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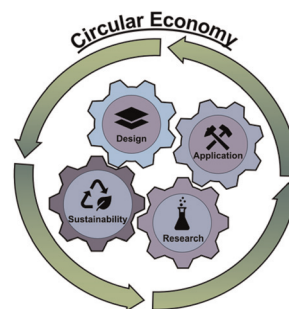


## CRITICAL REVIEWS

2384

**Design of depolymerizable polymers toward a circular economy**

Julian F. Highmoore, Lasith S. Kariyawasam, Scott R. Trenor and Ying Yang\*



2421

**Breaking new grounds: metal salts based-deep eutectic solvents and their applications- a comprehensive review**

Aman Khalid, Suman Tahir, Abdul Rafay Khalid, Muhammad Asif Hanif, Qamar Abbas and Muhammad Zahid\*

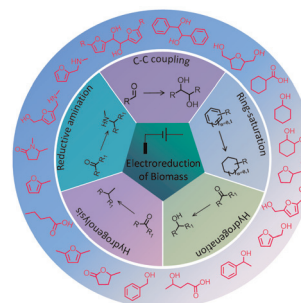


## TUTORIAL REVIEWS

2454

**Electroreductive upgradation of biomass into high-value chemicals and energy-intensive biofuels**

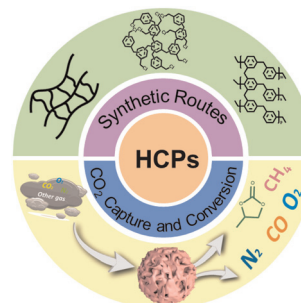
Keping Wang, Zheng Li, Zhenyan Guo, Jinshu Huang, Tengyu Liu, Min Zhou, Jinguang Hu\* and Hu Li\*



2476

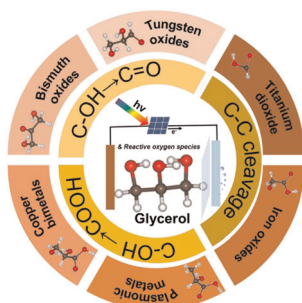
**Green synthesis of hypercrosslinked polymers for CO<sub>2</sub> capture and conversion: recent advances, opportunities, and challenges**

Wenliang Song, Yunxin Tang, Byeong Yeol Moon, Qian Liao, Hailang Xu, Qing Hou, Heng Zhang, Deng-Guang Yu,\* Yaozu Liao\* and Il Kim\*



## TUTORIAL REVIEWS

2505

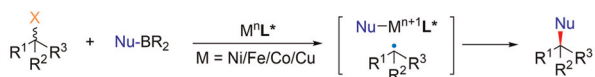


## Recent advances in the selective oxidation of glycerol to value-added chemicals via photocatalysis/photoelectrocatalysis

Yang Liu, Bing Zhang, Dongpeng Yan\* and Xu Xiang\*

## PERSPECTIVE

2525

Enantioconvergent radical Suzuki–Miyaura C(sp<sup>3</sup>)-C coupling of racemic alkyl halides

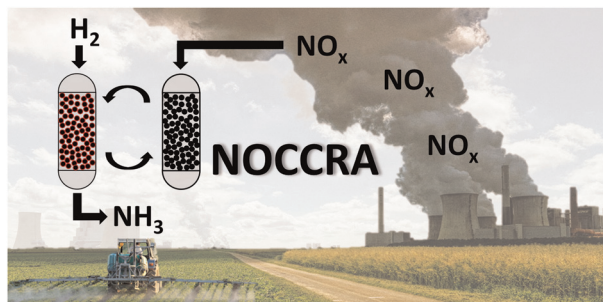
- a good single electron reducing catalyst
- a class of the stable, easily available and low toxic organoboron nucleophiles
- diverse racemic alkyl halides

The first-row transition metal-catalysed enantioconvergent radical Suzuki–Miyaura C(sp<sup>3</sup>)-C coupling of racemic alkyl halides

Lin Liu,\* Chang-Jiang Yang, Zhong-Liang Li, Qiang-Shuai Gu and Xin-Yuan Liu\*

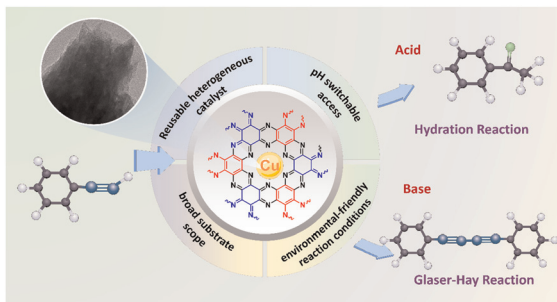
## COMMUNICATIONS

2534

Green ammonia synthesis from stationary NO<sub>x</sub> emission sources on a catalytic lean NO<sub>x</sub> trap

