

# Green Chemistry

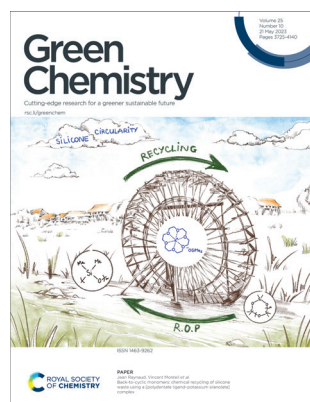
Cutting-edge research for a greener sustainable future

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ISSN 1463-9262 CODEN GRCHFJ 25(10) 3725–4140 (2023)



### Cover

See Jean Raynaud, Vincent Monteil *et al.*, pp. 3869–3877.

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### Inside cover

See M. A. A. Mohamed, N. Gräßler *et al.*, pp. 3878–3887.

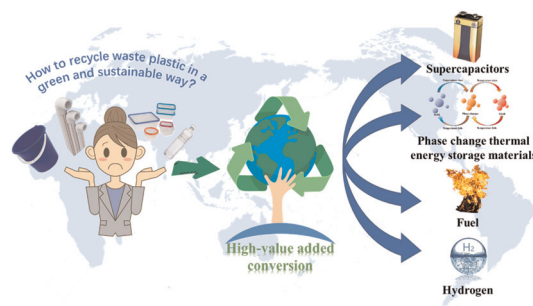
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Guoqiang Tang, Wenyuan Qiao, Zheng Wang, Fang Liu, Liang He, Minghao Liu, Wenbo Huang,\* Hongqu Wu\* and Changhui Liu\*

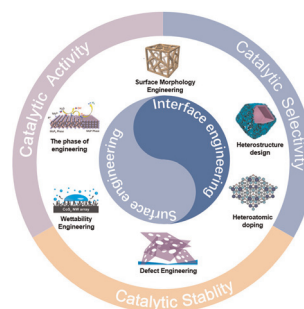


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### Designing electrocatalysts for seawater splitting: surface/interface engineering toward enhanced electrocatalytic performance

Bo Xu, Jie Liang, Xuping Sun\* and Xiaoli Xiong\*



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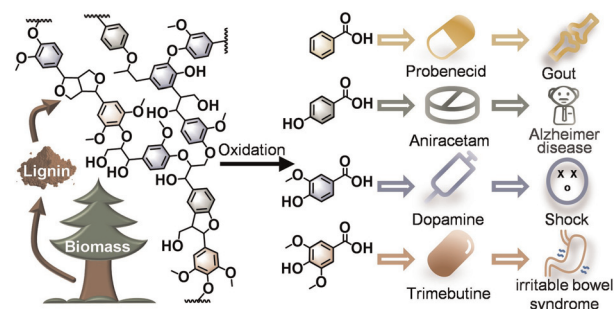


## TUTORIAL REVIEWS

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## Sustainable production of active pharmaceutical ingredients from lignin-based benzoic acid derivatives via "demand orientation"

Yuguo Dong, Lin Dong,\* Xiaoli Gu,\* Yanqin Wang, Yuhe Liao, Rafael Luque and Zupeng Chen\*



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## Waste to wealth: direct utilization of spent materials for electrocatalysis and energy storage

Chengcheng Yan, Xun Jiang, Jiaxin Yu, Zhaolong Ding, Ling Ma, Tingyu Su, Yilu Wang, Chunxia Wang,\* Guoyong Huang\* and Shengming Xu

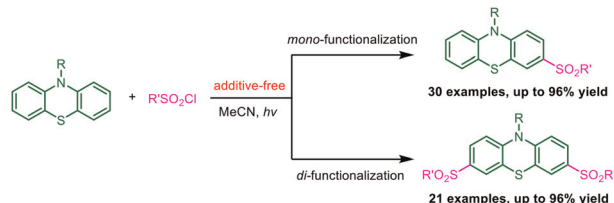


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## Self-catalytic photochemical sulfonylation of phenothiazines

