Open Access Article. Published on 02 June 2025. Downloaded on 1/19/2026 11:35:33 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

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(22) 6309–6678 (2025)

Cover
See Baojun Yi, Yong Sik Ok *et al.*, pp. 6320–6341.

Image reproduced by permission of Baojun Yi & Yong Sik Ok from *Green Chem.*, 2025, **27**, 6320.

Inside cover
See Klaus Müller-Buschbaum *et al.*, pp. 6405–6419.

Image reproduced by permission of Klaus Müller-Buschbaum from *Green Chem.*, 2025, **27**, 6405.

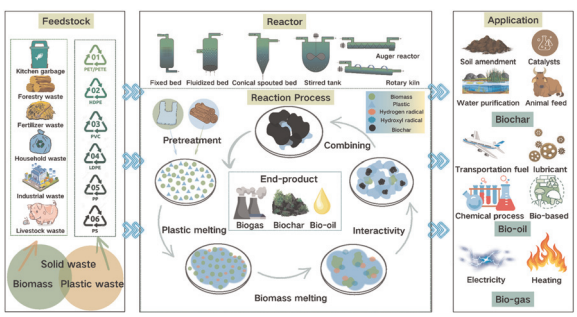
Cover partially generated using the Google Gemini AI tool.

CRITICAL REVIEWS

6320

Co-pyrolysis of biomass and plastic waste into carbon materials with environmental applications: a critical review

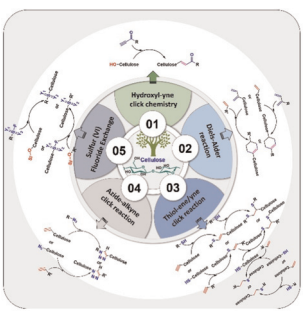
Jiaqi Deng, Baojun Yi,* Ondřej Mašek, Xiangzhou Yuan, Sung Yeon Hwang, Hwai Chyuan Ong, Zewen Hua and Yong Sik Ok*



6342

Green chemistry perspectives on click chemistry approaches for cellulose functionalization: a critical review

Bowen Li, Chaoqun Xu, Xinyi Zhu, Juan Yu,* Xiaofang Zhang* and Yimin Fan*



View Article Online

ROYAL SOCIETY OF CHEMISTRY

NEW JOURNAL

RSC Applied Interfaces

GOLD OPEN ACCESS

Interfacial and surface research with an applied focus

Interdisciplinary and open access

rsc.li/RSCApplInter

Fundamental questions
Elemental answers

Registered charity number: 207890

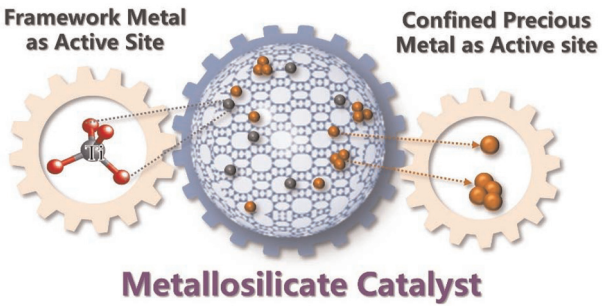
Open Access Article. Published on 02 June 2025. Downloaded on 1/19/2026 11:35:33 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

TUTORIAL REVIEW

6362

Green reactions by metallosilicate catalysts

Hao Xu,* Jie Tuo, Longkang Zhang, Yue Ma, Yejun Guan and Peng Wu*

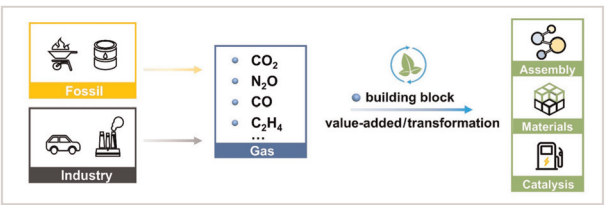


PERSPECTIVE

6378

Gas-constructed assembled materials: a sustainable way for transforming gas into value-added products

