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Cutting-edge research for a greener sustainable future

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Cover
See Pérez-Ramírez *et al.*,
pp. 4850–4860.

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Inside cover
See Zhefei Pan, Xun Zhu,
Rong Chen, Qiang Liao *et al.*,
pp. 4861–4872.

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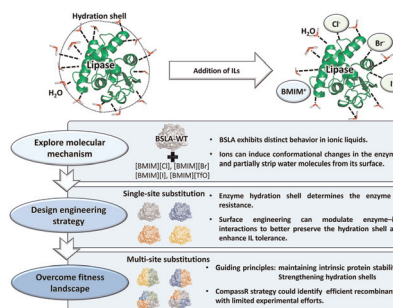
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4705

Lessons learned on how to reengineer enzymes for improved performance in ionic liquids: insights from BSLA saturation mutagenesis library

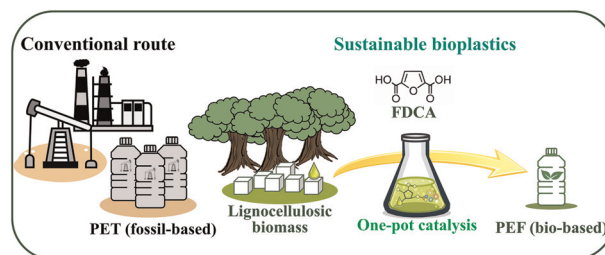
Shuaiqi Meng, Yu Ji,* Maxine Yew, Leilei Zhu* and Ulrich Schwaneberg*



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Critical evaluation of 2,5-furandicarboxylic acid (FDCA) production from biomass: perspectives on reaction pathways, catalytic systems, and process optimization

Chamini Lakshika Wickramaratna Dissanayake, Sabarathinam Shanmugam* and Timo Kikas*



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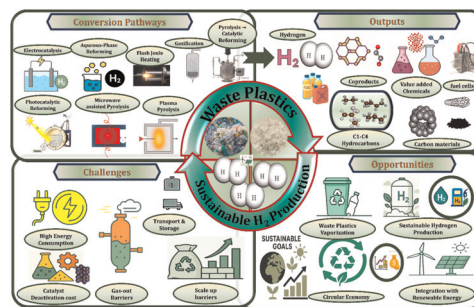
Fundamental questions
Elemental answers

CRITICAL REVIEWS

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Innovative routes for hydrogen production from waste plastics: a comprehensive review of thermochemical, photocatalytic, and electrocatalytic technologies

Mohammed F. Alotibi, Fekri Abdurqab Ahmed Ali, Senthilkumar Jayapalan, Sasikumar Gopalakrishnan, Amine Aymen Assadi, Saravanan Palanivel, Anand Chandrasekar, AbdulAziz A. AlGhamdi, Khalid M. Alshamrani, Shoba Gunasekaran, Subramani Annadurai and Tamizhdurai Perumat*

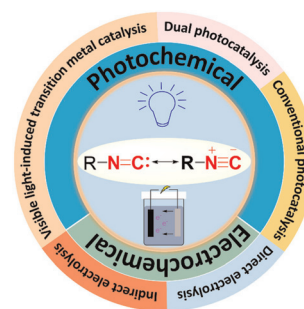


TUTORIAL REVIEW

4795

Photochemical and electrochemical transformations involving isocyanides

Yan He, Xin-Yi Shen, Yi Ding, Ying-Chun Wang,* Yu-Yang Xie* and Ying-Ming Pan*

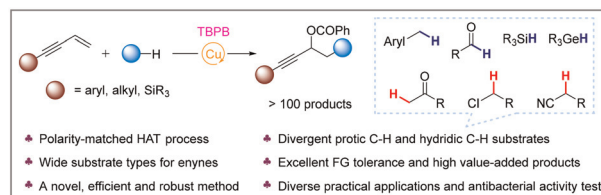


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Copper-catalyzed 1,2-carboesterification of 1,3-enynes via polarity-matched hydrogen atom transfer