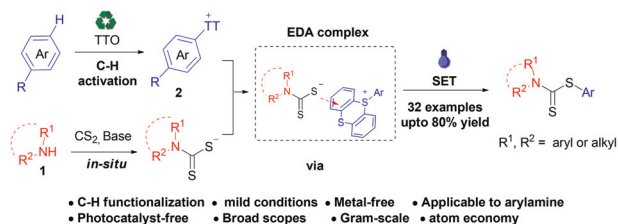
Jige Liu, Huiying Liu, Xing Guo, Ziqiang Wang, Xinxin Wu, Jie Li and Chen Zhu\*



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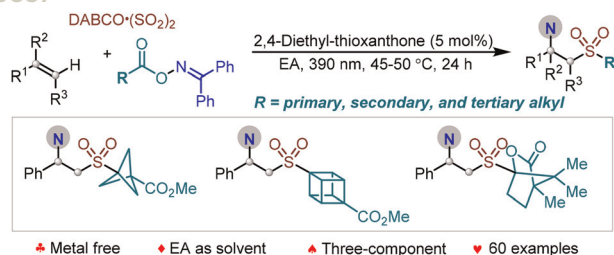
## Multicomponent synthesis of di-aryl dithiocarbamates via electron donor–acceptor photoactivation with thianthrenium salts

Min Liu, Yong Qian, Yanqi Wu\* and Fengzhi Zhang\*



## COMMUNICATIONS

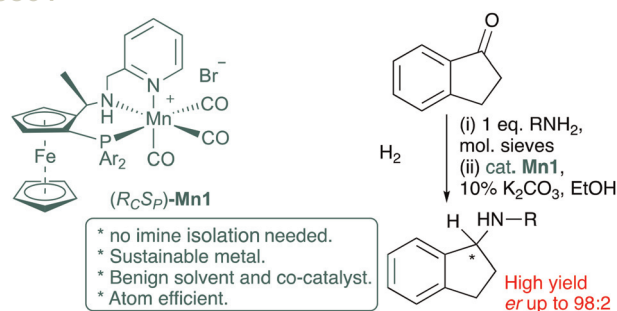
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### Metal-free photosensitized aminosulfonylation of alkenes: a practical approach to $\beta$ -amido sulfones

Meiling Chen, Wenyan Sun, Jingjing Yang, LuLu Yuan, Jian-Qiang Chen\* and Jie Wu\*

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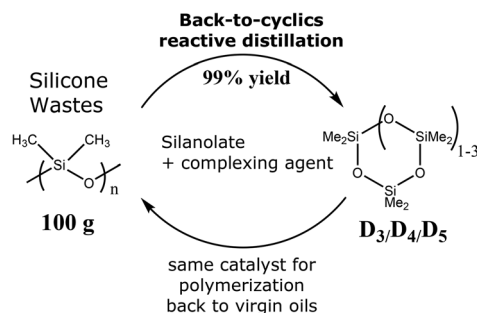


### Manganese catalysed enantioselective hydrogenation of *in situ*-synthesised imines: efficient asymmetric synthesis of amino-indane derivatives

Conor L. Oates, Alister S. Goodfellow, Michael Bühl and Matthew L. Clarke\*

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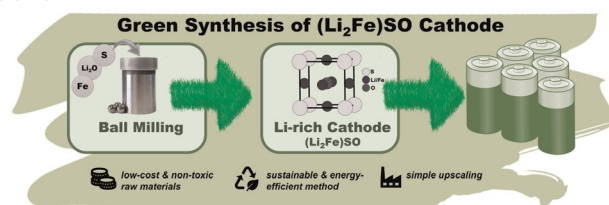
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### Back-to-cyclic monomers: chemical recycling of silicone waste using a [polydentate ligand–potassium silanolate] complex

Nam Duc Vu, Aurélie Boulègue-Mondière, Nicolas Durand, Jean Raynaud\* and Vincent Monteil\*

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### Mechanochemical synthesis of Li-rich (Li<sub>2</sub>Fe)SO cathode for Li-ion batteries

M. A. A. Mohamed,\* H. A. A. Saadallah, I. G. Gonzalez-Martinez, M. Hantusch, M. Valldor, B. Büchner, S. Hampel and N. Gräßler\*

