

Green Chemistry

Cutting-edge research for a greener sustainable future

rsc.li/greenchem

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

IN THIS ISSUE

ISSN 1463-9262 CODEN GRCHFJ 27(8) 2169–2376 (2025)



Cover

See Travis J. Williams, Steven R. Nutt *et al.*, pp. 2184–2188.

Image reproduced by permission of Travis J. Williams from *Green Chem.*, 2025, **27**, 2184.



Inside cover

See Adam Slabon and Bruno V. M. Rodrigues, pp. 2178–2183.

Image reproduced by permission of Bruno V. M. Rodrigues from *Green Chem.*, 2025, **27**, 2178.

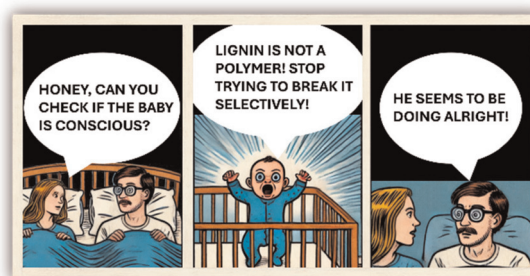
Image partly generated with AI, Google Gemini.

PERSPECTIVE

2178

To break, or not to break: is selective depolymerization of lignin a Riemann hypothesis rather than a solution?

Adam Slabon* and Bruno V. M. Rodrigues*

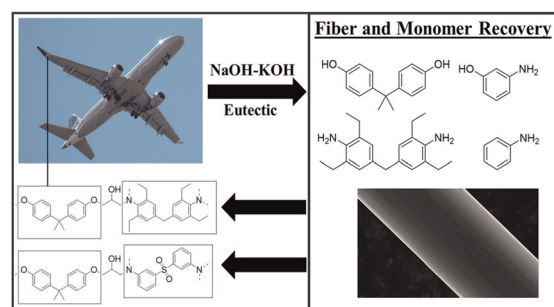


COMMUNICATIONS

2184

Fiber and monomer recovery from an amine-cured epoxy composite using molten NaOH–KOH

Y. Justin Lim, Zehan Yu, Valeriy Cherepakhin, Travis J. Williams* and Steven R. Nutt*



Advance your career in science

with professional recognition that showcases
your **experience, expertise and dedication**

Stand out from the crowd

Prove your commitment
to attaining excellence in
your field

Gain the recognition you deserve

Achieve a professional
qualification that inspires
confidence and trust

Unlock your career potential

Apply for our professional
registers (RSci, RSciTech)
or chartered status
(CChem, CSci, CEnv)

Apply now

rsc.li/professional-development

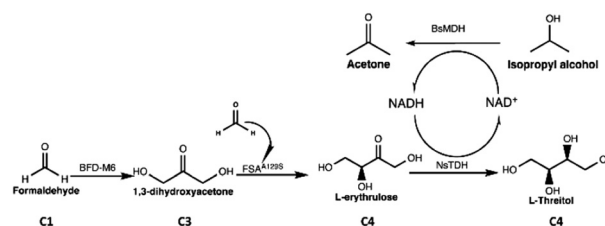


COMMUNICATIONS

2189

One-pot enzymatic synthesis of L-threitol from C1 formaldehyde

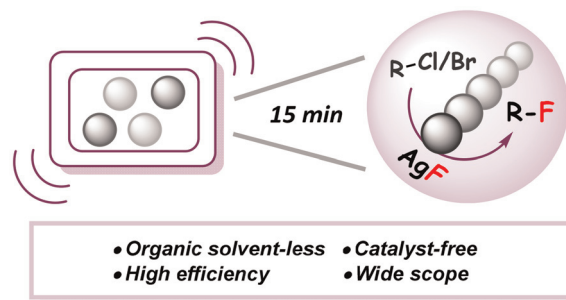
Sanrunyi Gong, Tianzhen Li, Zijing Tang, Zijian Tan, Ruke Zhang, Karsten Olsen, Haifeng Liu* and Leilei Zhu*