Yulian Zhang and Qiang Yan*

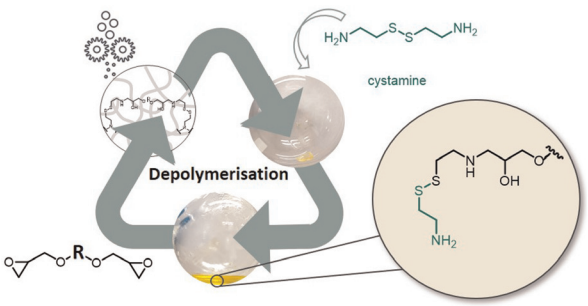


COMMUNICATIONS

6392

Closed-loop recycling of bio-based disulfide vitrimer *via* a solvent-and waste-free strategy

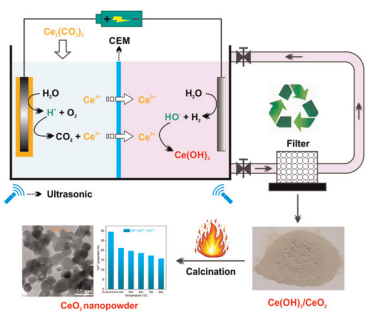
Solène Guggari, Fiona Magliozzi, Samuel Malburet, Alain Graillot, Mathias Destarac and Marc Guerre*



6399

Green electrochemical synthesis of CeO_2 nanopowders *via* an electrolysis–calcination process

Xiaohui Zhang, Xiaodong Liu, Xuan Xu,* Kunyuan Zhao, Haifeng Sun, Peng Jing,* Peng Xu, Baocang Liu and Jun Zhang*



Open Access Article. Published on 02 June 2025. Downloaded on 1/19/2026 11:35:33 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

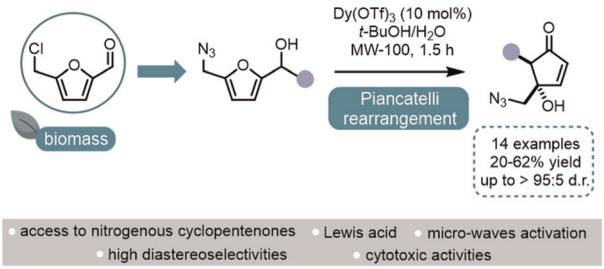
PAPERS

6405

Tellurium recovery from the thermoelectric materials bismuth telluride and antimony telluride by chemical vapour transport

Julian Burkhart, Lucas H. Bemfert, Eliane L. Mitura, Moritz Maxeiner, Ruben Maile, Alexander E. Sedykh and Klaus Müller-Buschbaum*

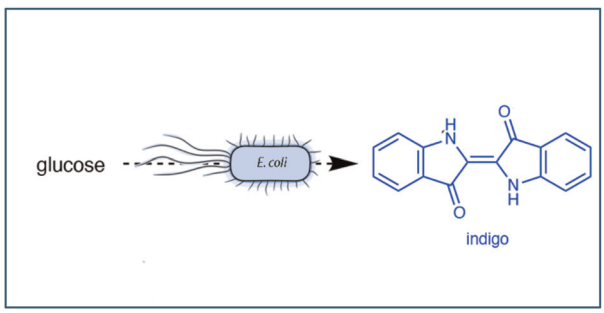
6420



The Piancatelli rearrangement of AMF (5-azidomethylfurfural) derivatives: a biobased opportunity for the synthesis of nitrogenous cyclopentenones