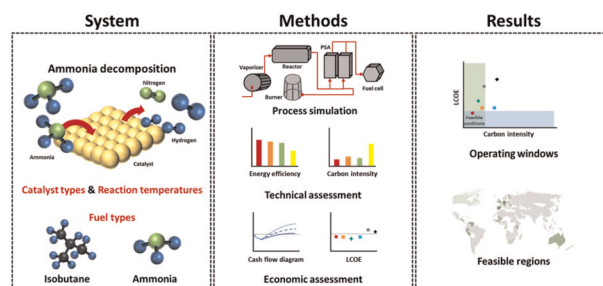


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### Feasibility of electricity generation based on an ammonia-to-hydrogen-to-power system

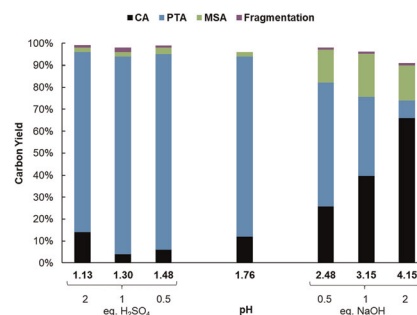
Dongjun Lim, Jong Ah Moon, Chang Won Yoon\* and Hankwon Lim\*



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### Efficient two-step production of biobased plasticizers: dehydration-hydrogenation of citric acid followed by Fischer esterification

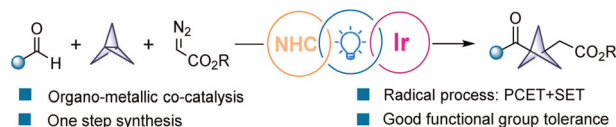
Anthony De Bruyne, Wouter Stuyck, Willem Deleu, Jarne Leinders, Carlos Marquez, Kwinten Janssens, Dimitrios Sakellariou, Ruben Ghillebert and Dirk E. De Vos\*



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### Visible light-induced synthesis of 1,3-disubstituted bicyclo[1.1.1]pentane ketones via cooperative photoredox and N-heterocyclic carbene catalysis

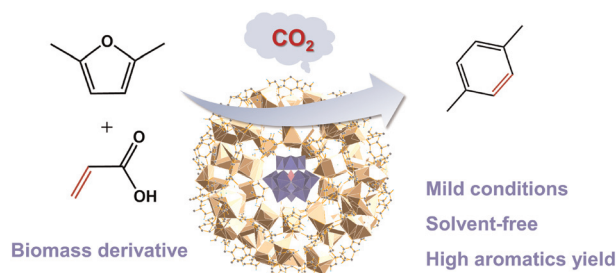
Yan Gao, Zicong Zheng, Yu Zhu, Wenhao Xu, Yu Zhou, Chuanming Yu and Xinpeng Jiang\*



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### Synergistic Fe(III) and acid sites in SiW@MIL-100(Fe) catalyst prompt the synthesis of *p*-xylene from biomass derivatives

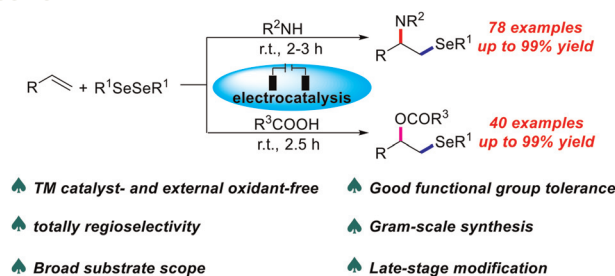
Wenjing Wang, Qing Wang, Ruofan Li, Di Zeng, Juxue Wang, Yu Zhang, Ling Zhang,\* Haiming Liu\* and Wenzhong Wang\*





## PAPERS

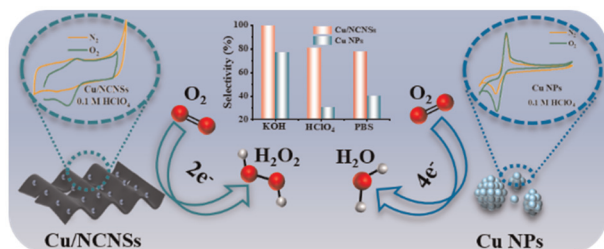
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## Versatile electrooxidative amino- and oxy-selenation of alkenes

