

Green Chemistry

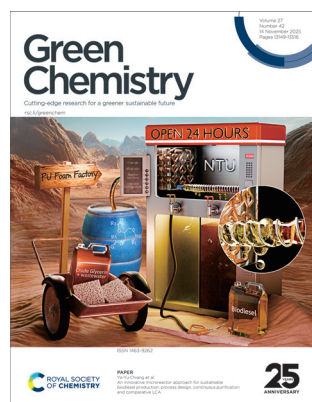
Cutting-edge research for a greener sustainable future

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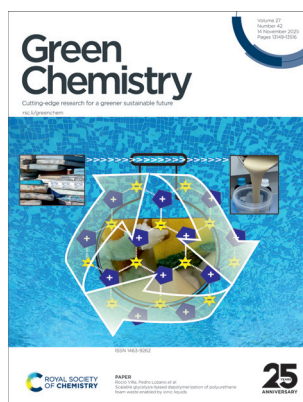
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ISSN 1463-9262 CODEN GRCHFJ 27(42) 13149–13516 (2025)



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

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

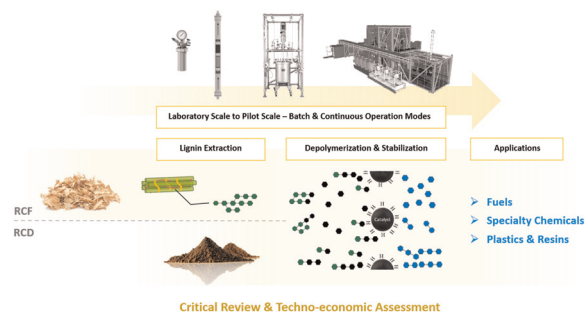
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Green Chem., 2025, **27**,
13235.

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*

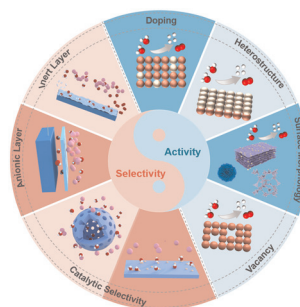


TUTORIAL REVIEW

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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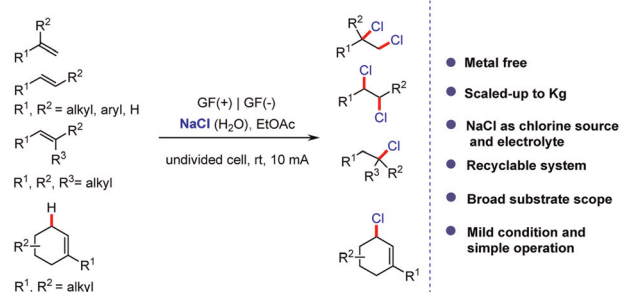
Fundamental questions
Elemental answers

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*

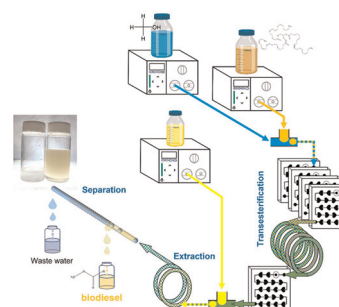


PAPERS

13214

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

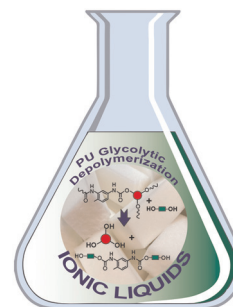
Cheng-You Yang, Cheng-Yu Wang, Ni Ni Myint, Yi-Chun Chen, Penjit Srinophakun* and Ya-Yu Chiang*



13235

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

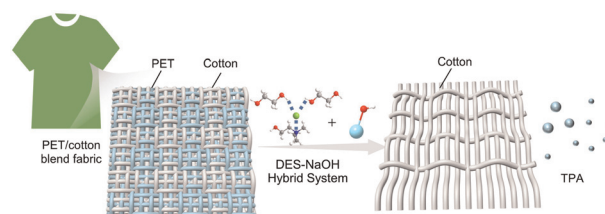
Francisco Velasco, Rocio Villa,* Nicolas Alonso, Rebeca Salas, Jairton Dupont, Eduardo Garcia-Verdugo and Pedro Lozano*



