

# Green Chemistry

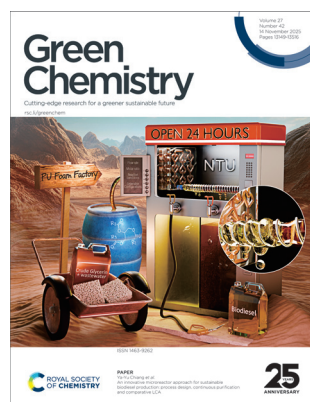
Cutting-edge research for a greener sustainable future

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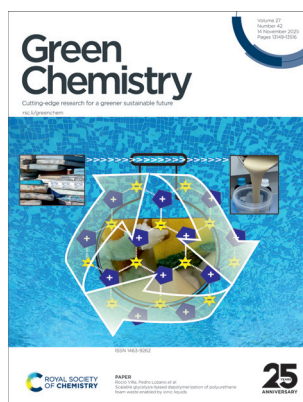
## IN THIS ISSUE

ISSN 1463-9262 CODEN GRCHFJ 27(42) 13149–13516 (2025)



**Cover**  
See Ya-Yu Chiang *et al.*,  
pp. 13214–13234.

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13214.



**Inside cover**  
See Rocio Villa, Pedro Lozano  
*et al.*, pp. 13235–13246.

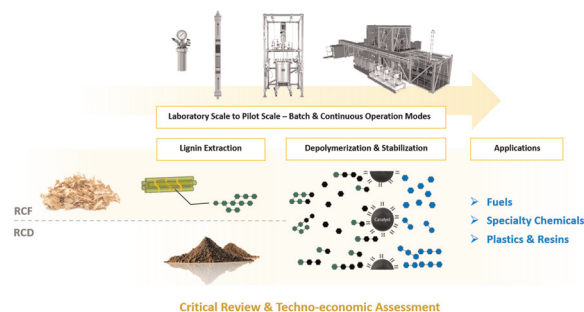
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Francisco Velasco, Rocio Villa  
and Pedro Lozano from  
*Green Chem.*, 2025, **27**,  
13235.

## CRITICAL REVIEW

13160

### From lignin to market: a technical and economic perspective of reductive depolymerization approaches

Brent Daelemans,\* Balaji Sridharan, Paul Jusner, Agneev Mukherjee, Jiazhao Chen, Jacob K. Kenny, Miet Van Dael, Karolien Vanbroekhoven, Peter J. Deuss, Michael L. Stone and Elias Feghali\*

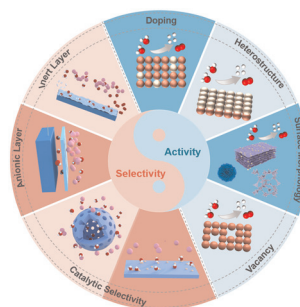


## TUTORIAL REVIEW

13179

### Chalcogenide electrocatalysts for electrolytic seawater oxidation: design strategies for enhanced activity and selectivity

Qing Li, Chenxi Liu, Zefeng Teng, Rui Zhang, Xu Liu, Jia Liu, Zhenyu Xiao,\* Jingqi Chi,\* Jianping Lai and Lei Wang\*



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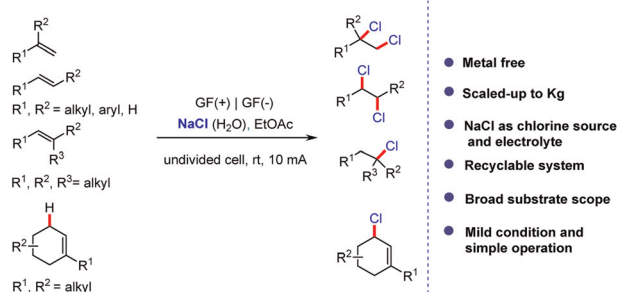
Fundamental questions  
Elemental answers