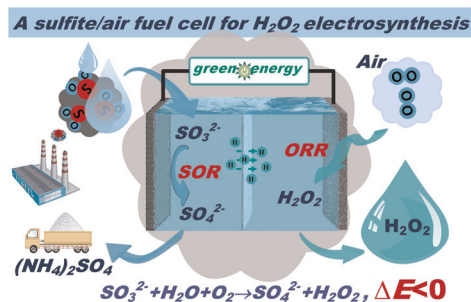
Renjie Wang, Nana Zhang, Yonghong Zhang, Bin Wang, Yu Xia, Kai Sun, Weiwei Jin,\* Xinyong Li\* and Chenjiang Liu\*

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Single-iron, cobalt, nickel, and copper-atom catalysts for the selective reduction of oxygen to H<sub>2</sub>O<sub>2</sub>

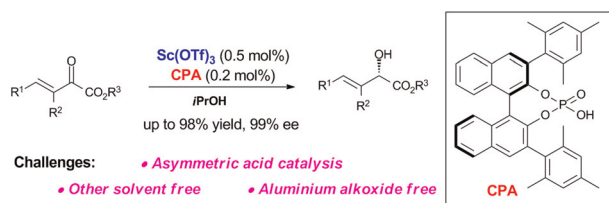
Cuizhu Ye, Yongfang Zhou, Hongying Li and Yi Shen\*

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A sulfite/air fuel cell for H<sub>2</sub>O<sub>2</sub> electrosynthesis

Jucai Wei, Xu Wu\* and Siqi Xing

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## Enantioselective Meerwein–Ponndorf–Verley reduction of β,γ-unsaturated α-keto esters by asymmetric binary-acid catalysis in the green solvent iPrOH

Huixin Qiu, Jiayi Ren, Long Zhang,\* Ran Song, Wen Si, Daoshan Yang, Lirong Wen\* and Jian Lv\*

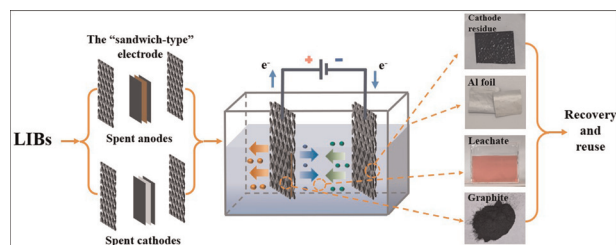


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### A novel electrochemical redox method for the simultaneous recovery of spent lithium-ion battery cathodes and anodes

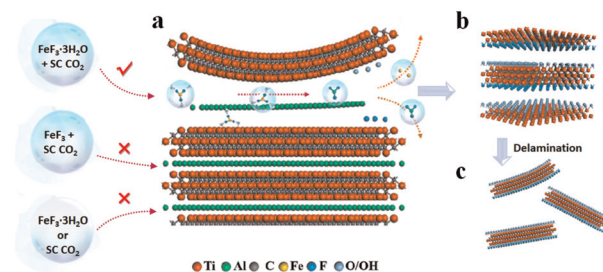
Jiao Kong, Shiyu Zhou, Ting He, Shuai Gu\* and Jianguo Yu\*



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### Supercritical CO<sub>2</sub>-assisted solid-phase etching preparation of MXenes for high-efficiency alkaline hydrogen evolution reaction

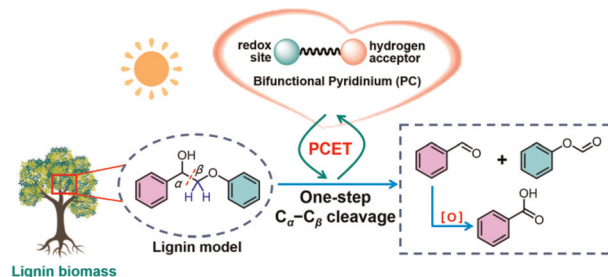
Huajian Feng, Qingyong Tian,\* Junhao Huang, Xinwei Cui, Jingyun Jiang, Yapeng Tian, Li Ye and Qun Xu\*



