

# Green Chemistry

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### Cover

See Daan S. van Es,  
Pieter C. A. Bruijnincx et al.,  
pp. 7739–7751.

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*Green Chem.*, 2024, **26**,  
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### Inside cover

See Luigi Vaccaro et al.,  
pp. 7752–7758.

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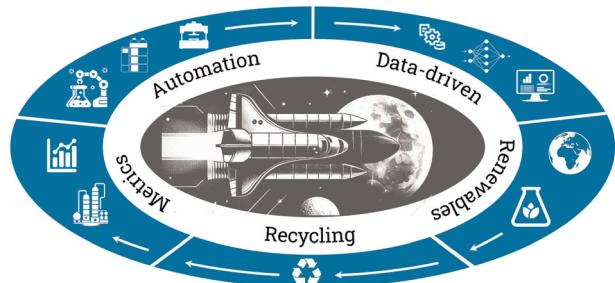
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## CONFERENCE REPORT

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Matthew B. Plutschack\* and Peter H. Seeberger

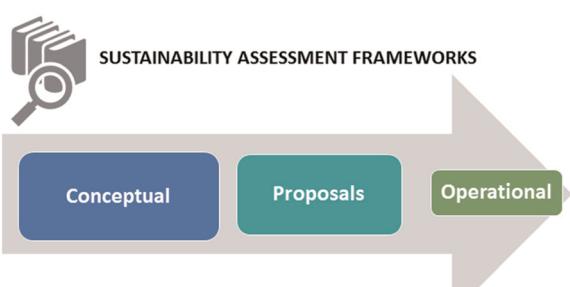


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Safe and sustainable chemicals and materials:  
a review of sustainability assessment frameworks

Carla Caldeira, Elisabetta Abbate, Christian Moretti,  
Lucia Mancini and Serenella Sala\*



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## CRITICAL REVIEWS

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## Deep eutectic solvents as green solvents for materials preparation

Dongkun Yu, Depeng Jiang, Zhimin Xue\* and Tiancheng Mu\*



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## Towards greener batteries: sustainable components and materials for next-generation batteries

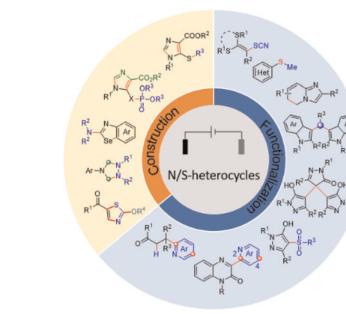
Palanivel Molaiyan, Shubhankar Bhattacharyya, Gladson Simoes dos Reis,\* Rafal Sliz, Andrea Paolella and Ulla Lassi



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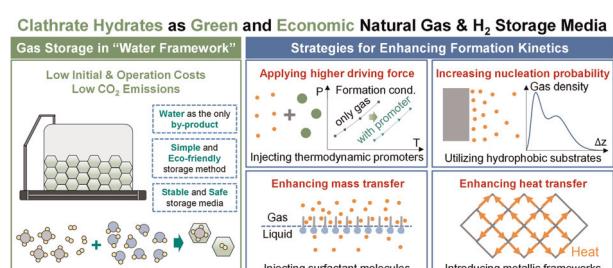
Jiangwei Wen,\* Yonghong Yin, Kelu Yan, Bingwen Li, Ming-Zhong Zhang\* and Jianjing Yang\*



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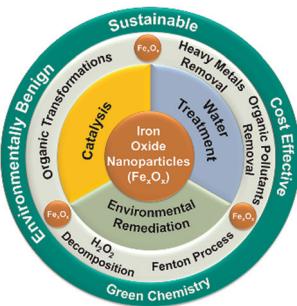
## Perspectives on facilitating natural gas and hydrogen storage in clathrate hydrates under a static system

Wonhyeong Lee, Kwangbum Kim, Jeongwoo Lee, Yun-Ho Ahn and Jae W. Lee\*



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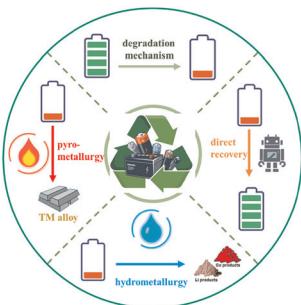
7579