Clémentine Mayet, Jérôme Bignon and Jean-François Betzer*

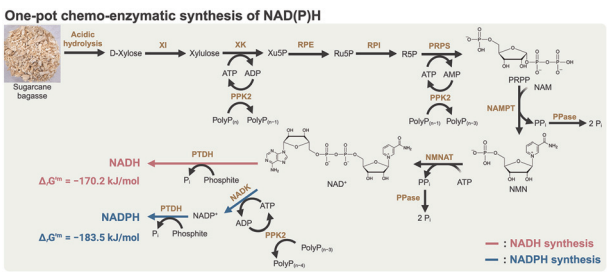
6430



A microbial factory for bio-indigo synthesis: demonstration of sustainable denim dying

Matteo Planchestainer,* Lin Chen, Tsvetan Kardashliev, Sven Panke and Martin Held*

6437



Sustainable chemo-enzymatic NADP(H) synthesis from biomass-derived xylose, polyphosphate, and nicotinamide

Kai-Cheng Wang, Shota Nishikawa, Wan-Wen Ting, Xue-Hong Luo, Takumi Takahashi, Tony Z. Jia, Min-Hsuan Huang, Kosuke Fujishima, I-Son Ng* and Po-Hsiang Wang*

This journal is © The Royal Society of Chemistry 2025

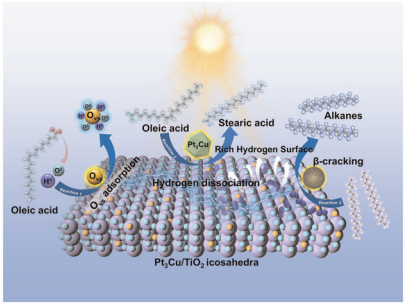
Open Access Article. Published on 02 June 2025. Downloaded on 1/19/2026 11:35:33 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

6449

Rational design of an efficient Pt_3Cu/TiO_2 icosahedral catalyst for bio-aviation fuel production under mild conditions

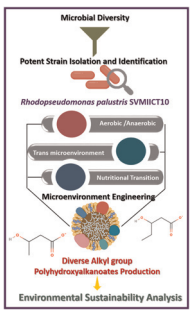
Yichen Nie, Xingyong Li,* Misbah Uddin, Na Liu, Senshen Yu, Phidsavard Keomeesay, Olajide-rasheed Olalekan, Shuaizhe Li, Yubao Chen,* Xuebing Zhao,* Longlong Ma, Zhifeng Zheng and Shijie Liu



6464

Metabolic channelling in *Rhodopseudomonas palustris* for diversification and sustainability assessment of polyhydroxyalkanoates

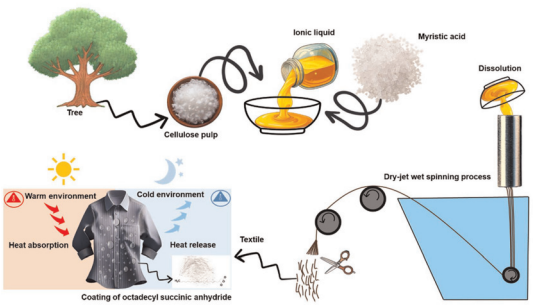
Poonam Kumari and S. Venkata Mohan*



6482

Multifunctional thermoregulating and water repellent cellulosic textile

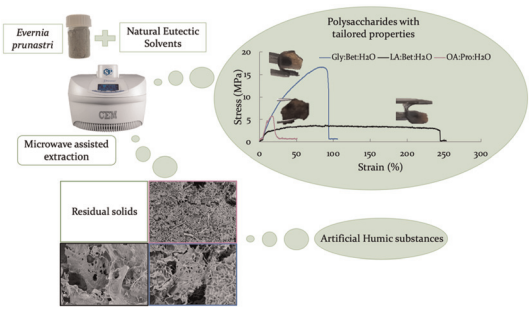
Zahra Madani, Hossein Baniasadi, Pedro E. S. Silva, Maija Vaara, Marike Langhans, Inge Schlapp-Hackl, Lars Evenäs, Michael Hummel and Jaana Vapaavuori*



6493

Tailoring the extraction process and properties of polysaccharides from the lichen *Evernia prunastri* using natural eutectic solvents following a biorefinery approach