Frea Van Steenweghen, Lander Hollevoet and Johan A. Martens\*

2540

A recyclable Cu@C<sub>2</sub>N nano-catalyst applied in the transformation of alkynes: pH switchable access to ketones and 1,3-diynes

Yuanjin Li, Tianyu Yang, Shuhui Wang, Zuqiang Bian\* and Zhiwei Liu\*



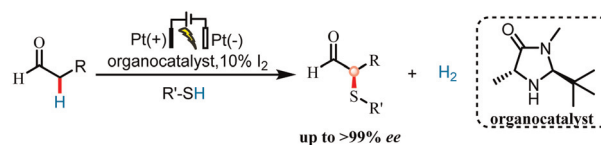


## COMMUNICATIONS

2546

### Iodine-enabled organoelectrocatalysis: enantioselective cross dehydrogenative coupling of sulfides and aldehydes

Zhen Wang, Marcel Gausmann, Jan-Hendrik Dickoff and Mathias Christmann\*

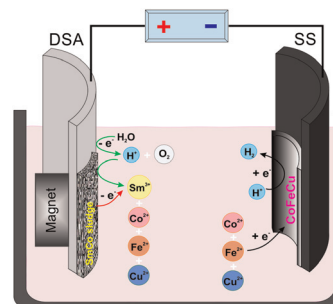


- ▶ selective oxidation
- ▶ no metal/stoichiometric oxidants/sacrificial reagent
- ▶ mild conditions
- ▶ one-step formation of C-S bond

2552

### A cleaner strategy for efficient recovery of Sm<sub>2</sub>O<sub>3</sub> and CoFeCu alloy from SmCo swarf based on an anodic leaching process

Xuan Xu,\* Jun Gao, Kunyuan Zhao, Haifeng Sun, Peng Jing, Baocang Liu\* and Jun Zhang\*

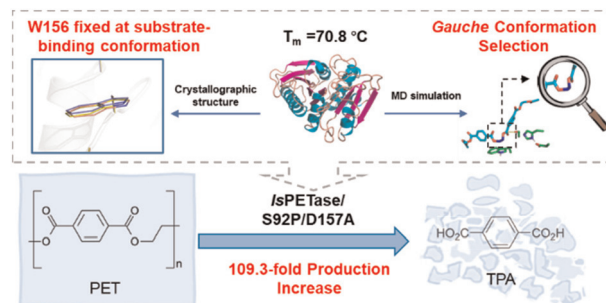


## PAPERS

2560

### Efficient polyethylene terephthalate biodegradation by an engineered *Ideonella sakaiensis* PETase with a fixed substrate-binding W156 residue

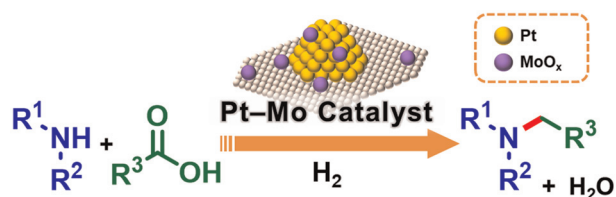
Qingdian Yin, Jiaxing Zhang, Sen Ma, Tao Gu, Mengfan Wang, Shengping You,\* Sheng Ye,\* Rongxin Su, Yaxin Wang\* and Wei Qi\*



2571

### Reductive amination of carboxylic acids under H<sub>2</sub> using a heterogeneous Pt–Mo catalyst

Katsumasa Sakoda, Sho Yamaguchi, Kazuki Honjo, Yasutaka Kitagawa, Takato Mitsudome and Tomoo Mizugaki\*

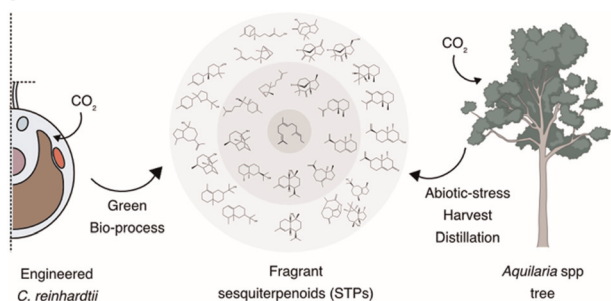


- ✓ Naturally Abundant Carboxylic Acids
- ✓ Mild Conditions (H<sub>2</sub> >0.1 MPa, >100 °C)