2197

Mechanochemical fluorination of unactivated tertiary alkyl chlorides

Jiemin Wang, Xueyan Yang,* Cheng Peng, Mengyao Pei and Xiaofeng Wei*

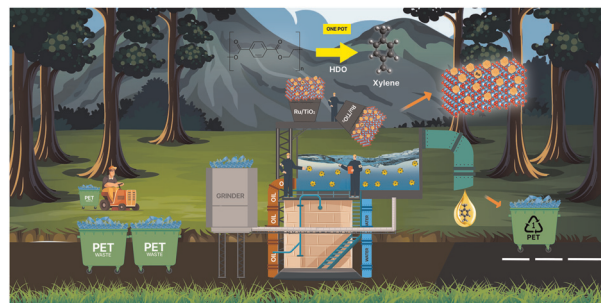


PAPERS

2203

Selective one-pot chemical recycling of PET waste to xylene monomers: insights into a Ru/TiO₂ catalyst design and interfacial dynamics in a biphasic system

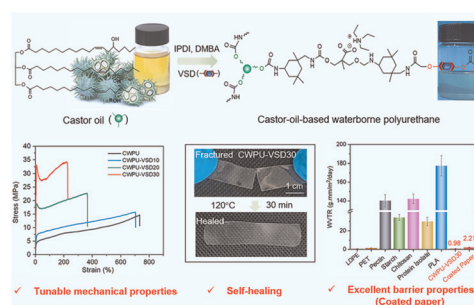
Vishnu Murali, Hanbyeol Kim, Han Ung Kim, Jung Rae Kim, Sang Hwan Son, Young-Kwon Park, Jeong-Myeong Ha and Jungho Jae*



2220

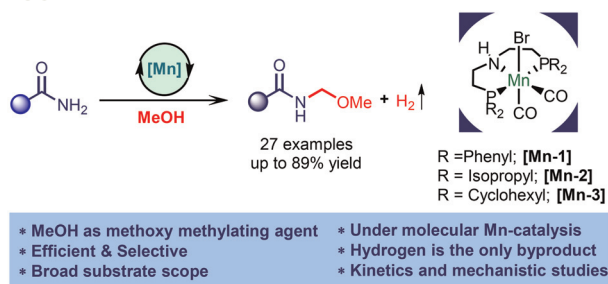
High-strength, self-healable, transparent castor-oil-based waterborne polyurethane barrier coatings enabled by a dynamic acylhydrazone co-monomer

Guowen Zhou, Yunfeng Zhou, Xiaoqian Zhang, Zepeng Lei* and Xiaohui Wang*



PAPERS

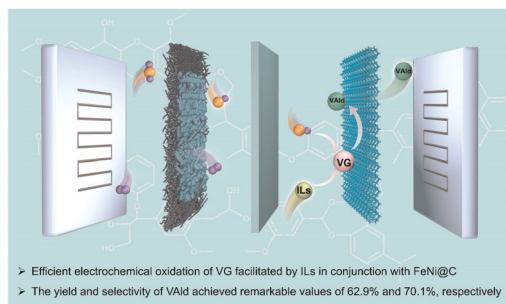
2230



A green and sustainable catalytic protocol for methoxymethylation of primary amides using methanol with dihydrogen release

Reshma Babu, Ganesan Sivakumar, Smruti Rekha Padhy and Ekambaram Balaraman*

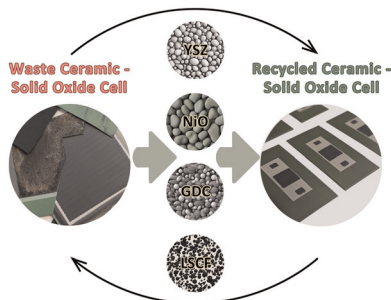
2238



Anodic electrochemical C–C bond cleavage co-catalyzed by ionic liquids and FeNi@C for lignin upgrading