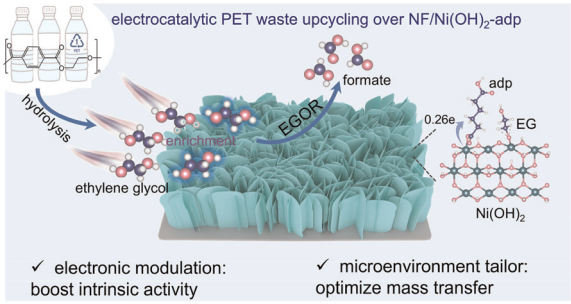
Julie Queffelec,* Maria Dolores Torres Pérez,* Herminia Domínguez, Giulia Ischia and Svitlana Filonenko



Open Access Article. Published on 02 June 2025. Downloaded on 1/19/2026 11:35:33 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

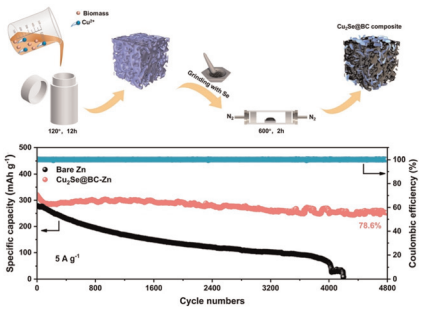
6512



Electronic structure and interfacial microenvironment engineering over the $Ni(OH)_2$ nanoarray for boosted electrocatalytic upcycling of polyethylene terephthalate

Xinci Hu, Wei Qiao, Yuxin Hu, Fengli Li, Yuting Yang, Zhihong Jiang, Yu Yu, Jingyun Fang and Ping Li*

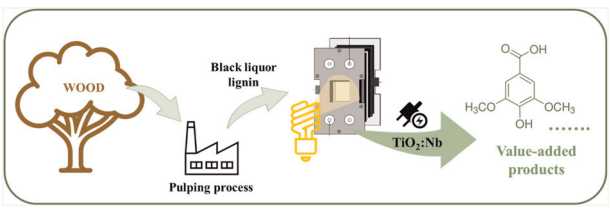
6525



Building a multifunctional Cu_2Se@biomass carbon composite interfacial layer on a zinc anode for stable aqueous zinc-ion batteries

Wenjing Zheng, Tieran Zhou, Hao Zhou, Jie Guan, Fei Wang, Lin Zhu,* Zhongti Sun* and Kan Zhang*

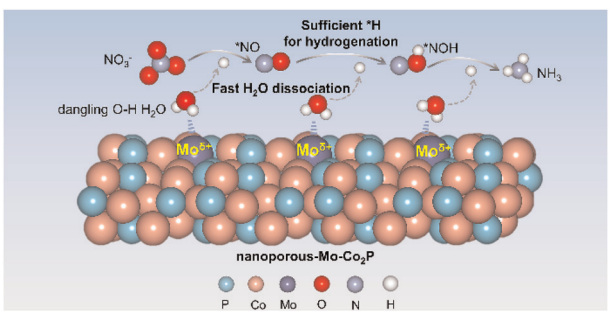
6537



Insights into photoelectrocatalytic lignin oxidation to value-added products using a niobium-doped titanium dioxide photoanode

Daniela F. S. Morais, Luiza M. G. Sena, Joana M. Ribeiro, Telmo da Silva Lopes, Paula Dias, Adélio Mendes, Carina A. E. Costa, Alírio E. Rodrigues, Susana R. S. Pereira, Paula C. Pinto, Rui A. R. Boaventura, Carlos J. Tavares, Vítor J. P. Vilar* and Francisca C. Moreira*

6556



Electron-deficient Mo sites enhance electrochemical nitrate reduction to ammonia by promoting water dissociation

Xue Zhou, Wence Xu,* Yunduo Huang, Zhonghui Gao, Yanqin Liang, Hui Jiang, Zhaoyang Li, Fang Wang,* Shengli Zhu* and Zhenduo Cui