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*

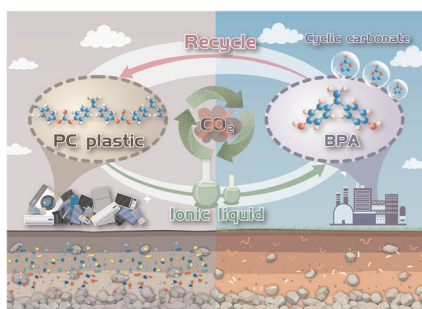


- ✓ 100% degradation of polyester
- ✓ Recovery of high-purity, high-value TPA
- ✓ Highly efficient separation
- ✓ Nondestructive recycling of cotton fibers



PAPERS

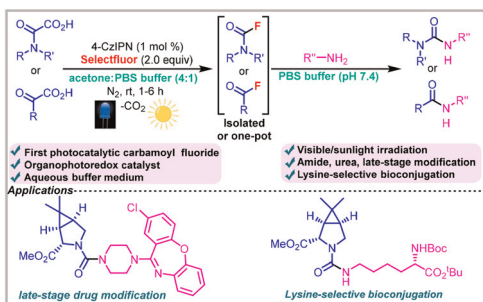
13259



Synergistic recycling of polycarbonate: efficient BPA recovery integrated with CO₂ utilization to produce valuable chemicals

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

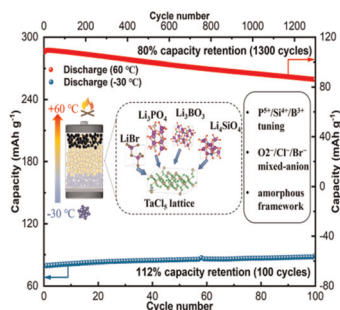
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A visible-light-mediated decarboxylative umpolung strategy to access carbamoyl/acyl fluorides in a buffer medium: expedient access to unsymmetrical ureas/amides and lysine-selective bioconjugation

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

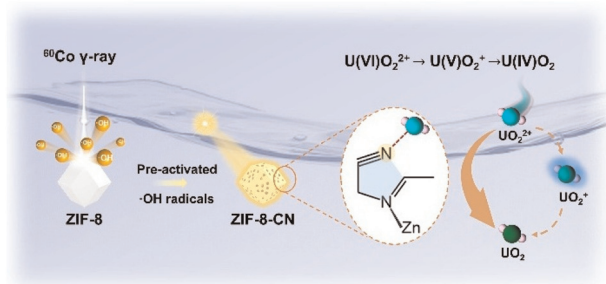
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All-climate all-solid-state batteries enabled by high-entropy amorphous oxyhalide solid electrolytes

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 γ -irradiation for photochemical removal of uranium

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

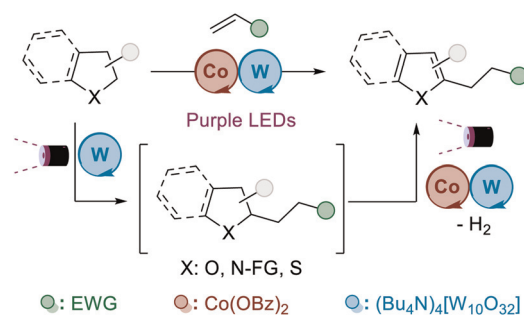


PAPERS

13303

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

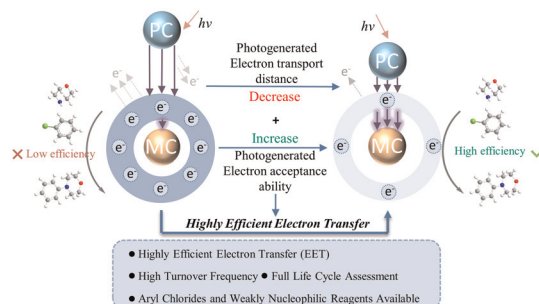
Lorenzo Di Terlizzi,* Davide Ravelli and Burkhard König



13311

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

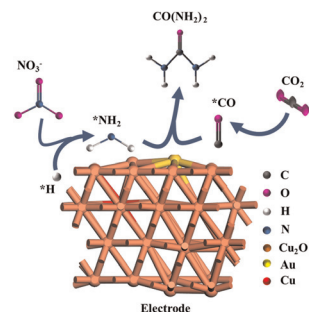
Rui Zhang, Jinyang Hai, Huiying Chen, Mingxiang Zhu* and Fang Zhang*



13323

Porous core–shell CuAu@Cu₂O catalyst for acidic C–N coupling toward urea electrosynthesis from CO₂ and nitrate