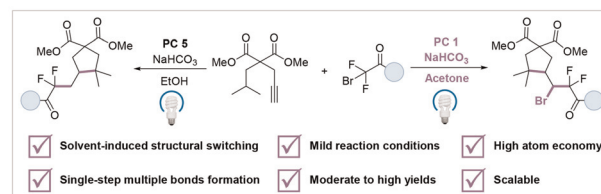
Kai Xiao, Wen-Chao Zhao, Dianyan Chen, Qiao Cao, Lefu Lan, Wei Huang and Feng-Hua Zhang*



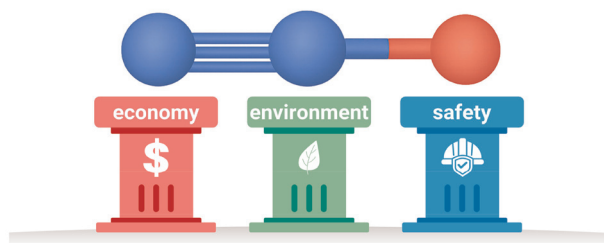
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Solvent-controlled divergent 1,2-dialkylation and 1,1,2-bromodialkylation of terminal alkynes to access difluoroalkylated cyclopentanes

Jianguo Han, Yatao Lang, Chen Zhu* and Huifeng Yue*



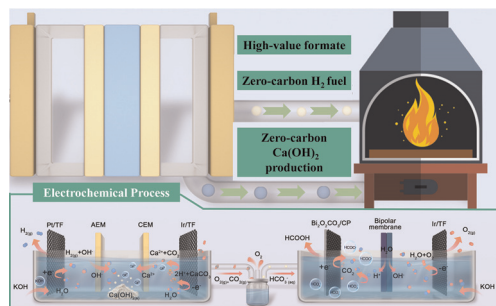
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Nitrous oxide as a green oxidant: a holistic evaluation based on economic, environmental, and safety metrics

Abhinandan Nabera, Gian-Marco Beshara, Gonzalo Guillén-Gosálbez* and Javier Pérez-Ramírez*

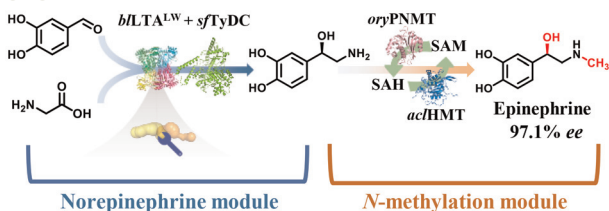
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Tandem electrocatalysis for continuous production of a zero-carbon cement clinker precursor and formate

Xiaoling Xue, Haozhen Li, Liuke Duan, Zhefei Pan,* Xun Zhu,* Dingding Ye, Yang Yang, Hong Wang, Xiao Yan, Xiaolong Zu, Xiao Zhang, Liang An, Rong Chen* and Qiang Liao*

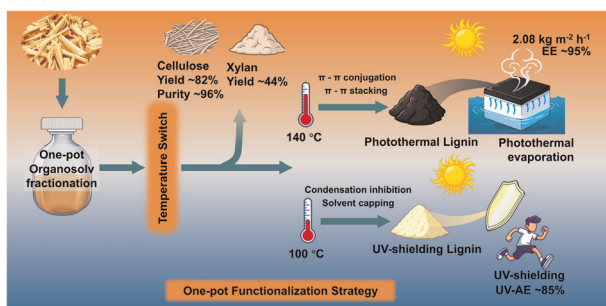
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Continuous flow synthesis of epinephrine through modularized multienzyme cascades

Wenhao Meng, Zejiao Liu, Xiaofan Lin, Zhenkun Zhang and Yifei Zhang*

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Revealing the impact of lignocellulosic fractionation on lignin photofunctionality toward materials for solar-powered desalination

