Yang, Ge Wang, Tony D. James, Jiangli Fan* and Hua Zhang*



16300

An anthracene-containing crown ether: synthesis, host–guest properties and modulation of solid state luminescence

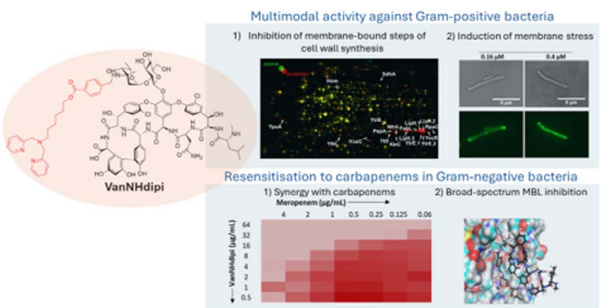
Weijie Zhu,* Bohan Zhao, Shuai Fang, Huangtianzhi Zhu* and Feihe Huang*



16307

Enhancing the antibacterial efficacy of vancomycin analogues: targeting metallo-β-lactamases and cell wall biosynthesis

Paramita Sarkar, Weipan Xu, Melissa Vázquez-Hernández, Geetika Dhanda, Shubhandra Tripathi, Debajyoti Basak, Hexin Xie, Lea Schipp, Pascal Dietze, Julia E. Bandow, Nishanth N. Nair and Jayanta Haldar*



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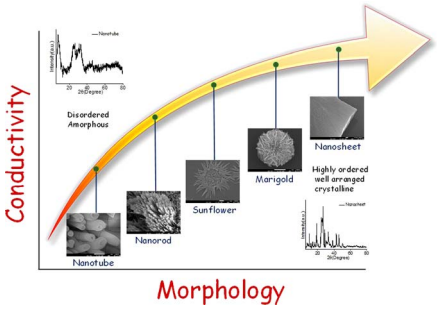
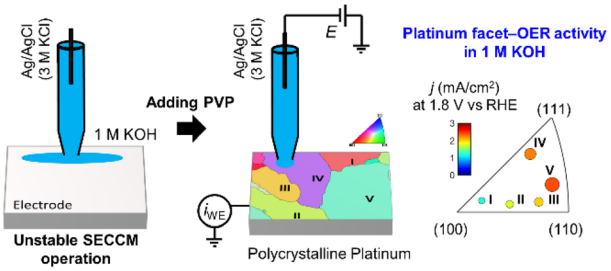
16321



2D organic nanosheets of self-assembled guanidinium derivative for efficient single sodium-ion conduction: rationalizing morphology editing and ion conduction

Anik Kumar Dey, Sam Sankar Selvasundarasekar, Subrata Kundu,* Amal Kumar Mandal,* Amitava Das* and Sumit Kumar Pramanik*

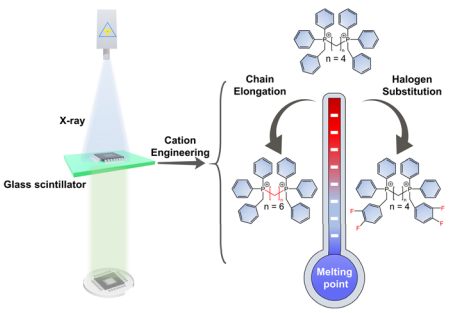
16331



Controlling surface wetting in high-alkaline electrolytes for single facet Pt oxygen evolution electrocatalytic activity mapping by scanning electrochemical cell microscopy

Geovane Arruda de Oliveira, Moonjoo Kim, Carla Santana Santos, Ndrina Limani, Taek Dong Chung, Emmanuel Batsa Tetteh and Wolfgang Schuhmann*

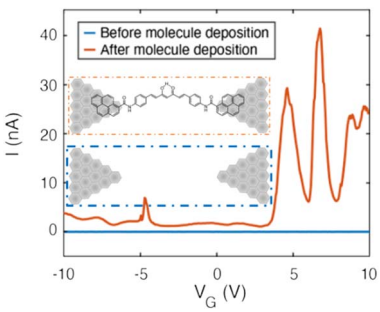
16338



Bisphosphonium cation based metal halide glass scintillators with tunable melting points

Jian-Bin Luo, Jun-Hua Wei, Zi-Lin He, Jing-Hua Chen, Qing-Peng Peng, Zhi-Zhong Zhang and Dai-Bin Kuang*

16347



Experimental and theoretical studies of the electronic transport of an extended curcuminoid in graphene nano-junctions

Teresa Cardona-Lamarca, Thomas Y. Baum, Rossella Zaffino,* Daniel Herrera, Raphael Pfattner, Silvia Gómez-Coca, Eliseo Ruiz,* Arántzazu González-Campo,* Herre S. J. van der Zant* and Núria Aliaga-Alcalde*

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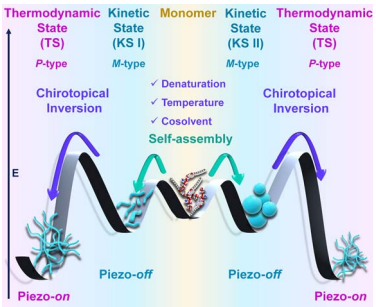
EDGE ARTICLES

16355

Unravelling denaturation, temperature and cosolvent-driven chiroptical switching in peptide self-assembly with switchable piezoelectric responses

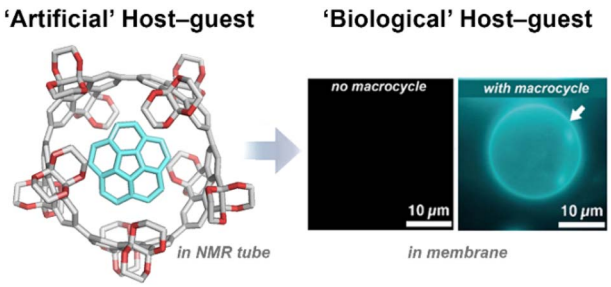
Aparna Ramesh, Tarak Nath Das, Tapas Kumar Maji* and Goutam Ghosh*



16367

Nanohoops in membranes: confined supramolecular spaces within phospholipid bilayer membranes

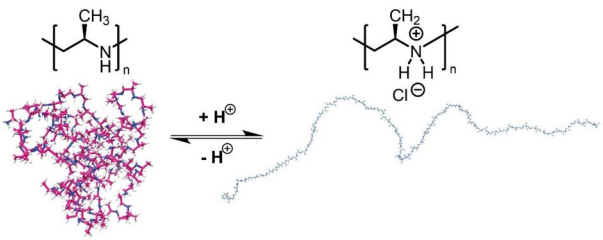
Kylie Chinner, Niklas Grabicki, Rei Hamaguchi, Mitsunori Ikeguchi, Kazushi Kinbara, Sayaka Toyoda, Kohei Sato* and Oliver Dumele*



16377

Helical polyamines

Daniël Hagedoorn, Sandra Michel-Souzy, Bartłomiej Gostyński, Hubert Gojzewski, Piotr Paneth, Jeroen J. L. M. Cornelissen and Frederik R. Wurm*



CORRECTION

16391

Correction: Highly stable color-tunable organic long-persistent luminescence from a single-component exciplex copolymer for *in vitro* antibacterial

Hui Li,* Xiaoye Li, Haoran Su, Shuman Zhang, Cheng Tan, Cheng Chen, Xin Zhang, Jiani Huang, Jie Gu, Huanhuan Li, Gaozhan Xie, Heng Dong,* Runfeng Chen and Ye Tao*