**A review on sustainable iron oxide nanoparticles: syntheses and applications in organic catalysis and environmental remediation**

Dinesh S. Chaudhari, Rohit P. Upadhyay, Gajanan Y. Shinde, Manoj B. Gawande,\* Jan Filip, Rajender S. Varma\* and Radek Zbořil\*

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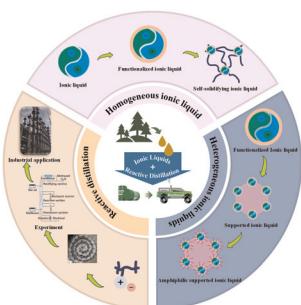


**Recycling spent lithium-ion battery cathode: an overview**

Xun Zhang and Maiyong Zhu\*

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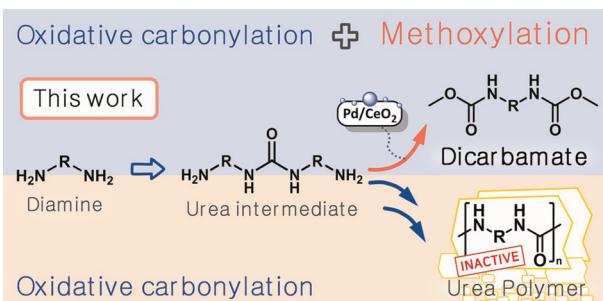


**Challenges and perspectives on using acidic ionic liquids for biodiesel production via reactive distillation**

Zhaoyang Qi, Rongkai Cui, Hao Lin, Changshen Ye, Jie Chen\* and Ting Qiu\*

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**A dual-functional catalyst for selective dicarbamate synthesis via oxidative carbonylation: enhanced methoxylation for suppressing urea polymer formation**

Seulgi Han, Young-Woo You, Kwanyong Jeong, Mintaeck Im, Jung-Ae Lim, Soo Min Kim, Jin Hee Lee\* and Ji Hoon Park\*

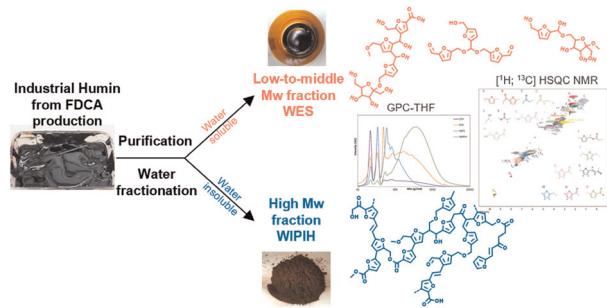


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**Molecular structure and composition elucidation of an industrial humin and its fractions**

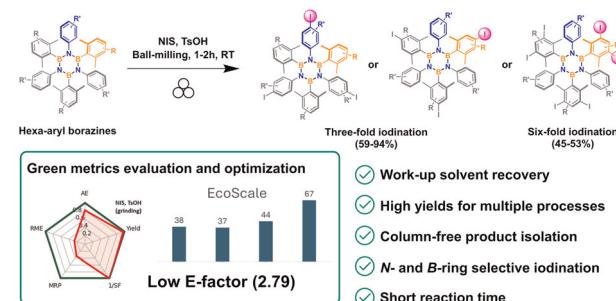
Sandra Constant, Christopher S. Lancefield, Willem Vogelzang, Rajeesh Kumar Pazhavelikkakath, Purushothaman, Augustinus E. Frissen, Klaartje Houben, Peter de Peinder, Marc Baldus, Bert M. Weckhuysen, Daan S. van Es\* and Pieter C. A. Bruijnincx\*



7752

**A waste-minimized approach for the synthesis of iodinated organic borazines**

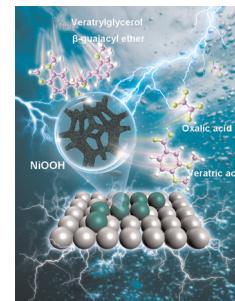
Dario Marchionni, Daniele Gernini, Alireza Nazari, Khodadadi, Ejdi Cela, Fan Huang and Luigi Vaccaro\*



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**Electrochemical oxidation of lignin model compounds over metal oxyhydroxides on nickel foam**