Yuanlong Xu, Yunxuan Wang, Xuesong Tan,* Quan Zhang, Changlin Miao, Zhanying Zhang, Jun Deng, Wuhuan Li and Xinshu Zhuang*

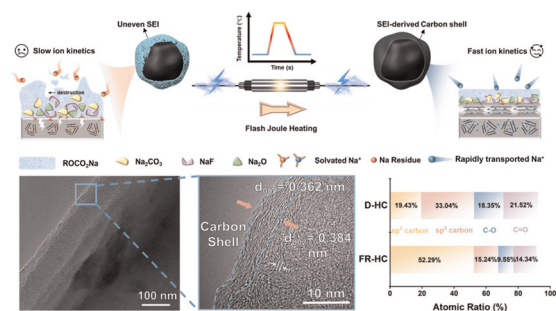


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Direct regeneration of hard carbon anodes from spent sodium-ion batteries via flash Joule heating

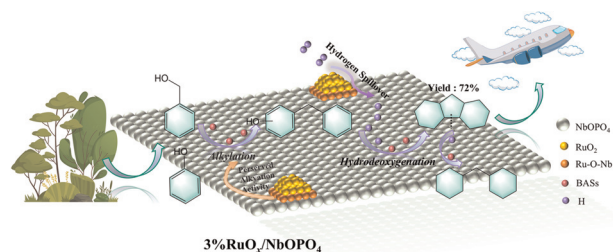
Bingwu Wang, Dong Xie, Han Jia, Yu Yang, Moqi Zhang, Ying Wang, Wei Ai and Ke Wang*



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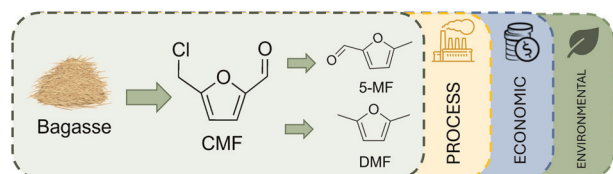
Danni Liu, Kaige Zhang, Weni Zhao, Xiaopo Niu, Xiangwen Zhang and Qingfa Wang*



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Production of furanics from sugarcane bagasse via the 5-chloromethylfurfural pathway: techno-economics and greenhouse gas assessment

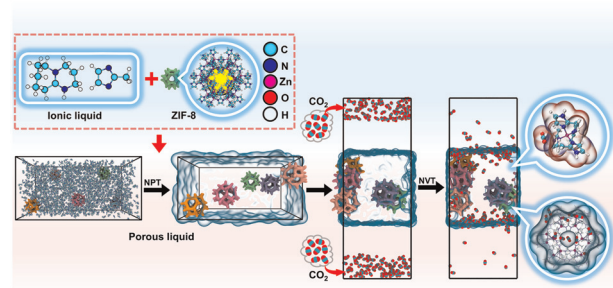
Jerome Ramirez,* Aban Sakheta, Lalehvasht Moghaddam, Darryn Rackemann and Gabriel Fraga



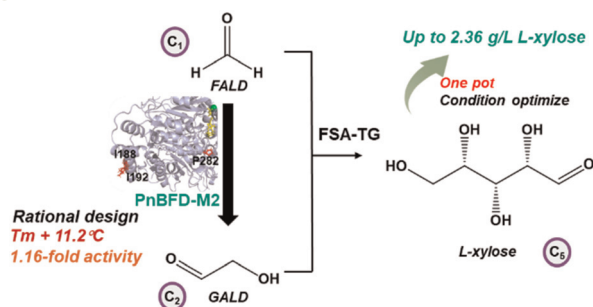
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Controlling the free volume of type III porous liquids by tailoring solvent for enhanced CO₂ capture

Pingping Zhao, Zhihao Li, Baikang Dong, Xin Su, XuanXuan Li, Fengling Wang, Qiang Wang,* Di Liu, Dongmei Xu and Jun Gao