## PAPERS

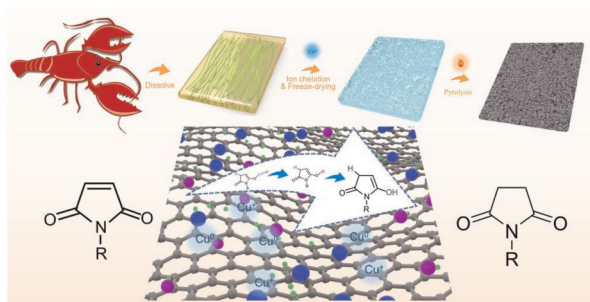
2577



### A synthetic biology and green bioprocess approach to recreate agarwood sesquiterpenoid mixtures

Sergio Gutiérrez, Sebastian Overmans, Gordon B. Wellman, Vasilios G. Samaras, Claudia Oviedo, Martin Gede, Gyorgy Szekely and Kyle J. Lauersen\*

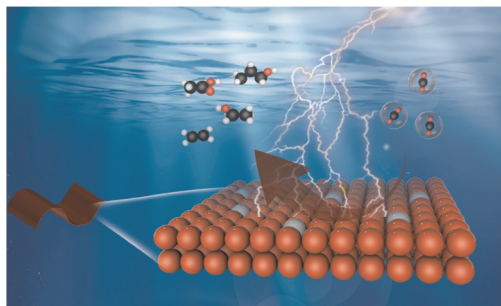
2592



### Preparation of reusable copper-based biomass-carbon aerogel catalysts and their application in highly selective reduction of maleimides to succinimides with hydrosilane as a hydrogen source

Shaohuan Lv, Zhanhong Yuan, Juanjuan Zheng, Zirong Liu, Jiawang Ye, Jiefang Li, Shanshan Xu, Feng Xie, Dongdong Ye\* and Bin Li\*

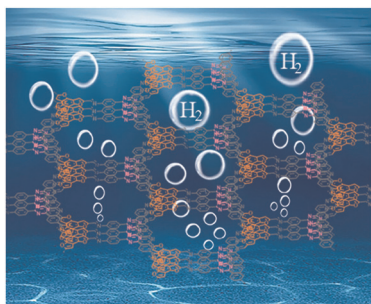
2599



### Stabilization of $\text{Cu}^+$ sites by amorphous $\text{Al}_2\text{O}_3$ to enhance electrochemical $\text{CO}_2$ reduction to $\text{C}_{2+}$ products

Hailian Cheng, Shuaiqiang Jia,\* Jiapeng Jiao, Xiao Chen, Ting Deng, Cheng Xue, Mengke Dong, Jianrong Zeng, Chunjun Chen, Haihong Wu,\* Mingyuan He and Buxing Han\*

2605



### Benzotrifuran-based donor-acceptor covalent organic frameworks for enhanced photocatalytic hydrogen generation

Chuanmeng Yang, Zhenwei Zhang, Jiali Li, Yuxin Hou, Qi Zhang,\* Zhongping Li, Huijuan Yue and Xiaoming Liu\*

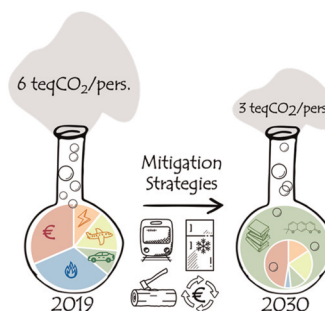


## PAPERS

2613

**Carbon footprint and mitigation strategies of three chemistry laboratories**

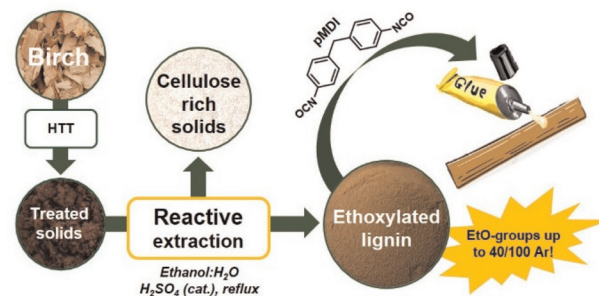
André Estevez-Torres,\* Fabienne Gauffre,  
Guillaume Gouget, Chloé Grazon and Philippe Loubet\*



2623

**Upgrading AquaSolv Omni (AqSO) biorefinery: access to highly ethoxylated lignins in high yields through reactive extraction (REx)**

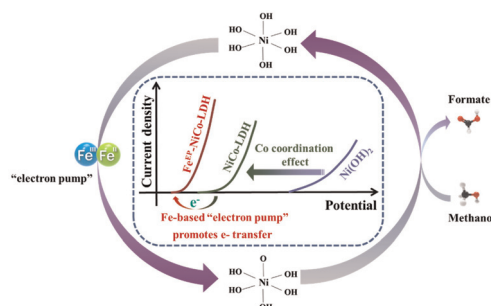
Davide Rigo,\* Nadine Kohlhuber, Lukas Fliri,  
Daryna Diment, Mijung Cho, Ivan Sumerskii,  
Michael Hummel, Antje Potthast and Mikhail Balakshin



2638

**Fe-based “electron pump” involving NiCo-LDH enables robust and highly-selective electrocatalytic methanol oxidation to formic acid**