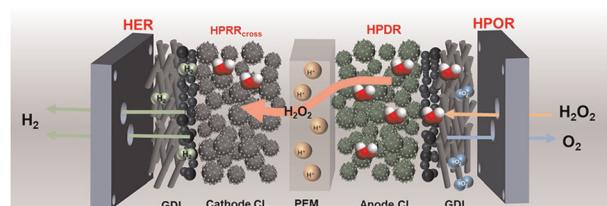
Zhang Danlu, Zeng Xu,\* Wang Sinong, Xu Yan, Dai Qiqi, Yue Fengxia, Wang Peng, Liu Chuanfu and Lan Wu\*



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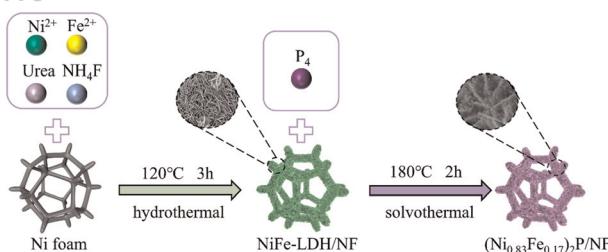
**Maximization of hydrogen peroxide utilization in a proton exchange membrane  $H_2O_2$  electrolyzer for efficient power-to-hydrogen conversion**

Jie Yang, Ruimin Ding,\* Chang Liu, Lifang Chen, Qi Wang, Shanshan Liu, Qinchao Xu and Xi Yin\*



## PAPERS

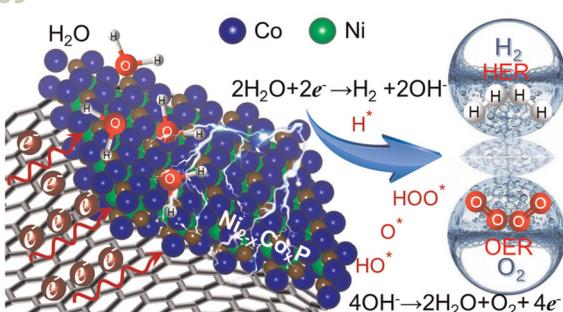
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**Iron-doped nickel phosphide hollow nanospheres synthesized by solvothermal phosphidization of layered double hydroxides for electrocatalytic oxygen evolution**

zeyi Wang, Shuling Liu,\* Jinyu Du, Yichuang Xing, Yanling Hu, Yujie Ma, Xinyi Lu and Chao Wang\*

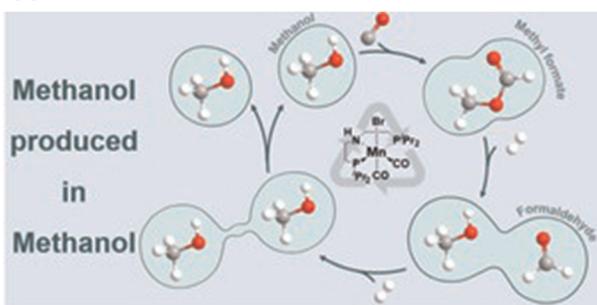
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**Bimetallic  $\text{Ni}_{2-x}\text{Co}_x\text{P}$  carbon nanofibers network: solid-solution alloy nano-architecture as efficient electrocatalyst for water splitting**

Meijie Ding, Zhiqiang Wei,\* Wenhua Zhao, Qiang Lu, Chenggong Lu, Meipan Zhou, Dexue Liu\* and Hua Yang

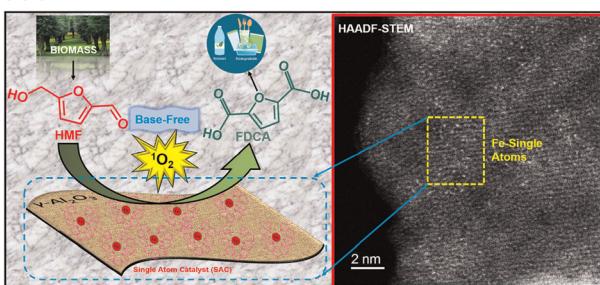
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**Liquid-phase hydrogenation of carbon monoxide to methanol using a recyclable manganese-based catalytic system**

Sebastian Stahl, Niklas Wessel, Andreas J. Vorholt\* and Walter Leitner\*

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**Base-free aerobic oxidation of 5-hydroxymethylfurfural to 2,5-furandicarboxylic acid over a Fe single-atom catalyst**