This journal is © The Royal Society of Chemistry 2025

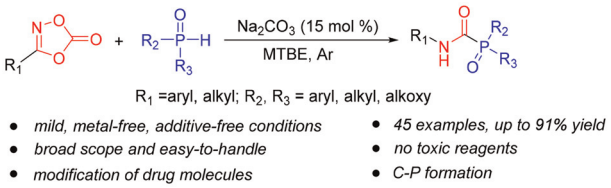
Open Access Article. Published on 02 June 2025. Downloaded on 1/19/2026 11:35:33 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

6567

Metal-free carboxamidation of P(O)H compounds with *in situ* formed isocyanates from dioxazolones: a convenient access to carbamoylphosphine oxides

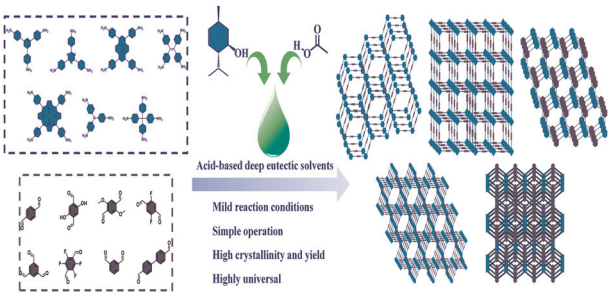
Yong Zhao, Longyang Chen, Guohao Xu, Shanshan Meng, Chuan Fu, Pengxiang Xu,* Yuxing Gao* and Yufen Zhao



6573

Gentle and rapid synthesis of imine-linked covalent organic frameworks in acetic acid-based deep eutectic solvents

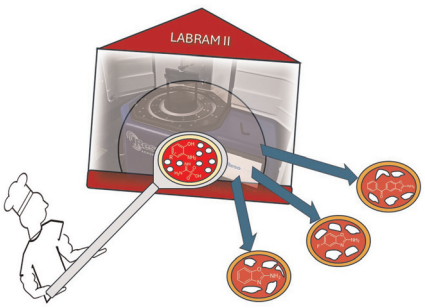
Quanyuan Qiu, Guanwei Li, Chenxi Shi, Yueren Zeng, Kunchi Xie, Ke Wang, Zhen Song, Zhenjie Zhang and Xiaoqing Lin*



6586

Oxidized thiourea derivatives: uncovering new frontiers with resonant acoustic mixing (RAM)

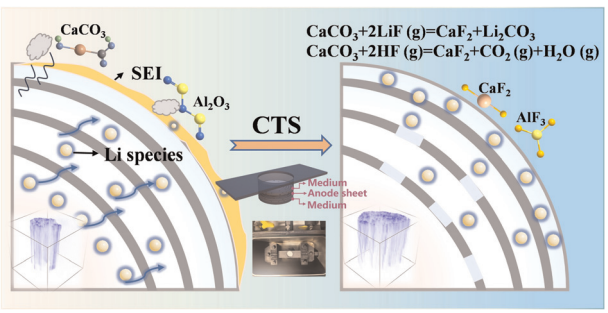
Pietro Caboni, Francesco Basoccu, Shyamal Kanti Bera and Andrea Porcheddu*



6595

Flash recovery of lithium from spent anode graphite by carbothermal shock and water leaching

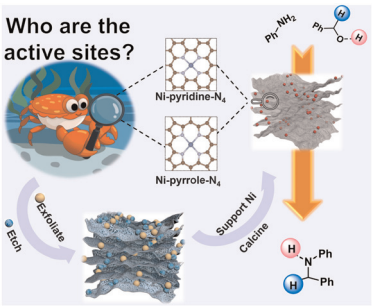
Duanmei Song, Beikai Zhang, Hongbiao Du, Jing Wu, Jiadong Yu* and Jinhui Li