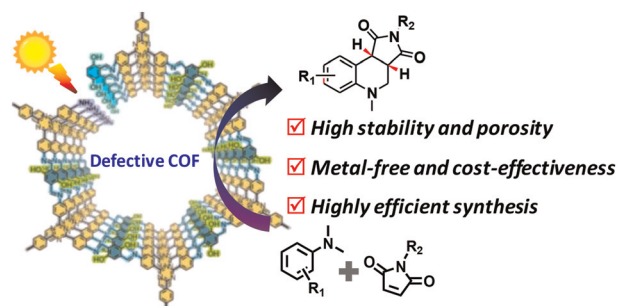
Jiawei Shi, Huawei He, Shunfa Zhou, Jing Li and  
Weiwei Cai\*



2645

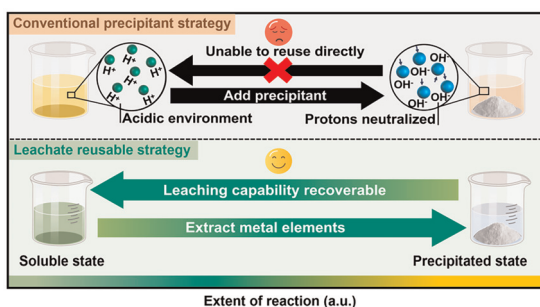
**Missing-linker defects in a covalent organic framework photocatalyst for highly efficient synthesis of tetrahydroquinoline**

Yuling Zhao,\* Kangna Zhang, Keping Zhu, Yaqin Zhao,  
Hanping Zhai and Jikuan Qiu\*



## PAPERS

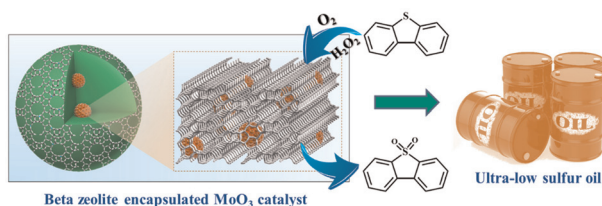
2653



### Realizing the reusability of leachate for the hydrometallurgical recycling of spent lithium cobalt oxide by dynamically regulating the solubility product

Tao Hu, Taibai Li, Xuncheng Liu, Zhongjie Wang, Liang Lou, Siqi Jing, Xiaohui Yan, Yige Xiong, Junkai Xiong and Xiang Ge\*

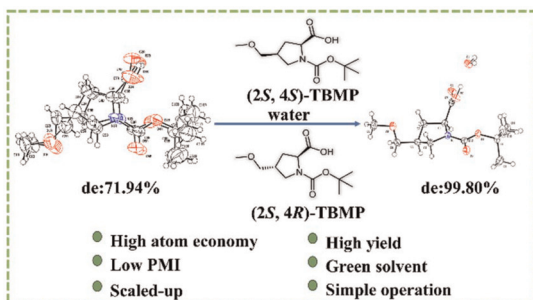
2661



### *In situ* encapsulation of ultras-small $MoO_3$ nanoparticles into beta zeolite for oxidative desulfurization

Songcheng Bo, Haoyi Lin, Jiaxing Zhang, Weiping Liao, Kaixuan Yang, Ting Su, Hongying Lü\* and Zhiguo Zhu\*

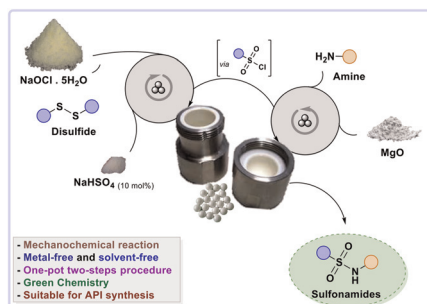
2673



### Design and process study of chiral separation of (2S,4S)-1-(tert-butoxy carbonyl)-4-(methoxymethyl)pyrrolidine-2-carboxylic acid for green manufacturing

Shuwang Ge, Mingwei Fu, Dihai Gu, Lai Wei, Kun Qian, Qi Rui, Yan Ma, Liang Li, Huaiqiu Wang, Lingchao Li, Min Ge and Yihong Wang\*

2684



### Mechanosynthesis of sulfonamides via a telescopic, environmentally friendly, and cost-effective process

Federico Cuccu and Andrea Porcheddu\*



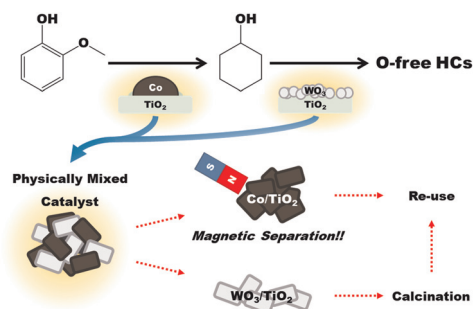


## PAPERS

2692

Hydrodeoxygenation of guaiacol over physically mixed Co/TiO<sub>2</sub> and WO<sub>3</sub>/TiO<sub>2</sub> catalysts