Sohaib Hameed, Wengang Liu,\* Zhounan Yu, Jifeng Pang, Wenhao Luo\* and Aiqin Wang\*

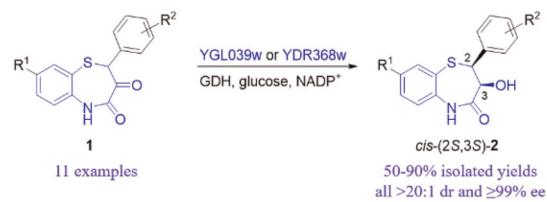


## PAPERS

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**Ketoreductase-catalyzed dynamic reductive kinetic resolution of sterically hindered 2-aryl-1,5-benzothiazepin-3,4(2H,5H)-diones: asymmetric synthesis of a key diltiazem precursor and its analogues**

Zijun Guo, Zexin Wu, Xiaofan Wu, Li Zhang, Zedu Huang\* and Fener Chen\*

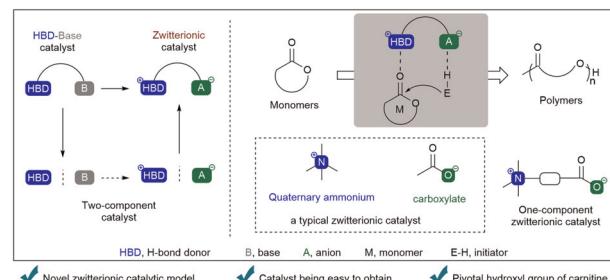


Dynamic reductive kinetic resolution ✓ Excellent stereoselectivity ✓  
Gram scale synthesis of diltiazem precursor ✓ Enzyme immobilization and reuse ✓

7825

**Zwitterionic organocatalysis for ring-opening polymerization of cyclic esters**

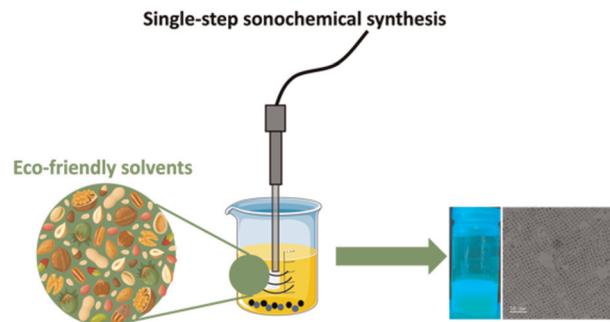
Yue Xu, Peng Guo, Zhenjiang Li,\* Ziqi Liu, Tianyu Zhu, Yujia Wang, Hao Zhang, Wei He, Mingfu Lyu and Kai Guo\*



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**Sonochemical-assisted synthesis of CsPbBr<sub>3</sub> perovskite quantum dots using vegetable oils**

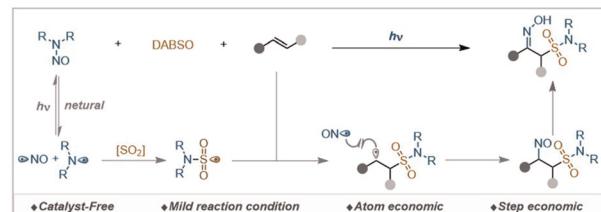
Pedro Conceição, Andrés Perdomo, Diogo F. Carvalho, Jennifer P. Teixeira, Pedro M. P. Salomé and Tito Trindade\*



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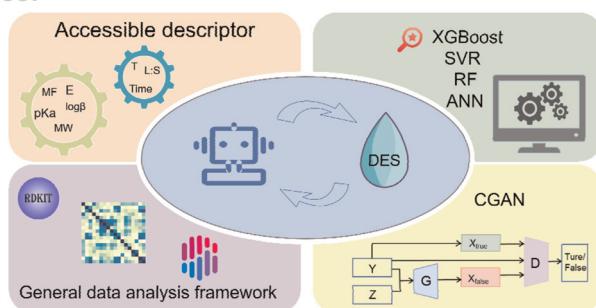
**Photo-mediated radical relay oximinosulfonamidation of alkenes with N-nitrosamines triggered by DABSO**