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### Selective cleavage of C<sub>α</sub>–C<sub>β</sub> bonds in lignin models using a bifunctional pyridinium photocatalyst via a PCET process

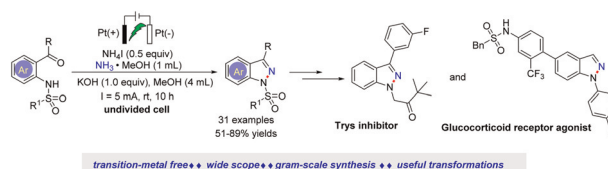
Cai-Hui Rao, Hao-Ran Wei, Xiao-Li Miao, Meng-Ze Jia, Xin-Rong Yao, Xiao-Yan Zheng\* and Jie Zhang\*



3982

### Electrochemical intramolecular N(sp<sup>2</sup>)–H/N(sp<sup>3</sup>)–H coupling for the synthesis of 1*H*-indazoles

Qiang Zhong, Pei-Long Wang,\* Hui Gao, Fang Ma, Youqing Yang and Hongji Li\*

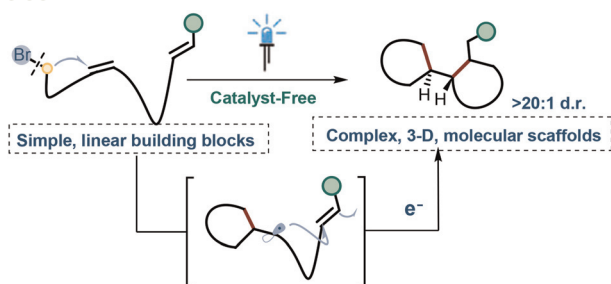


transition-metal free • wide scope • gram-scale synthesis • useful transformations



## PAPERS

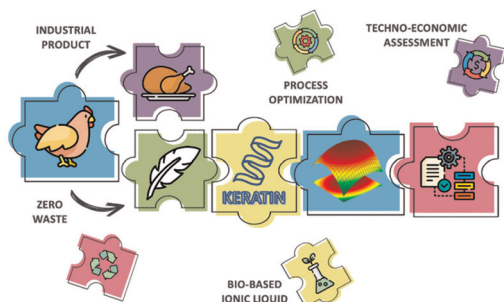
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### Catalyst-free intramolecular radical cyclization cascades initiated by the direct homolysis of $C_{sp^3}-Br$ under visible light

Panyi Huang, Zhiyang Yan, Jiaxin Ling, Peixuan Li, Jiayang Wang, Jianjun Li, Bin Sun\* and Can Jin\*

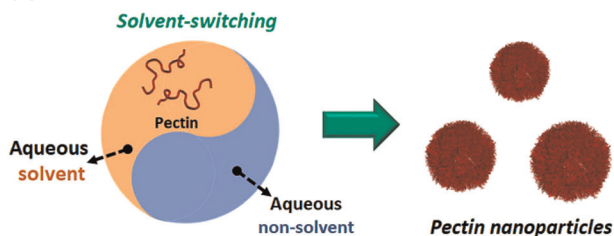
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### Sustainable keratin recovery process using a bio-based ionic liquid aqueous solution and its techno-economic assessment

Cariny Polesca, Amir Al Ghatta, Helena Passos, João A. P. Coutinho, Jason P. Hallett\* and Mara G. Freire\*

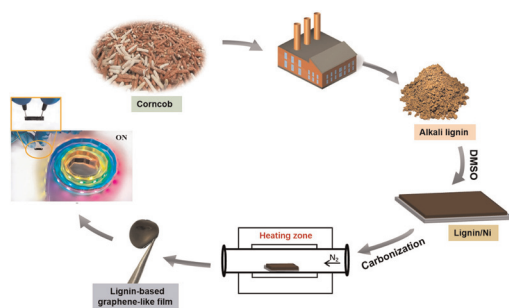
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### Aqueous nanoprecipitation for programmable fabrication of versatile biopolymer nanoparticles

Dongming Ding, Li Gong, Miao Li, Xie Cheng, Huahong Peng, Zesheng Zhang, Shuai Wang\* and Xibo Yan\*