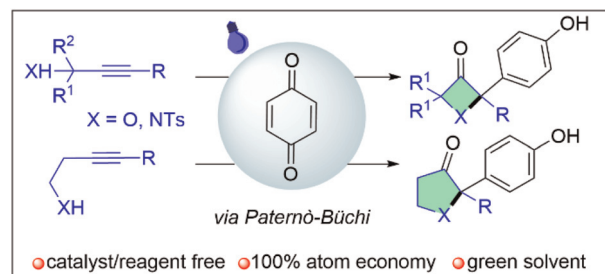
Hyungjoo Kim, Yong Hyun Lim, Jae Hyun Park, Jeong-Myeong Ha and Do Heui Kim\*



2705

## Photoinduced arylation of propargyl alcohols/amines to access strained heterocycles

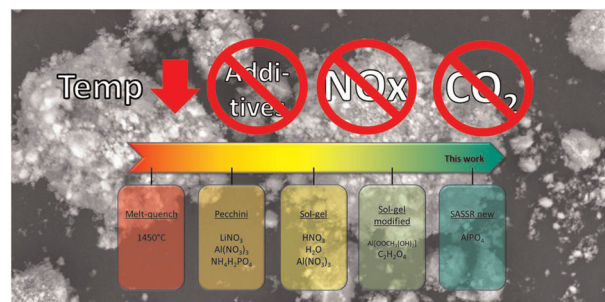
Pammi Venka Reddy, Attunuri Nagireddy, Jagadeesh Babu Nanubolu and Maddi Sridhar Reddy\*



2712

## Reducing the environmental footprint of solid-electrolytes - a green synthesis route for LATP

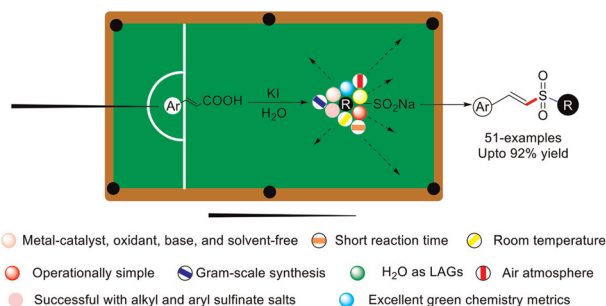
Melanie Rosen, Philipp Hecker, Markus Mann, Qianli Ma, Jürgen Peter Gross, Ruth Schwaiger, Olivier Guillon, Dina Fattakhova-Rohlfing and Martin Finsterbusch\*



2721

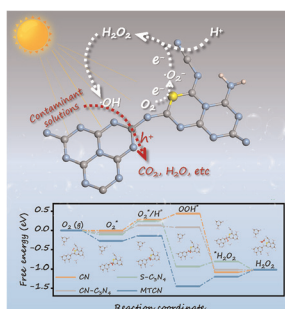
Mechanochemical-assisted decarboxylative sulfonylation of  $\alpha,\beta$ -unsaturated carboxylic acids with sodium sulfinate salts

Barakha Saxena, Roshan I. Patel, Shruti Sharma and Anuj Sharma\*



## PAPERS

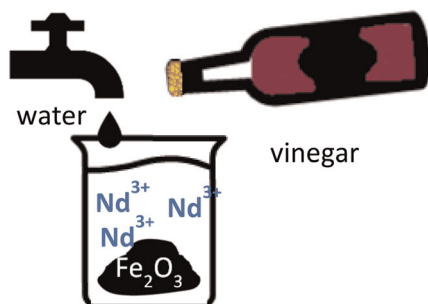
2730



### Green and alcohol-free H<sub>2</sub>O<sub>2</sub> generation paired with simultaneous contaminant treatment enabled by sulfur/cyano-modified g-C<sub>3</sub>N<sub>4</sub> with efficient oxygen activation and proton adsorption

Zijie Wang, Jiaqi Wu, Xiaoqiong Fan, Yiwen Zhang, Qing Xu, Bocheng Qiu, Liang Chen,\* Xiaofei Zeng\* and Qiaohong Zhu\*

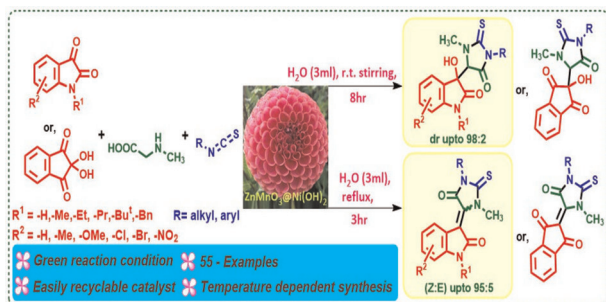
2740



### Selective neodymium recovery from model permanent magnets using cost-effective organic acid systems

Cristina Pozo-Gonzalo,\* Rabeeh Golmohammadzadeh, Munkhshur Myekhlai, Henrique Bastos, Glen B. Deacon and Anthony E. Somers