Open Access Article. Published on 02 June 2025. Downloaded on 1/19/2026 11:35:33 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

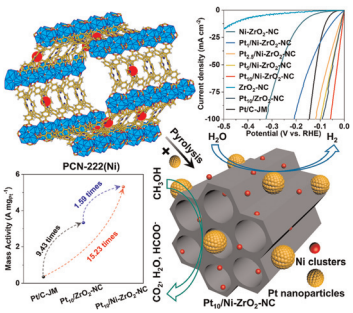
6607



Bio-waste derived Ni single-atom catalysts with Ni-pyridine-N_4 active sites for efficient *N*-alkylation of alcohols and amines

Yuxin Zhu, Qiudi Zhu, Youjuan Tan, Hongqin Wang, Xuefei Liu, Wei Gong,* Dongdong Ye* and Xianglin Pei*

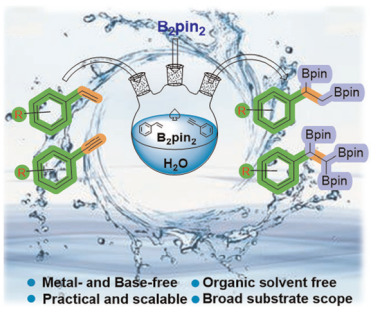
6619



Synergism of tiny Ni clusters and Pt nanoparticles promoting efficient and stable electrocatalytic methanol oxidation and hydrogen evolution by water electrolysis

Jie Huang, Min Tian, Liang Tong, Lihua Zhu,* Lingling Li, Xianping Liao, Qingsheng Gao, Weizhen Wang, Zhiqing Yang, Tongxiang Liang and Hengqiang Ye

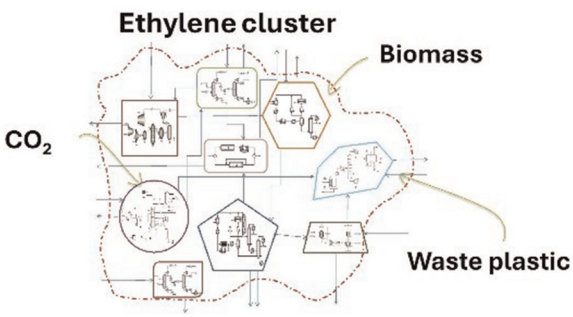
6630



Water-assisted diboron activation: efficient synthesis of alkyl 1,2-bis(boronates) and 1,1,2-tris(boronates)

Kiran S. Patil, Shivakumar Reddappa, Maruti Suryavansi, Srinivasa Budagumpi, D. H. Nagaraju, Manoj V. Mane* and Shubhankar Kumar Bose*

6641



Re-wiring petrochemical clusters: impact of using alternative carbon sources for ethylene production

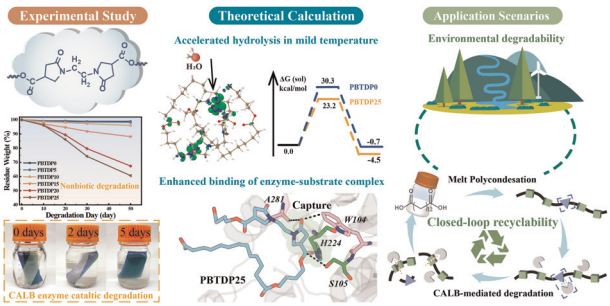
James Tonny Manalal,* Mar Pérez-Fortes and Andrea Ramírez

This journal is © The Royal Society of Chemistry 2025

6660

Design of environmentally degradable polyethylene-like polyesters and eco-friendly recycling *via* commercial enzymes

Hanxu Zhu, Han Hu,* Xingyu Ouyang, Xiaokun Hong, Qingyang Luan, Jiayi Li,* Jinggang Wang,* Dong-Qing Wei and Jin Zhu



Open Access Article. Published on 02 June 2025. Downloaded on 1/19/2026 11:35:33 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.