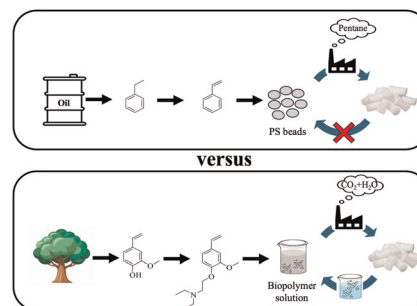
Xiang Ji, Yaodong Yu, Yujia Guan, Jianping Lai* and Lei Wang*



13331

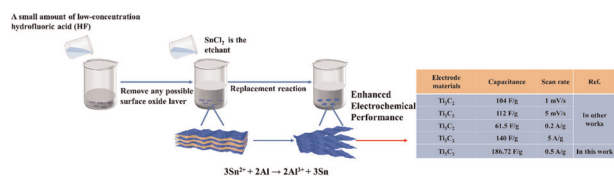
Expanding and recycling a water-resistant bioderived rigid foam using CO₂-responsive amines and carbonated water

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



PAPERS

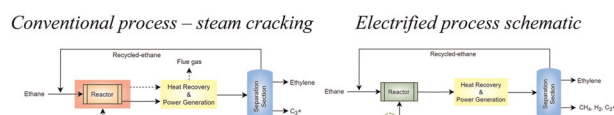
13349



Green synthesis strategy for Ti₃C₂ MXenes based on SnCl₄-assisted etching with a small amount of HF

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

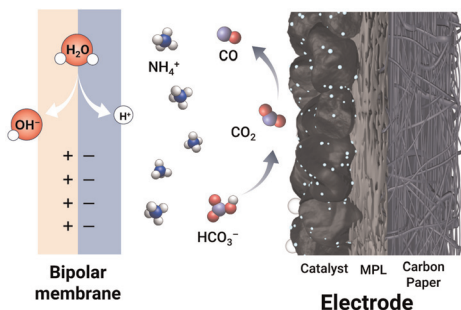
13357



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*

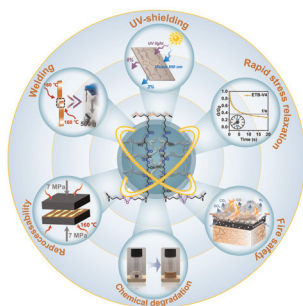
13375



Electrochemical reduction of ammonia-captured CO₂ 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*

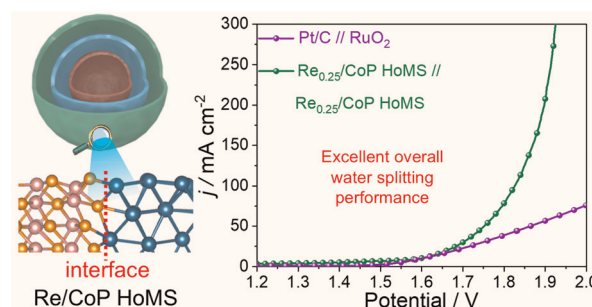


PAPERS

13404

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

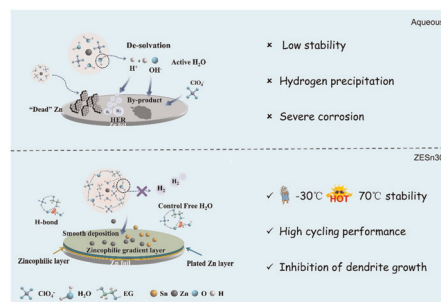
Guangyao Zhou, Mingxin Pang, Jing Li, Bin He, Zhijuan Li* and Yawen Tang*



13413

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

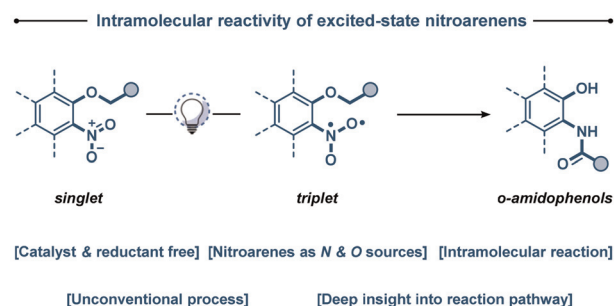
Yi-Yang Bi, Song-Lin Tian, Yang Yu, Yu Zhang, Lian-Shan Sun, Jian Li,* Wan-Qiang Liu,* Kai Li* and Gang Huang*