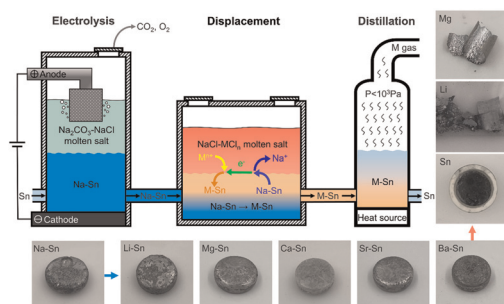
2750



### "On-water" synthesis of thioxoimidazolidinone-isatin/ninhydrin conjugates, followed by temperature-induced dehydration by a ZnMnO<sub>3</sub>@Ni(OH)<sub>2</sub> nano-catalyst

Soumitra Rana, Soumyadip Basu, Aswini Bera, Pinaki Saha, Prasanta Ghosh, Bhanu Bhusan Khatua and Chhanda Mukhopadhyay\*

2763



### An electrolysis–displacement–distillation approach for the production of Li, Mg, Ca, Sr, and Ba metals

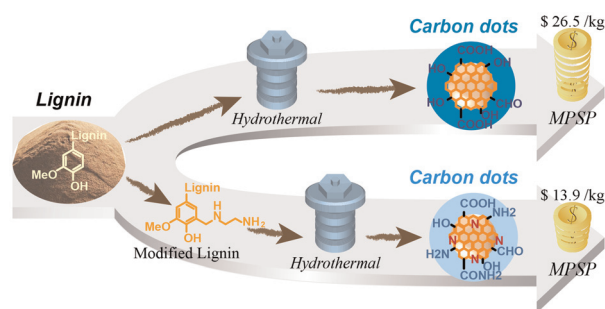
Lei Guo, Shuaibo Gao, Zuojun Hu, Yongxin Wu, Fangzhao Pang, Huayi Yin\* and Dihua Wang



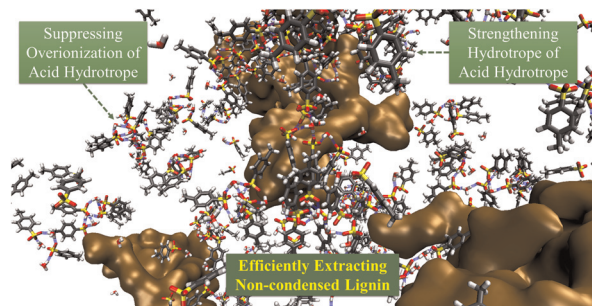
## PAPERS

2773

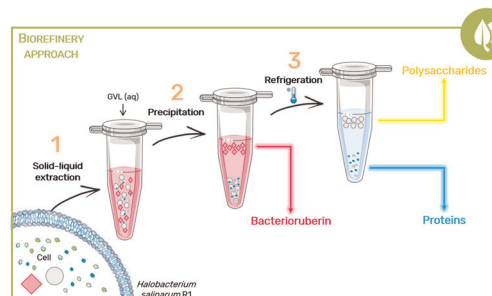
## Improving the revenue of lignin conversion into carbon dots by prior amino modification

Tingting Chu, Xiaoxu Yang, Mingjie Chen,\*  
Qing-Shan Shi,\* Xiaobao Xie\* and Yanzhu Guo\*

2783

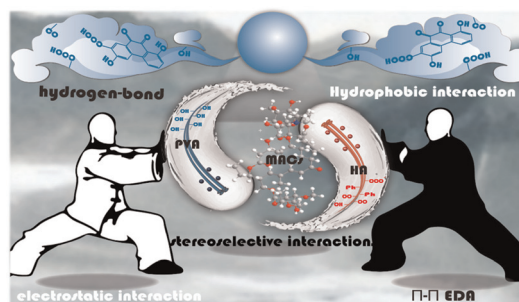
Unraveling lignin extraction: molecular dynamics insights into effective biomass valorization using a *p*-toluenesulfonic acid/solvents systemJiayi Zheng, Liheng Chen,\* Zhichang Huang and  
Xueqing Qiu\*

2793

Bio-based solvents as a sustainable alternative to develop a multiproduct biorefinery process from archaeobacteria *Halobacterium salinarum* R1Mariam Kholany, Inês P. E. Macário, Telma Veloso,  
Leticia S. Contieri, Bárbara M. C. Vaz, Joana L. Pereira,  
Cláudia Nunes, João A. P. Coutinho,  
Maurício A. Rostagno,\* Sónia P. M. Ventura\* and  
Leonardo M. de Souza Mesquita\*