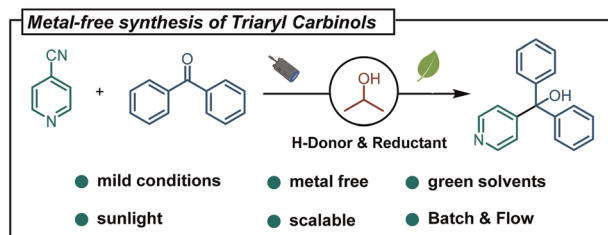
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One pot synthesis of L-xylose from formaldehyde with an improved benzoylformate decarboxylase

Junhui Zhou, Florian Bourdeaux, Tianwei Tan* and Ulrich Schwaneberg*

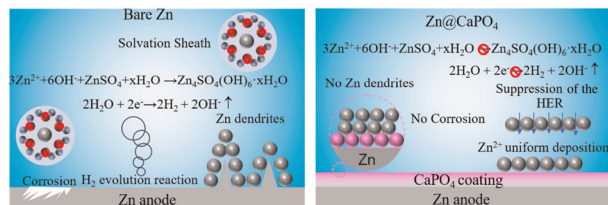
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Turning light into carbinols: a metal-free radical strategy for pyridine based triaryl scaffolds

Matteo Leone* and Maurizio Fagnoni*

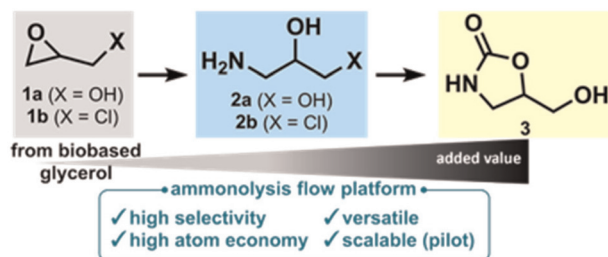
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Constructing a Ca-rich protective layer on the anode for high-performance aqueous zinc-ion batteries

Lun Zhang, Zhuo Chen, Junrun Feng,* Hao Gu, Lin Sheng, Zhangxiang Hao* and Feng Ryan Wang*

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Fast, selective and scalable flow ammonolysis of oxiranes accessible from glycerol toward bio-based amines

Florian Barbaz, Hubert Hellwig, Diana V. Silva-Brenes and Jean-Christophe M. Monbaliu*

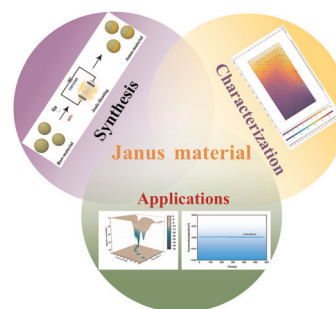


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Liquid metal-assisted rapid Joule heating for preparation of Janus metal oxides in one second

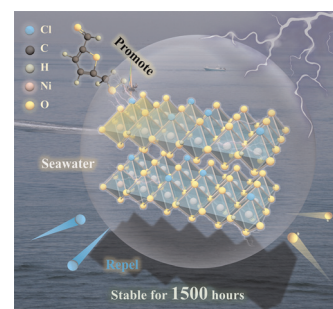
Kaixuan Xi, Mengyang Cao, Sufang Li,* Wenyu Yan, Guanqing Cheng, Yingpeng Wu and Lu Huang*



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Seawater-assisted biomass upgrading with stable catalytic activity for 1500 hours

