

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 26(16) 8883-9272 (2024)



Cover

See Sara Iborra, Avelino Corma *et al.*, pp. 9118–9131.

Image reproduced by permission of Avelino Corma, Sara Iborra and Maria Jose Climent from *Green Chem.*, 2024, **26**, 9118.

Artwork created by Katya Cuevas Bercovich



Inside cover

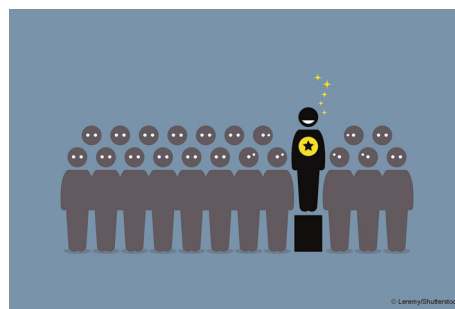
See Xiujuan Li *et al.*, pp. 9132–9141.

Image reproduced by permission of Xiujuan Li from *Green Chem.*, 2024, **26**, 9132.

EDITORIAL

8893

Outstanding Reviewers for *Green Chemistry* in 2023

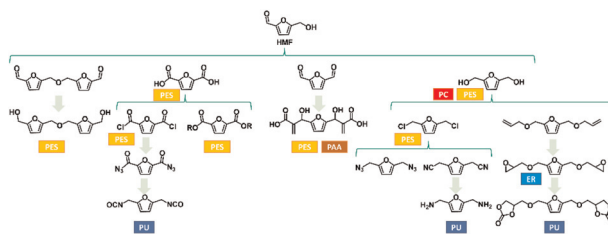


CRITICAL REVIEWS

8894

Beyond 2,5-furandicarboxylic acid: *status quo*, environmental assessment, and blind spots of furanic monomers for bio-based polymers

Mattia Annatelli, Julián E. Sánchez-Velandia, Giovanna Mazzi, Simão V. Pandeirada, Dimitrios Giannakoudakis, Sari Rautiainen, Antonella Esposito, Shanmugam Thiyagarajan, Aurore Richel, Konstantinos S. Triantafyllidis, Tobias Robert, Nathanael Guigo, Andreia F. Sousa, Eduardo García-Verdugo* and Fabio Aricò*



RSC Applied Interfaces

GOLD
OPEN
ACCESS

Interfacial and surface research
with an applied focus

Interdisciplinary and open access

rsc.li/RSCApplInter

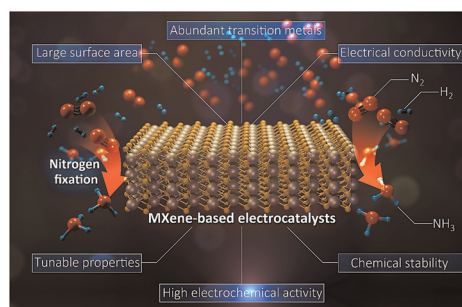
Fundamental questions
Elemental answers

CRITICAL REVIEWS

8942

Next-generation nitrogen fixation strategy: empowering electrocatalysis with MXenes

Siavash Iravani,* Atefeh Zarepour, Arezoo Khosravi, Rajender S. Varma* and Ali Zarrabi*



8969

Progress in the synthesis of carbon aerogels for advanced energy storage applications

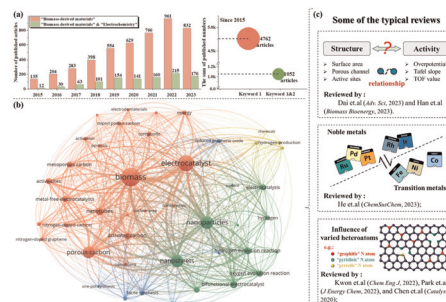
Yafei Shen* and Jinbei Yang



9005

Rational design of biomass-derived electrocatalysts for hydrogen/oxygen evolution reactions: a synthetic strategy for multiple components and their corresponding properties