## COMMUNICATION

13208

**Metal-free electrohalogenation of olefins with aqueous NaX mediators**

Zhe Zhang, Quanjin Rong, Shengkang Qian, Jianyou Zhao, Chengling Deng, Jiaoyang Liu, Fan Wang, Shuai Liu\* and Zhong-Quan Liu\*

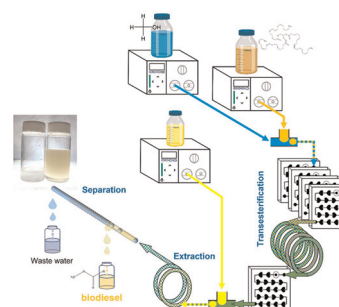


## PAPERS

13214

**An innovative microreactor approach for sustainable biodiesel production: process design, continuous purification and comparative LCA**

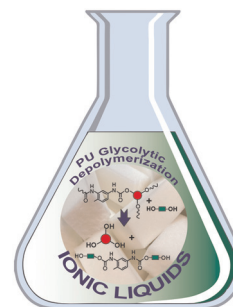
Cheng-You Yang, Cheng-Yu Wang, Ni Ni Myint, Yi-Chun Chen, Penjit Srinophakun\* and Ya-Yu Chiang\*



13235

**Scalable glycolysis-based depolymerization of polyurethane foam waste enabled by ionic liquids**

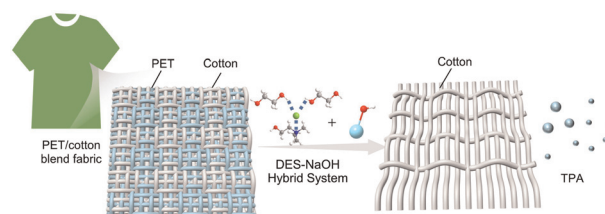
Francisco Velasco, Rocio Villa,\* Nicolas Alonso, Rebeca Salas, Jairton Dupont, Eduardo Garcia-Verdugo and Pedro Lozano\*



13247

**Efficient separation of polyester/cotton blends using a deep eutectic solvent–NaOH hybrid system for textile recycling**

Lele Zhang, Tengfei Wang, Yong Wang,\* Dongdong Ye\* and Zongqian Wang\*

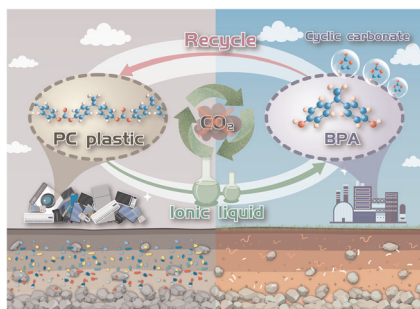


- ✓ 100% degradation of polyester
- ✓ Recovery of high-purity, high-value TPA
- ✓ Highly efficient separation
- ✓ Nondestructive recycling of cotton fibers



## PAPERS

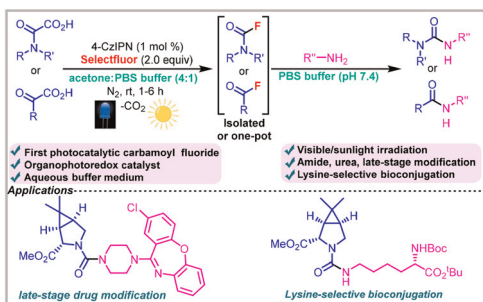
13259



### Synergistic recycling of polycarbonate: efficient BPA recovery integrated with CO<sub>2</sub> utilization to produce valuable chemicals

Yue Bai, Minghao Zhang, Siming Zhu, Zhuo Wang, Yu Liu, Jianxiu Hao, Huacong Zhou\* and Qingqing Mei\*