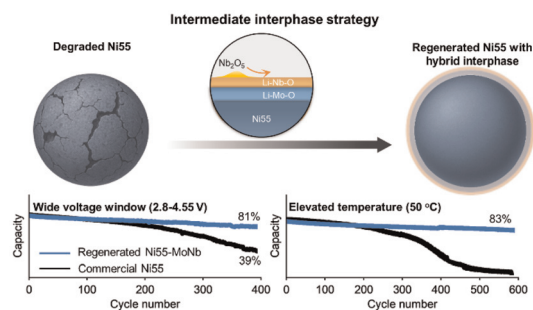
Yujie Ren, Bin Zhu, Qiuge Wang, Shuyi Wang, Sheng Chen, Jian Zhang* and Chunlin Chen*



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Chemical affinity guided high-valence metal oxide interphase engineering for upcycling of ternary cathodes from electric vehicles

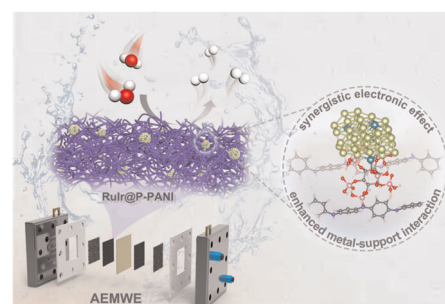
Wenyu Wang, Renming Zhan, Yuanjian Li, TianCheng Dong, Zihe Chen, Ruikang Feng, Yida Lu and Yongming Sun*



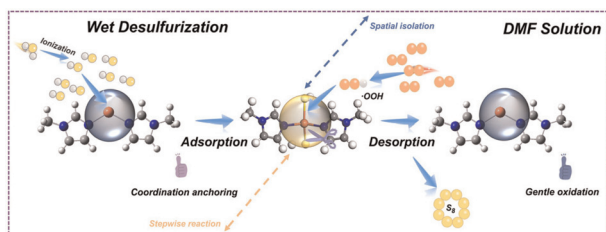
5024

An iridium-mediated bimetallic nanocatalyst for simultaneous enhancement of catalytic activity and metal-support interaction towards efficient and robust hydrogen evolution

Wenya Gao, Xiuxiu Chen, Yanle Xu, Shuo Zhang, Kang Liu* and Dingxuan Ma*



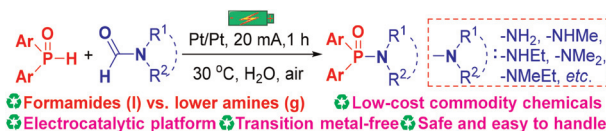
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Cu–N coordination-mediated H₂S absorption and controlled oxidation for efficient wet oxidative desulfurization

Zhihao Liu, Renji Zheng and Zhijie Chen*

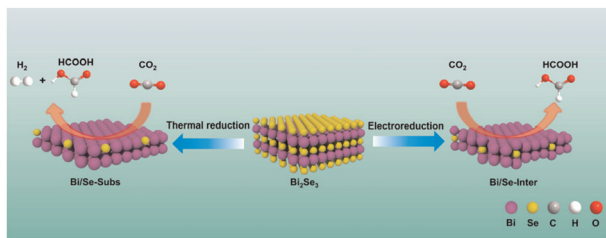
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Replacing low-boiling-point amines: electrocatalytic phosphinamide synthesis with liquid formamide reagents

Hang Gong,* Jingao Xiao, Hui Gao, Kexiao Zhou, Rong Yang and Changqun Cai

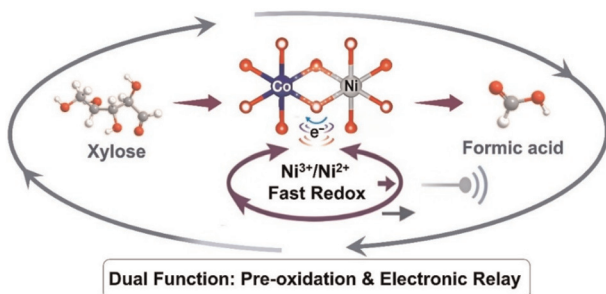
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Tailoring selenium dopant configurations for pH-universal CO₂ electroreduction to formate at ampere-level current density