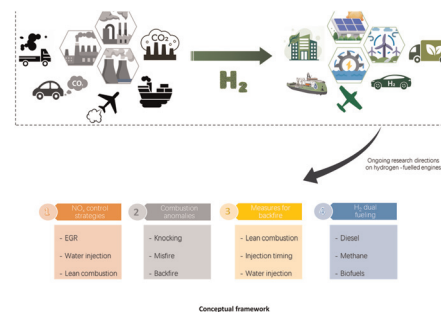
Xiuzheng Zhuang, Huiyi Liang, Xiaohong Hu, Song Li, Xinghua Zhang, Qi Zhang and Longlong Ma*



9025

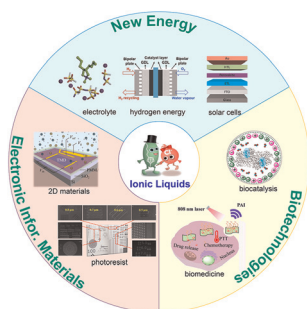
Race towards net zero emissions (NZE) by 2050: reviewing a decade of research on hydrogen-fuelled internal combustion engines (ICE)

Jeffrey Dankwa Ampah, Chao Jin,* Sandylove Afrane, Abdulfatah Abdu Yusuf, Haifeng Liu* and Mingfa Yao



TUTORIAL REVIEWS

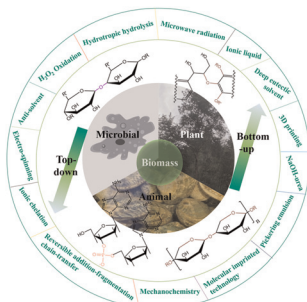
9048



The advanced applications of ionic liquids in new energy, electronic information materials, and biotechnologies

Suojiang Zhang,* Yuhong Huang, Lan Zhang, Yanrong Liu, Qingqing Miao, Ruixia Liu, Weizhen Zhao, Yanyan Diao and Kun Dong

9075

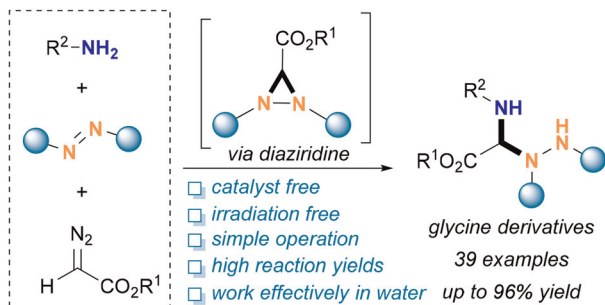


Towards the sustainable production of biomass-derived materials with smart functionality: a tutorial review

Ruibin Wang, Youguang Feng, Dongqi Li, Kaixin Li* and Yong Yan*

COMMUNICATIONS

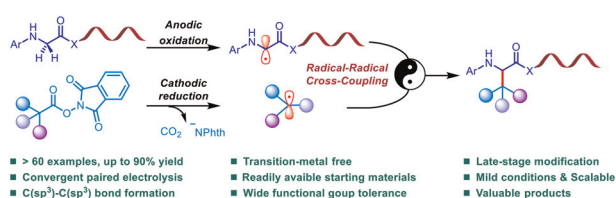
9104



Catalyst-free synthesis of hydrazino-containing glycine derivatives *via* a diaziridine *in situ* formation/ring-opening cascade

Chang-Long Rong, Qiang-Qiang Li* and Jun Xuan*

9110



Metal-free decarboxylative C(sp³)-C(sp³) bond formation for the synthesis of unnatural amino acids and peptides *via* convergent paired electrolysis enabled radical-radical cross-coupling

Zenghui Ye, Na Chen, Hong Zhang, Yanqi Wu and Fengzhi Zhang*

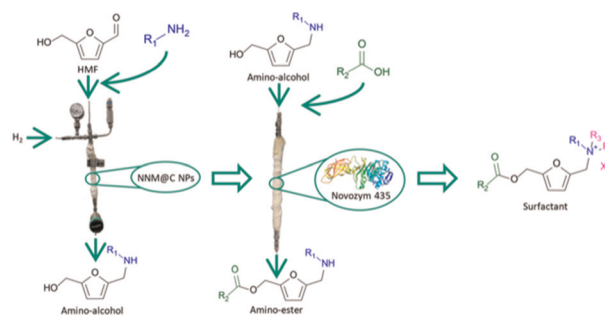


PAPERS

9118

Chemoenzymatic synthesis of amino-esters as precursors of ammonium salt-based surfactants from 5-hydroxymethylfurfural (HMF)