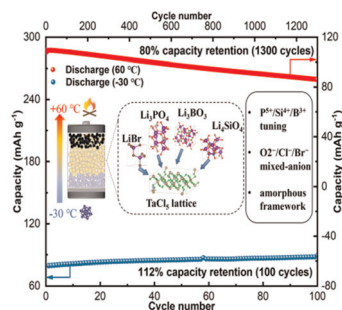
13268



### A visible-light-mediated decarboxylative umpolung strategy to access carbamoyl/acyl fluorides in a buffer medium: expedient access to unsymmetrical ureas/amides and lysine-selective bioconjugation

Subhdeep Das, Supriyo Das, Sk Abdur Rahaman, Sourav Mandal and Ranjan Jana\*

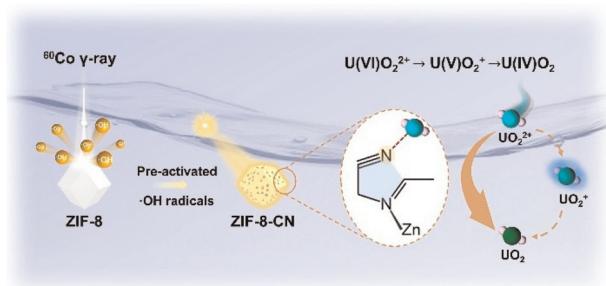
13281



### All-climate all-solid-state batteries enabled by high-entropy amorphous oxyhalide solid electrolytes

Shufeng Song,\* Wei Xue, Yumei Wang, Zhongting Wang, Yanming Cui, Zhixu Long, Hongyang Shan, Ning Hu, Jingfeng Wang and Fusheng Pan

13293



### In situ cyanide functionalization of ZIF-8 by $\gamma$ -irradiation for photochemical removal of uranium

Yukun Zhang, Chong Chen, Changjiang Hu, Jianfeng Zhao and Jun Ma\*

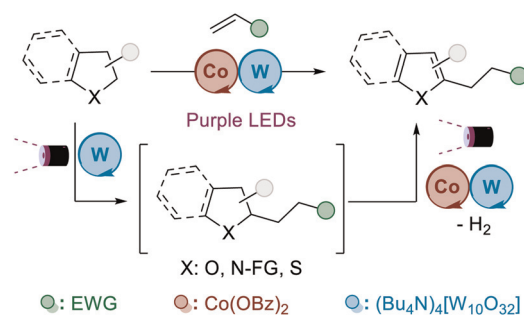


## PAPERS

13303

### Photocatalytic transformation of aliphatic heterocycles and electron-poor alkenes into functionalized heteroarenes

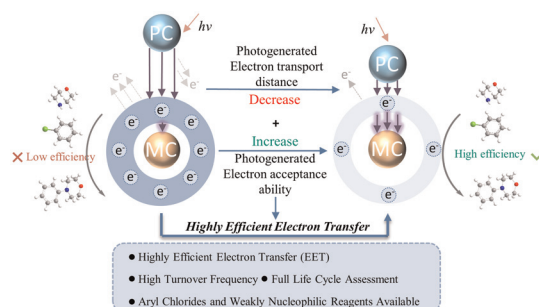
Lorenzo Di Terlizzi,\* Davide Ravelli and Burkhard König



13311

### The position-tuned nitrogen atom in Ni(II)-metalated covalent organic frameworks enables highly efficient and sustainable C–N coupling

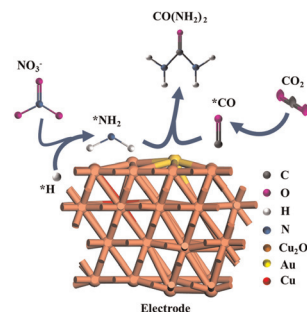
Rui Zhang, Jinyang Hai, Huiying Chen, Mingxiang Zhu\* and Fang Zhang\*



13323

### Porous core–shell CuAu@Cu<sub>2</sub>O catalyst for acidic C–N coupling toward urea electrosynthesis from CO<sub>2</sub> and nitrate