4013



### *In situ* growth of lignin-based graphene-like films catalyzed by metal substrates

Shuangxin Wang, Ying Yuan, Tong-Qi Yuan and Xiluan Wang\*



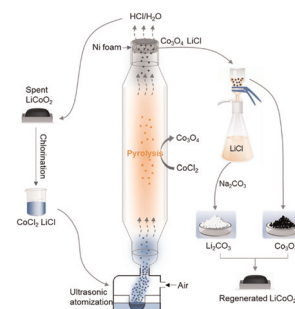


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# Spray pyrolysis technology-based closed-loop for regenerating single-crystal cathodes from spent lithium-ion batteries

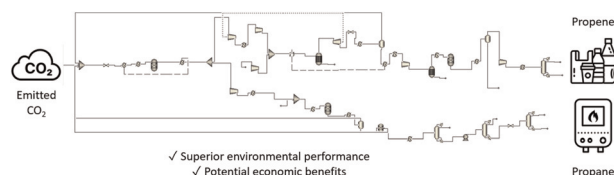
Tao Li, Yongchao Zhou, Ziyu Chen and Yan Li\*



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# Production of propane and propene via carbon capture utilisation: comparison of its environmental and economic performance against conventional production methods

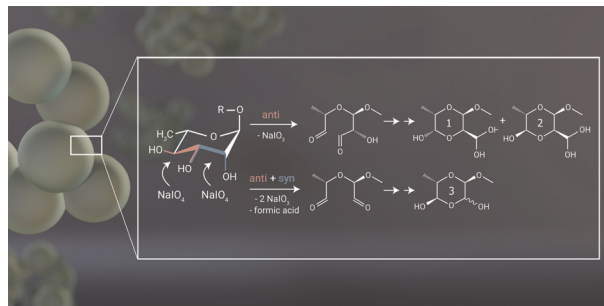
Alexander Payne, Guillermo Garcia-Garcia and Peter Styring\*



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# Formation of substituted dioxanes in the oxidation of gum arabic with periodate

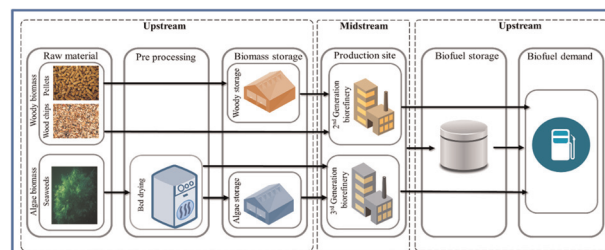
Harmke S. Siebe, Andy S. Sardjan, Sarina C. Maßmann, Jitte Flapper, Keimpe J. van den Berg, Niek N. H. M. Eisink, Arno P. M. Kentgens, Ben L. Feringa, Akshay Kumar\* and Wesley R. Browne\*



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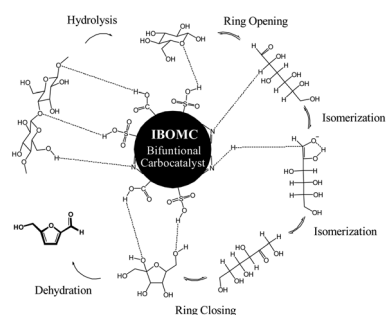
# Optimal design of a biofuel supply chain using an augmented multi-objective and TOPSIS method

Mohammadamin Zarei, Ali Cherif, Ha-Jun Yoon, J. Jay Liu and Chul-Jin Lee\*



## PAPERS

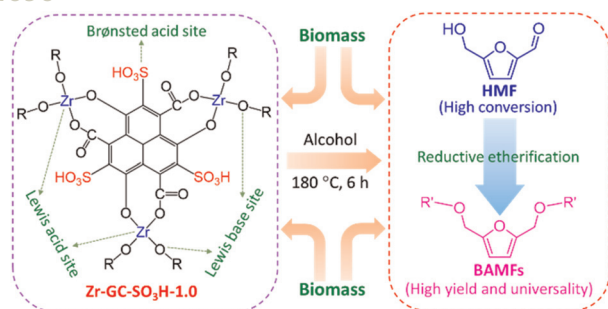
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### One-pot acid–base catalysed tandem reactions using a bimodal N, S-doped cubic mesoporous carbon