Qizhou Xue, Jiaqi Feng,* Boyang Liu, Yanlin Wang, Aofei Cheng, Chongyang Jiang, Xiaofu Sun, Min Wang, Ying Bai, Shaojuan Zeng* and Xiangping Zhang*

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Interfacial electronic engineering of co-doped Ni(OH)₂ nanoarrays for efficient electrooxidation of xylose to formate

Jianyun Gan, Ning Wang, Yunpeng Liu, Zhendong Liu, Bo Lu, Yongfa Huang, Ge Yuan, Emmanuel Iwuoha, Ruidong Xia, Ren Zou* and Xinwen Peng*

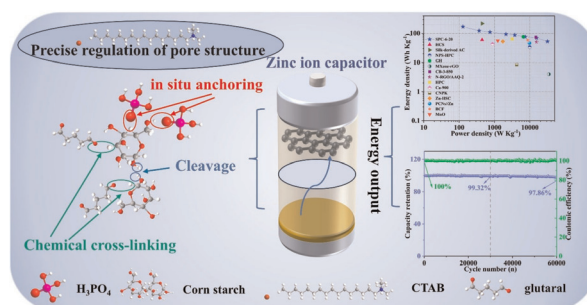


PAPERS

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Unveiling the triple enhancement mechanism of phosphorus doping: a carbon cathode with a precise mesoporous structure for advanced zinc-ion energy storage

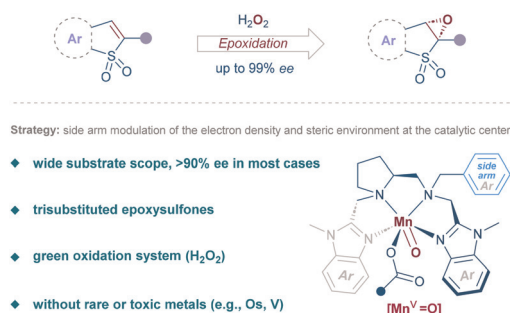
Yongtao Sun, Ying Li, Huihui Li, Shengqin Guan, Jianlong Wang, Binbin Zhang, Shengliang Hu,* Kaixi Li* and Taotao Guan*



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Highly enantioselective epoxidation of trisubstituted vinyl sulfones with H₂O₂ catalyzed by a bioinspired manganese catalyst

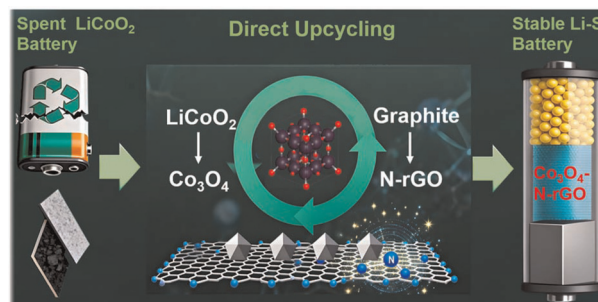
Wanting Tong, Yirui Chen, Xinhang Jin, Hangtao Wu, Chaoran Xu, Dingguo Song, Fei Ling* and Weihui Zhong*



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From waste to wealth: upcycling spent LiCoO₂ batteries into a high-performance Co₃O₄-graphene modified diaphragm for lithium-sulfur batteries

Lei You, Chen Cheng, Shaoqing Liu, Siwei Kuang, Dongming Cai, Danyun Lei, Ying Zheng* and Jianwen Liu*



5105

Green mechanochemical activation for acid-free recovery of valuable metals from spent lithium-ion battery sulfide residue

He Li, Kaixuan Sun, Yadong Ning, Guangye Wei,* Jingkui Qu,* Caixia Lv and Zhihui Yu



CORRECTION

5118

Correction: Defossilising fuels and chemicals – a systemic analysis from feedstock and technology, to hurdles and enablers

Jean-Paul Lange