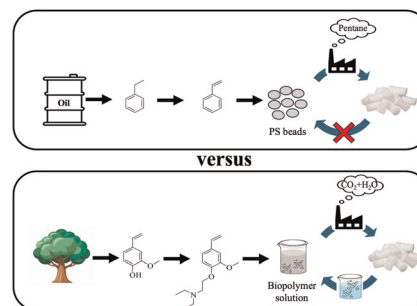
Xiang Ji, Yaodong Yu, Yujia Guan, Jianping Lai\* and Lei Wang\*



13331

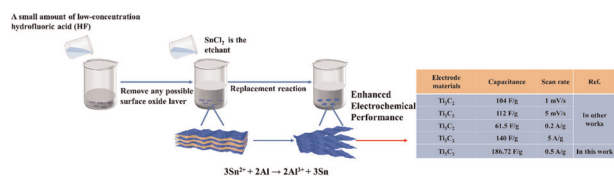
### Expanding and recycling a water-resistant bioderived rigid foam using CO<sub>2</sub>-responsive amines and carbonated water

Daniel Barker, Michael F. Cunningham, Guojun Liu\* and Philip G. Jessop\*



## PAPERS

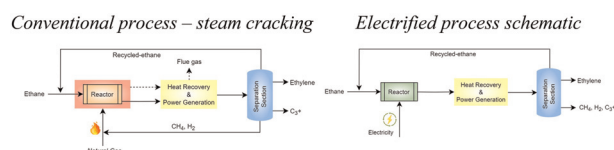
13349



### Green synthesis strategy for Ti<sub>3</sub>C<sub>2</sub> MXenes based on SnCl<sub>4</sub>-assisted etching with a small amount of HF

Pei Zhang,\* Haixiang Wang, Yiting Guo, Xiaohua Zhang and Jianfeng Zhu

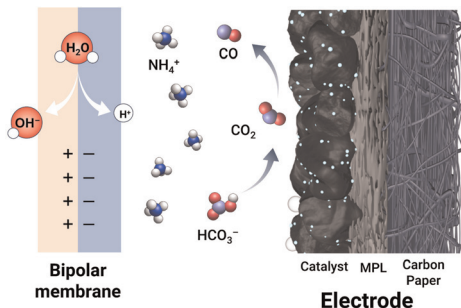
13357



### Comparative reactor, process, techno-economic, and life cycle emissions assessment of ethylene production via electrified and thermal steam cracking

Alexandre Cattray, Chaitanya Vuppanapalli and Dharik S. Mallapragada\*

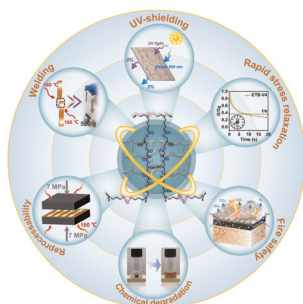
13375



### Electrochemical reduction of ammonia-captured CO<sub>2</sub> to CO over a nickel single-atom catalyst

Sujin Kang, Lun An, Tianlei Li, Long Qi, Wenyu Huang and Wenzhen Li\*

13385



### Green and sustainable itaconic acid-based vitrimers with rapid stress relaxation, superior fire safety, and recyclability via synergistic roles of multiple dynamic bonds

Yuzhao Qi, Yinliang Zhang, Shiyu Ou, Guangwu Zhuo, Hongju Zeng, Yufei Lao, Junfeng Wang,\* Qingwen Wang and Chuigen Guo\*

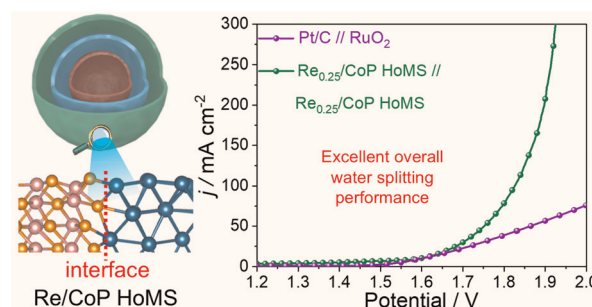


## PAPERS

13404

### Interfacial engineering-triggered electronic regulation of Re and CoP hollow multi-shelled structure toward high-activity electrochemical water splitting