Ji-Wei Sang, Hong Chen, Yu Zhang,\* Jinxin Wang\* and Wei-Dong Zhang\*



## PAPERS

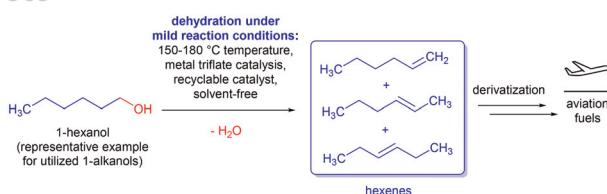
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### Machine learning models accelerate deep eutectic solvent discovery for the recycling of lithium-ion battery cathodes

Fengyi Zhou, Dingyi Shi, Wenbo Mu, Shao Wang, Zeyu Wang, Chenyang Wei, Ruiqi Li\* and Tiancheng Mu\*

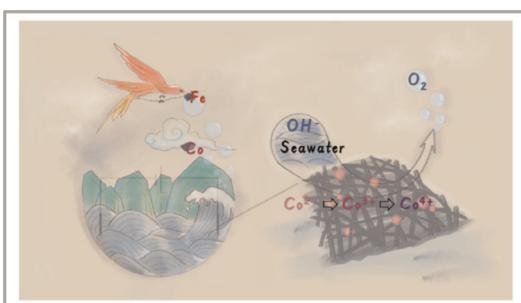
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### Catalyst screening for dehydration of primary alcohols from renewable feedstocks under formation of alkenes at energy-saving mild reaction conditions

Adil Allahverdiyev, Jianing Yang and Harald Gröger\*

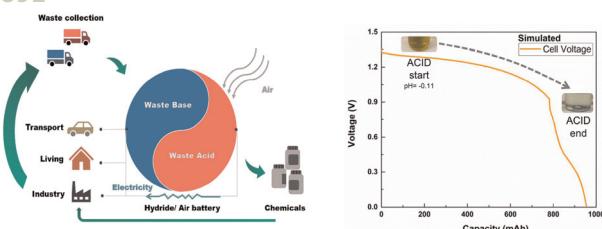
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### Eggshell membrane-derived metal sulfide catalysts for seawater splitting

Lingyu Cui, Lan Zhang\* and Yi Shen\*

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### An air/metal hydride battery for simultaneous neutralization treatment of acid–base wastewater and power generation

Kangqiang Ye, Yu'an Du, Yuxin Yang, Rong Chen, Chao Deng\* and Guo-Ming Weng\*

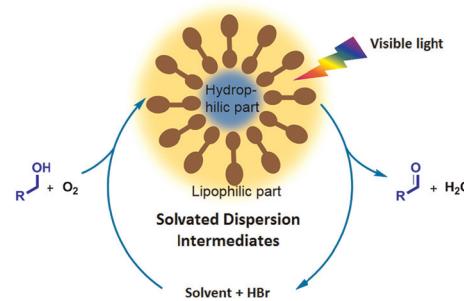


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**Visible-light-induced aerobic oxidation of alcohols to aldehydes/ketones *via* solvated dispersion intermediates**

Wenlong Lei, Runze Liu, Rengui Li, Yan Liu and Can Li\*



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**Sustainable upgrading of glycerol into glycidol and its derivatives under continuous-flow conditions**

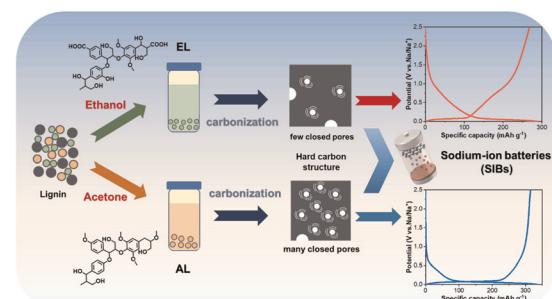
Alessandra Sivo, Ilaria Montanari, Mert Can Ince and Gianvito Vilé\*