13427

An unconventional photochemical amide synthesis from excited-state nitroarenes

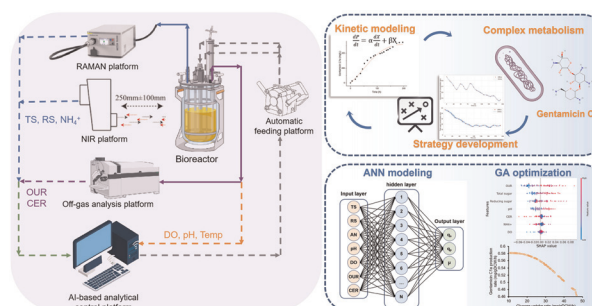
Zengping Wang, Xiaofang Zhai, Pengtao Bai, Li Fang, Shaojun Zheng, Jiajia Zhao, Fu Yang, Chen Xu and Heng Song*



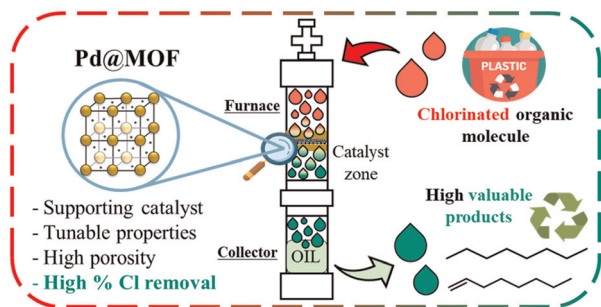
13436

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*



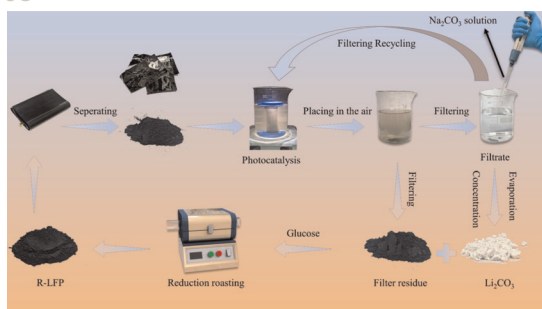
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Catalytic vapour phase hydrodehalogenation of 1,8-dichlorooctane over Pd@MIL-101(Cr)-NH₂: a step forward in MOF-based technologies

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

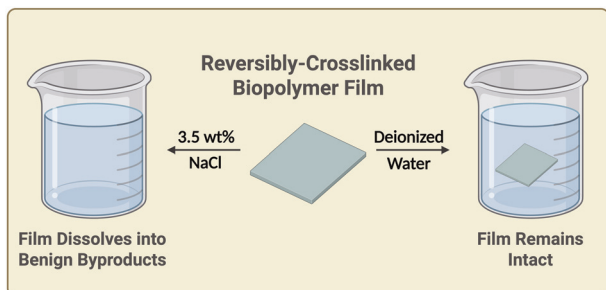
13468



Sustainable high-efficiency photocatalytic lithium recovery from spent LiFePO₄ 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*

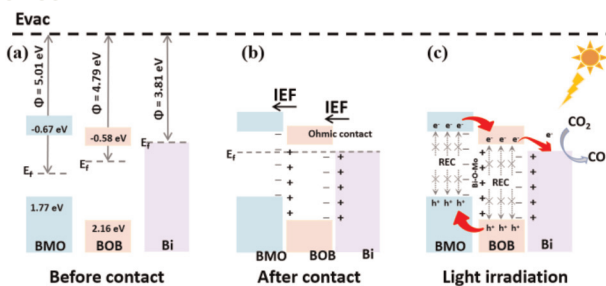
13480



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/Bi₂MoO₆/Bi₂₄O₃₁Br₁₀ to boost the stepwise transfer of electrons for efficient CO₂ photoreduction

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

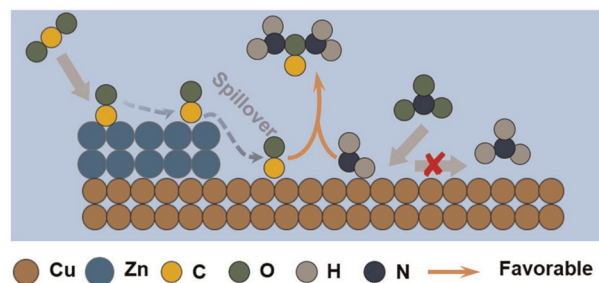


PAPERS

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*