Hamzeh H. Veisi, Maryam Akbari, Babak Karimi,\*  
Hojatollah Vali and Rafael Luque

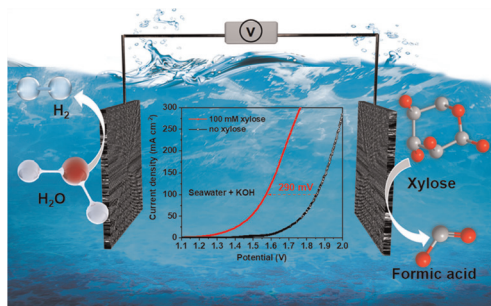
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### Highly effective synthesis of biomass-derived furanic diethers over a sulfonated zirconium–carbon coordination catalyst in alcohol systems

Xinming Shen, Jingyi Zheng, Lei Hu,\* Qinyin Gu,  
Jiacheng Li, Keru Chen, Yetao Jiang, Xiaoyu Wang,  
Zhen Wu and Jinliang Song\*

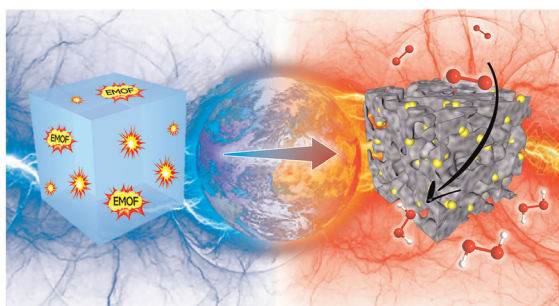
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### Integrating electrocatalytic seawater splitting and biomass upgrading via bifunctional nickel cobalt phosphide nanorods

Yunyi Yang, Ren Zou, Jianyun Gan, Yujia Wei,  
Zhongxin Chen, Xuehui Li, Shimelis Admassie,  
Yunpeng Liu\* and Xinwen Peng\*

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### Pre-embedding an energetic metal–organic framework to create interconnected pore structures in nitrogen-doped carbon for green and effective hydrogen peroxide electrosynthesis

Yuyu Guo, Jinxi Han, Shuting Li, Zhengqiang Xia,  
Sanping Chen,\* Gang Xie, Shengli Gao and Qi Yang\*

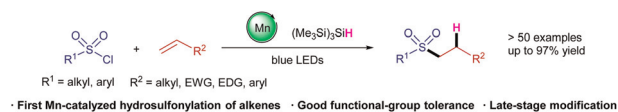


## PAPERS

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## Visible light-initiated manganese-catalyzed hydrosulfonylation of alkenes

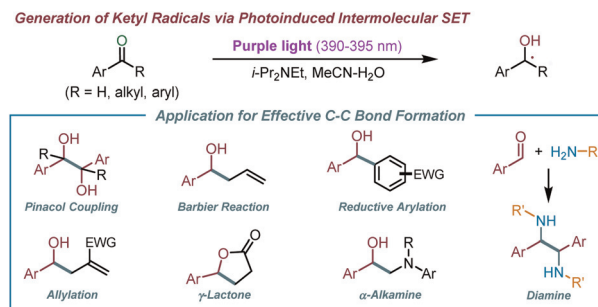
Chun-Min Li, Xin-Xin Dong, Zhe Wang\* and Bo Zhang\*



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## Photoinduced generation of ketyl radicals and application in C–C coupling without external photocatalyst

Yonggang Yan, Gang Li, Jiani Ma, Chao Wang, Jianliang Xiao and Dong Xue\*



## CORRECTIONS

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## Correction: Amenamevir by Ugi-4CR

Xin Li, Tryfon Zarganes-Tzitzikas, Katarzyna Kurpiewska and Alexander Dömling\*

4138

## Correction: 'Chemistry at the speed of sound': automated 1536-well nanoscale synthesis of 16 scaffolds in parallel

Li Gao, Shabnam Shaabani, Atilio Reyes Romero, Ruixue Xu, Maryam Ahmadianmoghaddam and Alexander Dömling\*