Weiwei Wang, Yuqing Zhai, Xiaoyan Ji, Hao Wang* and Yanrong Liu*

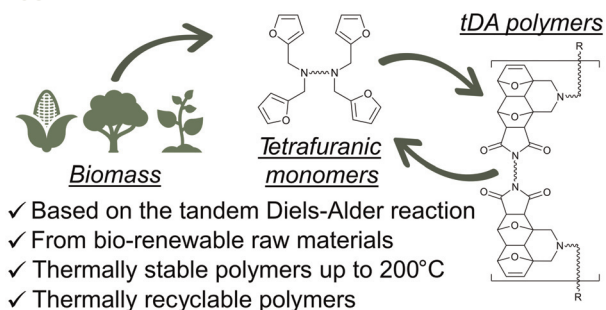
2252



Towards a scalable recycling process for ceramics in fuel-electrode-supported solid oxide cells

Stephan Sarnier, Norbert H. Menzler,*
Jürgen Malzbender, Martin Hilger, Doris Sebold,
André Weber and Olivier Guillon

2263



Tandem Diels–Alder reaction overrules entropy: the gate to thermally stable, yet thermally recyclable furan-based polymers

Daria V. Zakharova, Rinat R. Aysin, Alexander A. Pavlov,
Dmirty A. Khanin, Elena O. Platonova, Yulia V. Nelyubina
and Alexander V. Polezhaev*

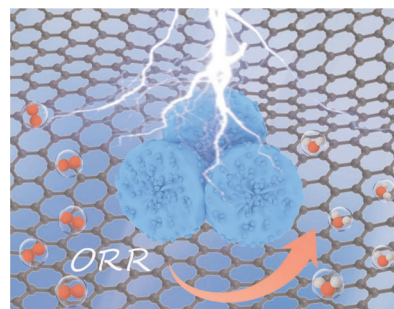


PAPERS

2276

Promoting oxygen reduction reaction kinetics through manipulating electron redistribution in CoP/Cu₃P@NC for aqueous/flexible Zn–air batteries

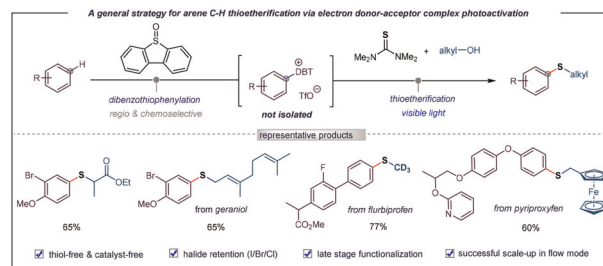
Lixia Wang, Jiasui Huang, Jia Huang, Bowen Yao, Aling Zhou, Zhiyang Huang, Tayirjan Taylor Isimjan,* Bao Wang* and Xiulin Yang*



2286

A catalyst- and thiol-free protocol for arene C–H thioetherification via photoactive electron donor–acceptor complexes

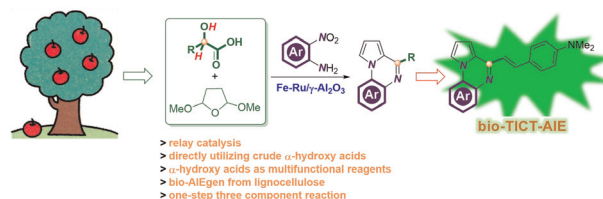
Ang Gao, He-Xiang Liu, Ya-Nan Zhou* and Ming-Chen Fu*



2293

A supported Fe/Ru catalyzed three-component relay reaction through a hydrogen borrowing strategy: conversion of crude α -hydroxy acids into valuable N-heterocycles

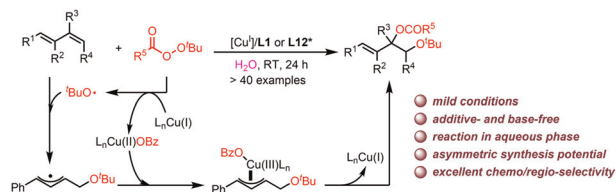
Shanshan Liu,* Jia Wan, Yaoyao Zhang, Wen-Yu Luo, Weiwei Dong, Chao Wang and Lin-Yu Jiao*