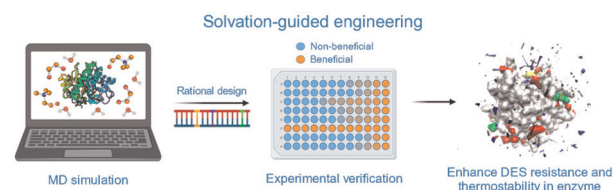
Carlos Moriana Herraiz, Karen S. Arias, Maria J. Climent, Sara Iborra* and Avelino Corma*



9132

Harnessing solvation-guided engineering to enhance deep eutectic solvent resistance and thermostability in enzymes

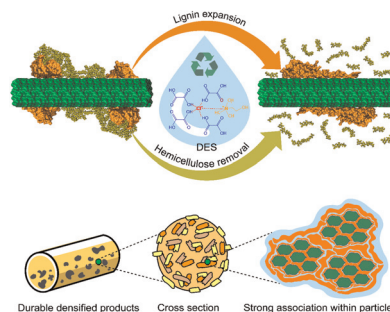
Yijie Sheng, Haiyang Cui, Xinyue Wang, Minghui Wang, Ping Song, He Huang and Xiujuan Li*



9142

Molecular origins of enhanced bioproduct properties by pretreatment of agricultural residues with deep eutectic solvents

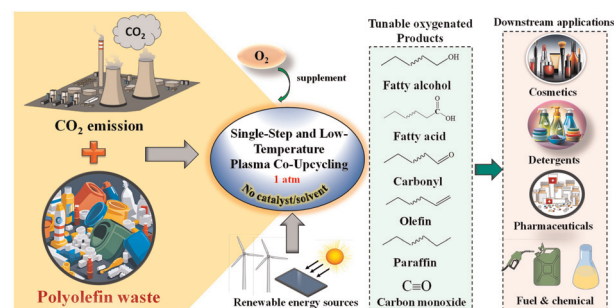
Yan Yu, Zhangmin Wan, Jerry M. Parks, Shahabaddine Sokhansanj, Orlando J. Rojas* and Jeremy C. Smith*



9156

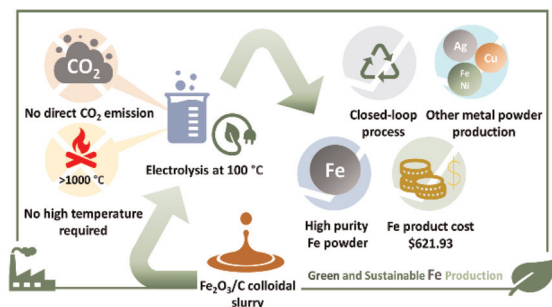
Non-equilibrium plasma co-upcycling of waste plastics and CO₂ for carbon-negative oleochemicals

Harish Radhakrishnan, Samirah Gngangbe, Alif Duereh, Sultan Ul Iffat Uday, Lusi A, Haiyang Hu, Hui Hu, Mark Mba Wright* and Xianglan Bai*



PAPERS

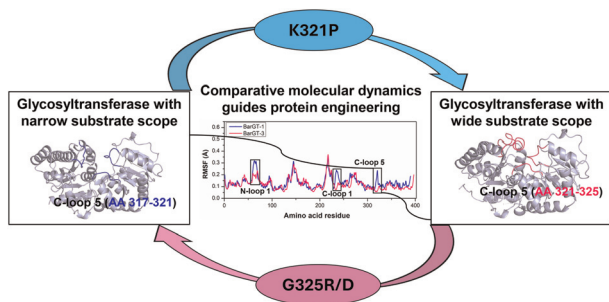
9176



Sustainable iron production via highly efficient low-temperature electrolysis of 3D conductive colloidal electrodes

Panya Thanwisai, Zeyi Yao, Muntasir Shahabuddin, Jiahui Hou, Jinzhao Fu, Adam C. Powell IV and Yan Wang*