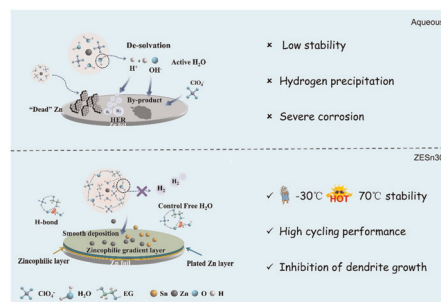
Guangyao Zhou, Mingxin Pang, Jing Li, Bin He, Zhijuan Li\* and Yawen Tang\*



13413

### Interface engineering via *in situ* constructed zincophilic gradient interphases for high-performance zinc-ion batteries in wide temperature ranges

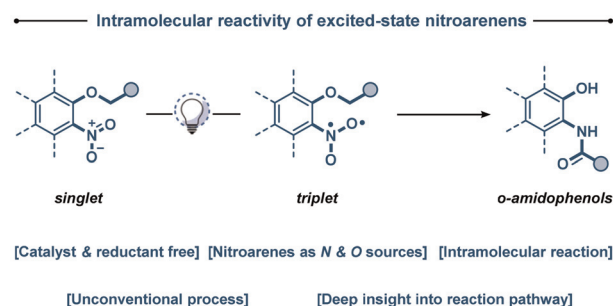
Yi-Yang Bi, Song-Lin Tian, Yang Yu, Yu Zhang, Lian-Shan Sun, Jian Li,\* Wan-Qiang Liu,\* Kai Li\* and Gang Huang\*



13427

### An unconventional photochemical amide synthesis from excited-state nitroarenes

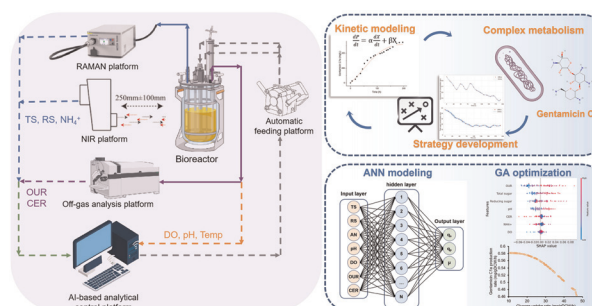
Zengping Wang, Xiaofang Zhai, Pengtao Bai, Li Fang, Shaojun Zheng, Jiajia Zhao, Fu Yang, Chen Xu and Heng Song\*



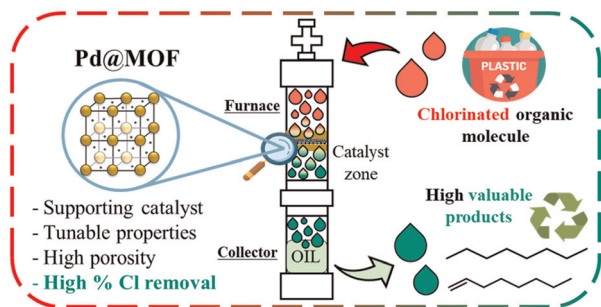
13436

### Artificial intelligence-driven dynamic regulation for high-efficiency gentamicin C1a production

Feng Xu, Yuan Wang, Hao Gao, Kaihao Hu, Rong Ben, Ali Mohsin, Yuanxin Guo, Xu Li, Hui Wu, Haifeng Hang, Ju Chu and Xiwei Tian\*



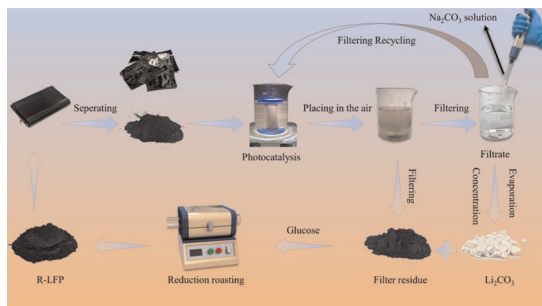
13455



### Catalytic vapour phase hydrodehalogenation of 1,8-dichlorooctane over Pd@MIL-101(Cr)-NH<sub>2</sub>: a step forward in MOF-based technologies