2302

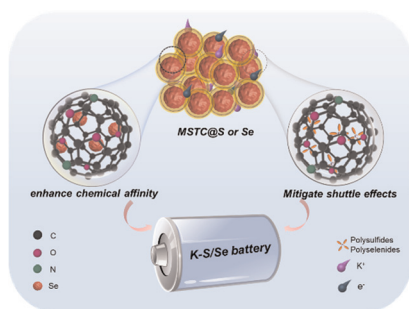
Copper-catalyzed 1,2-dioxygenation of 1,3-dienes with *tert*-butyl benzperoxyoate at room temperature

Pu Chen, Lin Tian, Lindong Xiao, Xiaochen Ji,* Guo-Jun Deng and Huawen Huang*



PAPERS

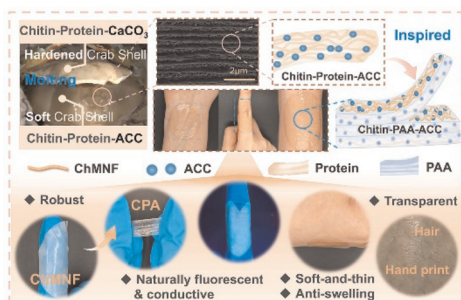
2309



Anchoring active sulfur/selenium into enhanced carbon hosts with multiple chemical affinities for efficient K–S/Se batteries

Yongxu Du,* Hongguang Fan, Yujing Zhu, Xianghua Zhang, Denghu Wei, Chuanyu Jin, Yongpeng Cui and Meijing Lv*

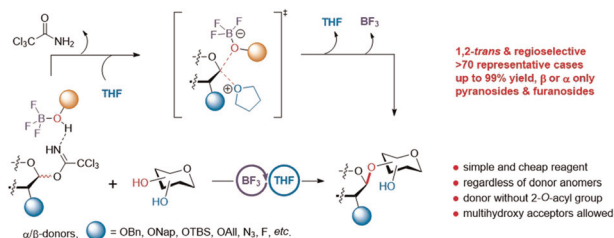
2319



Synthesis of robust yet flexible and transparent CPA hydrogels inspired by molting crab shells

Yamei Zao, Muqiu You, Jieru Ma, Xiaoyu Du, Yongcan Jin, Dagang Li, Zhaoyang Xu and Chuchu Chen*

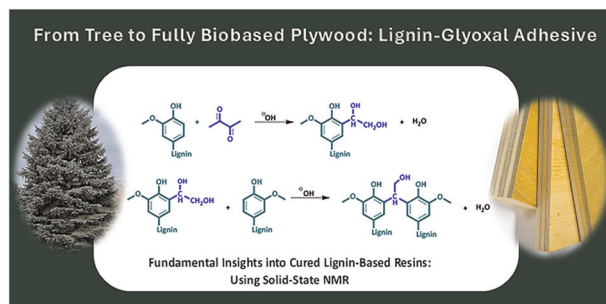
2331



1,2-*trans* and regioselective glycosylation of multihydroxy sugars via a simple yet synergistic combination of BF₃·Et₂O in THF

Zhimei Wang, Longwei Gao, Yingjie Wang, Fuzhu Yang, Jinpeng Sang, Shuheng Pan, Xin Huang, Pan Zhang, Weijia Xie, Xiaoxing Wu, Biao Yu, Peng Xu, Xiaheng Zhang, Zhaolun Zhang* and Wei Li*

2342



A fundamental study of lignin reactions with formaldehyde and glyoxal

Mohsen Siahkamari,* Debkumar Debnath, Tuo Wang* and Mojgan Nejad*



2359

Tandem chemical hydrolysis and bioelectrochemical upcycling of waste polyethylene terephthalate (PET) for sustainable biobutanol and ethanol production ensuring plastics circularity

Harishankar Kopperi, Vishnuvardhan Mamidi, G. Suresh and S. Venkata Mohan*