2807

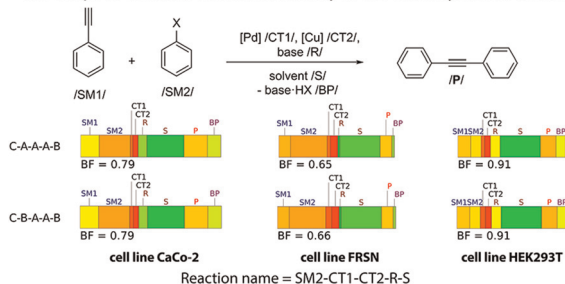
## Design of a novel green bio-based organic–inorganic hybrid material for cost-effective and sustainable monitoring of antibiotic residues

Guowen Qin, Huilin Song, Dan Wu, Yuqi Zhang, Peiqi Li,  
Kaidi Zhang, Yang Zheng\* and Shunli Ji\*

## PAPERS

2825

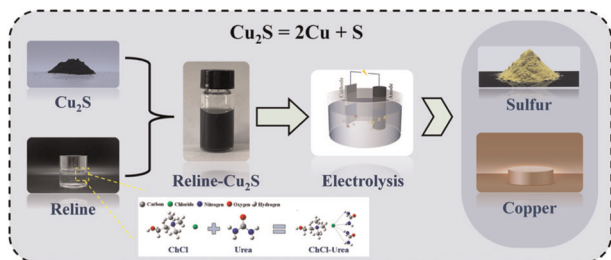
bio-Strips of chemical reactions: the way to the safest synthetic routes



## Establishing the main determinants of the environmental safety of catalytic fine chemical synthesis with catalytic cross-coupling reactions

Ksenia S. Egorova,\* Andrey E. Kolesnikov,  
Alexandra V. Posvyatenko, Alexey S. Galushko,  
Ruslan R. Shaydullin and Valentine P. Ananikov\*

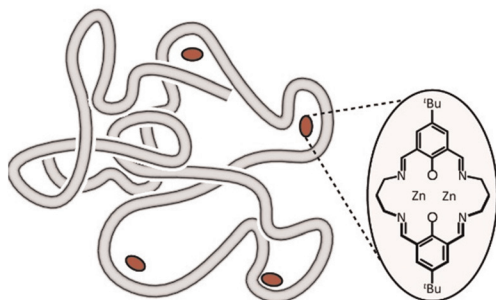
2842



## One-step separation and recovery of copper and sulfur by electrolysis in deep eutectic solvents

Jihua Li, Yucheng Xu, Jinfeng Zhou, Weijia Chen,  
Shiwei He,\* Zhongsheng Hua and Hui Kong\*

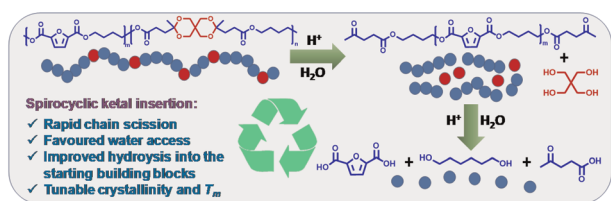
2851



## Embedding an esterase mimic inside polyesters to realize rapid and complete degradation without compromising their utility

Yanfen Wu, Jing Tian, Minmin Sun, Lizeng Gao, Jun Xu\*  
and Zhiqiang Niu\*

2858



## Improved chemical recyclability of 2,5-furandicarboxylate polyesters enabled by acid-sensitive spirocyclic ketal units

Nitin G. Valsange, Niklas Warlin, Smita V. Mankar,  
Nicola Rehnberg, Baozhong Zhang\* and  
Patric Jannasch\*



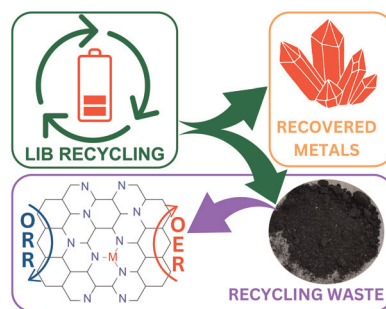


## PAPERS

2874

## Supporting critical raw material circularity – upcycling graphite from waste LIBs to Zn–air batteries

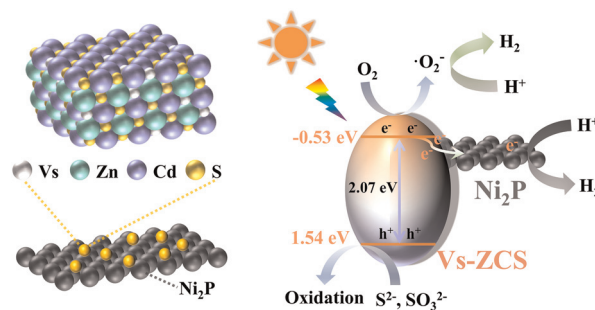
Reio Praats, Alexander Chernyaev, Jani Sainio, Mari Lundström, Ivar Kruusenberg and Kerli Liivand\*