7919

**Lignin molecular sieving engineering enables high-plateau-capacity hard carbon anodes for sodium-ion batteries**

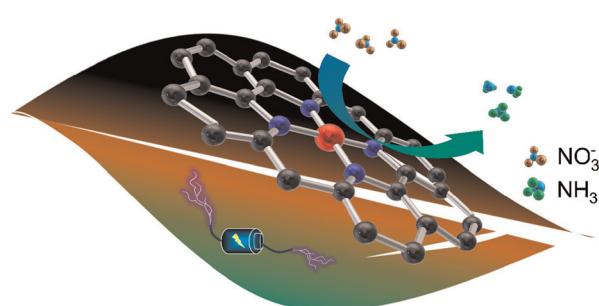
Bin Chen, Lei Zhong, Manjia Lu, Wenbin Jian, Shirong Sun, Qingwei Meng,\* Tiejun Wang, Wenli Zhang\* and Xueqing Qiu



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**Green synthesis of a magnesium single-atom catalyst from *Spinacia oleracea* chlorophyll extracts for sustainable electrocatalytic nitrate reduction to ammonia**

Kanhai Kumar, Pragyan Tripathi, Gokul Raj, Dova Kalyan, Demudu Babu Gorle, Nikhil George Mohan, Surendra Kumar Makineni, Kothandaraman Ramanujam, Abhishek Kumar Singh and Karuna Kar Nanda\*



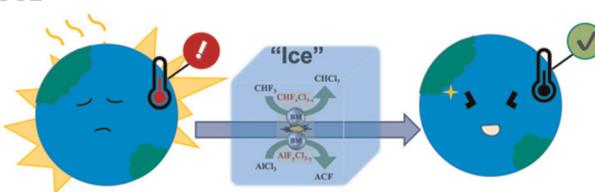
## PAPERS

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**Light-assisted green and efficient construction of thiadiazole/selenadiazole derivatives**

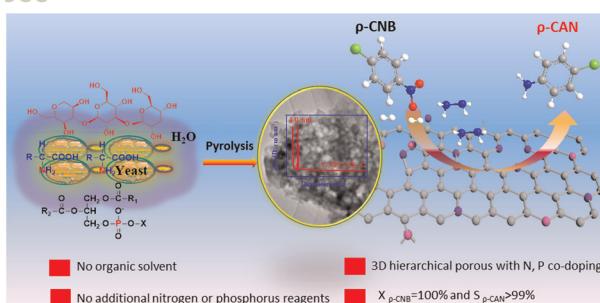
Chanting Wen, Guojin Sun, Lang Liu, Jun Zhang, Mengyao She, Zheng Yang,\* Ping Liu,\* Shengyong Zhang and Jianli Li\*

7951


**Conversion of fluoroform to  $\text{CHCl}_3$  and  $\text{AlCl}_x\text{F}_{3-x}$  via its mechanochemical reaction with  $\text{AlCl}_3$** 

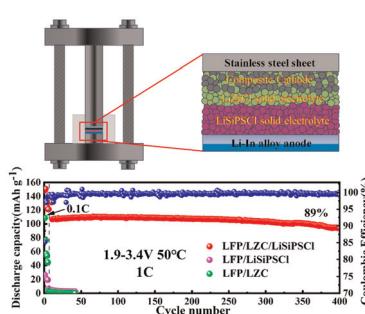
Yiwei Tang, Hui Shao, Yingzhou Lu,\* Hong Meng, Hongwei Fan and Chunxi Li\*

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**Yeast-derived N, P co-doped porous green carbon materials as metal-free catalysts for selective hydrogenation of chloronitrobenzene**

Xiaohua Wang,\* Hongfan Zhao, Yebin Zhou, Chunyu Yin, Wei He, Feng Feng, Fengli Wang, Chunshan Lu\* and Xiaonian Li\*

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**Halide-sulfide bilayer electrolytes for  $\text{LiFePO}_4$ -based all-solid-state batteries**

Guoyao Zhang, Xixi Shi, Qili Su, Yiming Sun, Yong Lu, Kai Liu,\* Zhe Li,\* Haijing Liu\* and Lianqi Zhang\*



## PAPERS

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**Efficient oxygen evolution activity of CoFe-PBA heterojunctions using a bimetallic probe (Mo/Cu) at room temperature: construction of multilayered activated structures and cationic vacancies**

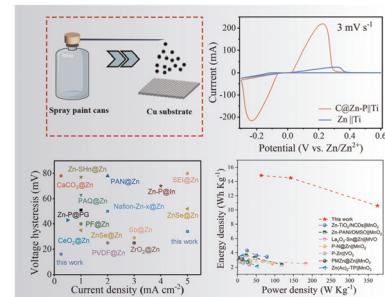
Lihai Wei, Zhihao Liu, Xiaodong Wu,\* Huabo Huang,\* Qianqian Jiang\* and Jianguo Tang\*