Raúl M. Guerrero, Ignacio D. Lemir, Carlos Fernández-Ruiz, Sergio Carrasco, Patricia Horcajada, David P. Serrano, Yolanda Pérez\* and Patricia Pizarro\*

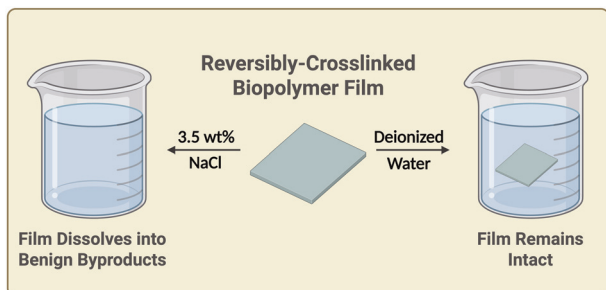
13468



### Sustainable high-efficiency photocatalytic lithium recovery from spent LiFePO<sub>4</sub> batteries: green process design and performance validation

Yin Zhuang Fang, Yurong Han, Menglong Yan, Changwen Li, Xiaolong Yan, Jinwei Li, Haowen Wei, Xianbao Wang and Tao Mei\*

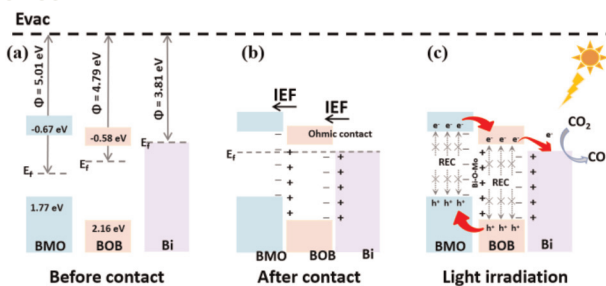
13480



### Uniformly crosslinked algal bioplastic with triggerable decomposition in salt water

Andrew E. Ashmar, Eric J. Beckman and Susan K. Fullerton-Shirey\*

13489



### Constructing a Bi–O–Mo electronic bridge bond and active sites over Bi/Bi<sub>2</sub>MoO<sub>6</sub>/Bi<sub>24</sub>O<sub>31</sub>Br<sub>10</sub> to boost the stepwise transfer of electrons for efficient CO<sub>2</sub> photoreduction

Huihui Ding, Huanhuan Wu, Jun Ma, Xiang Li, Shuangshuang Huai, Shijian Zhang, Wenbin Ruan, Xiuxiu Huang, Xiufang Wang\* and Wenjie Xie\*

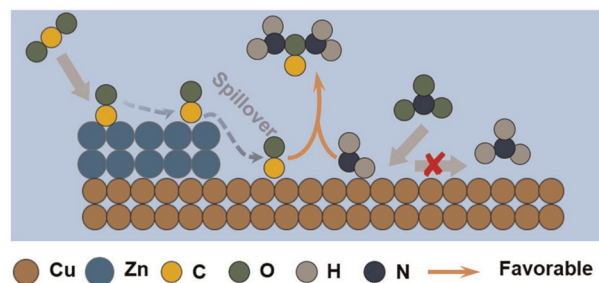


## PAPERS

13502

**Directional CO spillover promotes C–N coupling for highly selective electrocatalytic urea production**

Sheng Chang, Jing Gao, Yimin Xuan\* and Kui Wang



## CORRECTION

13513

**Correction: Evaluating the possibilities and limitations of the pyrometallurgical recycling of waste Li-ion batteries using simulation and life cycle assessment**

Marja Rinne, Heikki Lappalainen and Mari Lundström\*