2884

Sulfur vacancies and a Ni<sub>2</sub>P co-catalyst synergistically boost the photocatalytic H<sub>2</sub> evolution of Zn<sub>0.5</sub>Cd<sub>0.5</sub>S

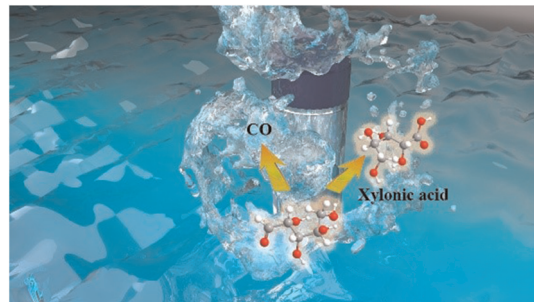
Lindong Xia, Wenzhen Qin, Yu Xie,\* Yiqiao Wang and Yun Ling



2893

Efficient photocatalytic conversion of xylose to co-produce xylonic acid and CO via a dual S-scheme heterojunction photocatalyst between carbon nitride and CuInS<sub>2</sub> quantum dot-sensitized ZnIn<sub>2</sub>S<sub>4</sub>

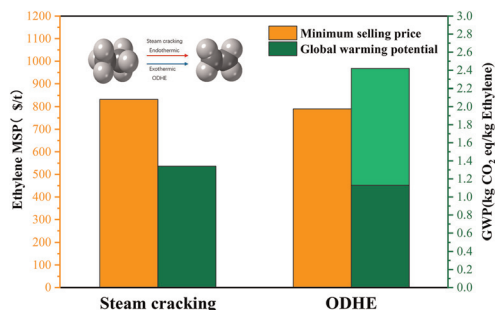
Kangning Liu, Junqiang Zhang, Jiliang Ma\* and Runcang Sun\*



2903

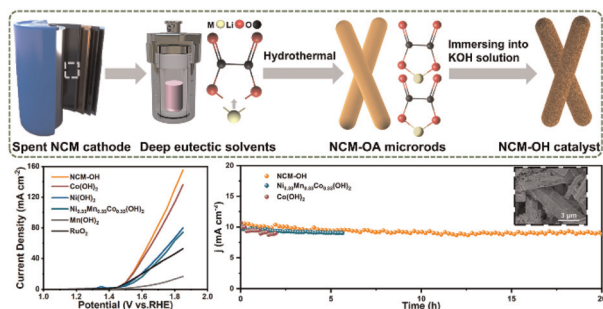
## Ethylene production: process design, techno-economic and life-cycle assessments

Yuqiu Chen, Mi Jen Kuo, Raul Lobo and Marianthi Ierapetritou\*



## PAPERS

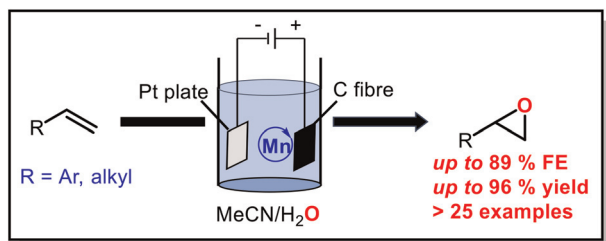
2912



### Recycling spent $\text{LiNi}_{1-x-y}\text{Co}_x\text{Mn}_y\text{O}_2$ cathodes to efficient catalysts for the oxygen evolution reaction

Mingfei Chen, Yixin Zhou, Li Wang, Gang Xue, Jiashuo Guo and Yaping Wang\*

2922



### Electrochemical epoxidation of alkene with high faradaic efficiencies using water as an oxygen source

Hao Wu, Yousen Xu, Pengyu Guo, Yuqing Xu, Zheng Huang\* and Lei Zhang\*

## CORRECTIONS

2928

### Correction: Spent tea leaves templated synthesis of highly active and durable cobalt-based trifunctional versatile electrocatalysts for hydrogen and oxygen evolution and oxygen reduction reactions

Md Ariful Ahsan,\* Muhammad A. Imam, Alain R. Puente Santiago,\* Alejandro Rodriguez, Bonifacio Alvarado-Tenorio, Ricardo Bernal, Rafael Luque and Juan C. Noveron\*

2929

### Correction: Photoelectrochemical NADH regeneration on a polymer semiconductor-based photocathode

Nanxin Li, Jia You, Lanlan Huang, Haoran Zhang, Xianlong Wang, Lihua He, Chunli Gong, Shiwei Lin\* and Bingqing Zhang\*