7990

**Spraying amorphous carbon coated zinc to prepare powder-based anodes for long-life zinc-ion batteries**

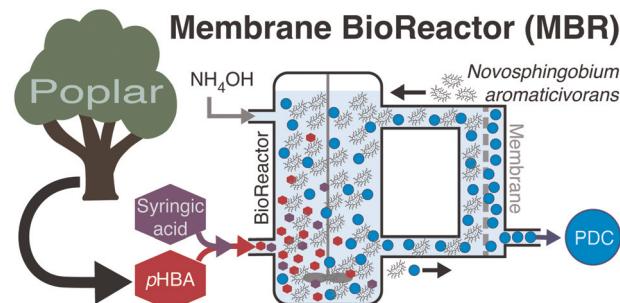
Jiahao Tang, Jiale Cao, Yunxuan Jiang, Siying Gou, Ruiqi Yao, Yingqi Li\* and Bo-Tian Liu\*



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**Achieving high productivity of 2-pyrone-4,6-dicarboxylic acid from aqueous aromatic streams with *Novosphingobium aromaticivorans***

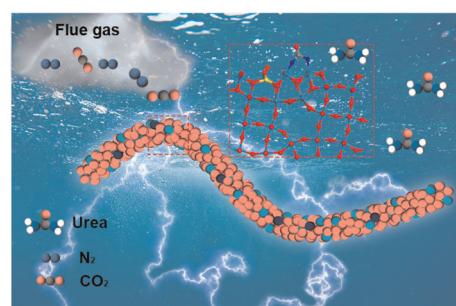
Bumkyu Kim, Jose M. Perez, Steven D. Karlen, Jason Coplien, Timothy J. Donohue and Daniel R. Noguera\*



8010

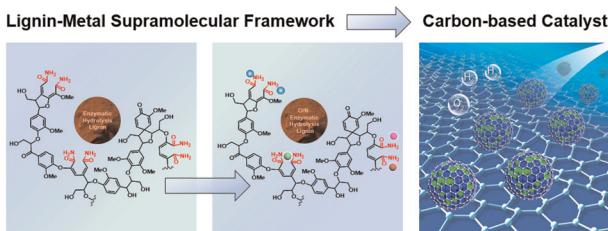
**Boosting urea synthesis in simulated flue gas electroreduction by adjusting W–W electronic properties**

Xiaohui Yao, Changyan Zhu, Jie Zhou, Kunhao Zhang, Chunyi Sun,\* Man Dong, Guogang Shan,\* Zhuo Wu, Min Zhang,\* Xinlong Wang and Zhongmin Su



## PAPERS

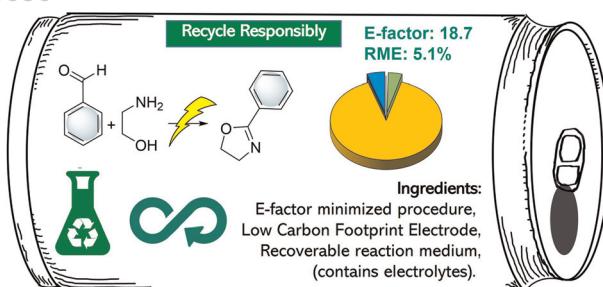
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**Synthesis of highly dispersed carbon-encapsulated Ru–FeNi nanocatalysts by a lignin–metal supramolecular framework strategy for durable water-splitting electrocatalysis**

Jianlin Liu, Xueqing Qiu,\* Shirong Sun,\* Bowen Liu, Yuhui Tian, Yanlin Qin and Xuliang Lin\*

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**Sustainability in a can: upcycling aluminium scrap in the waste-minimized electrochemical synthesis of 2-oxazoline**

Simone Trastulli Colangeli, Francesco Ferlin\* and Luigi Vaccaro\*

## CORRECTION

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**Correction: CO<sub>2</sub>-derived non-isocyanate polyurethanes (NIPUs) and their potential applications**

Rita Turnaturi, Chiara Zagni,\* Vincenzo Patamia, Vincenzina Barbera, Giuseppe Floresta and Antonio Rescifina\*