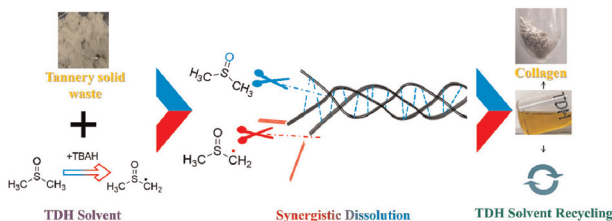
9186



A comparative molecular dynamics approach guides the tailoring of glycosyltransferases to meet synthetic applications

Peng Zhang, Shuaiqi Meng, Zhongyu Li, Dennis Hirtz, Lothar Elling, Leilei Zhu, Yu Ji* and Ulrich Schwaneberg*

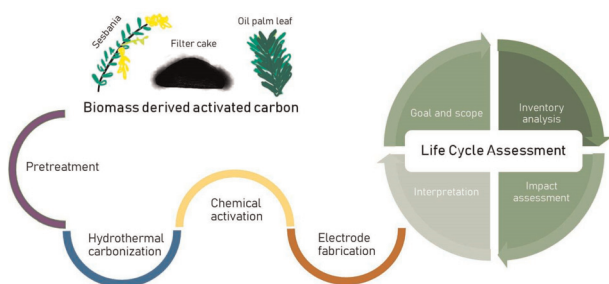
9195



Extraction of collagen from bovine tannery solid waste preserving original conformation via radical initiation and hydrogen bond reformation

Fang Luo, Zhuo Liu, Peng Zhou, Siqi Wang, Lingzhi He, Yi Wu, Lidan Du, Mengjie Jiao, Zhuwei Liao and Zhuqi Chen*

9209



Comparative environmental impact assessment of activated carbon electrodes for supercapacitors

Santamon Luanwuthi, Thanyapak Akkharaamnuay, Arisa Phukhrongthung and Channarong Puchongkawarin*

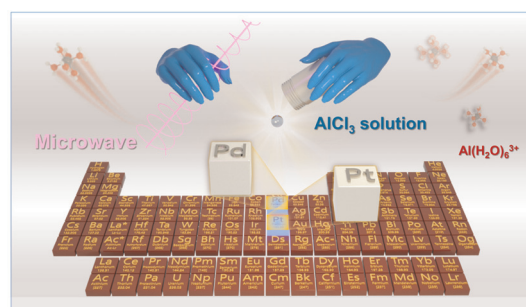


PAPERS

9220

Green palladium and platinum recovery by microwave-assisted aluminum chloride solution

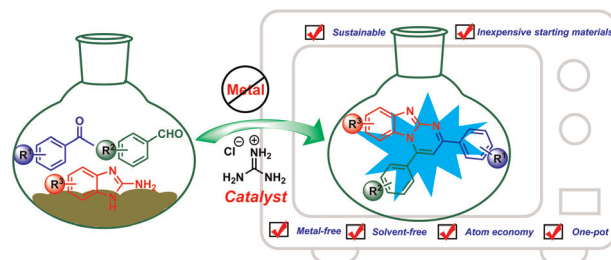
Anting Ding, Chuanying Liu and Chengliang Xiao*



9230

Guanidine hydrochloride (GuHCl)-catalysed microwave-mediated solvent- and metal-free synthesis of pyrimido[1,2-a]benzimidazole from aryl aldehyde and aryl methyl ketone

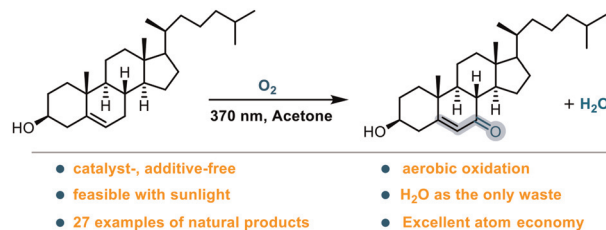
Rushikant Jagdale, Mohammad Zahid Hussain, Koushik Goswami, Ramalingam Peraman and Anupam Jana*



9241

Selective C(sp³)-H bond aerobic oxidation enabled by a π -conjugated small molecule-oxygen charge transfer state

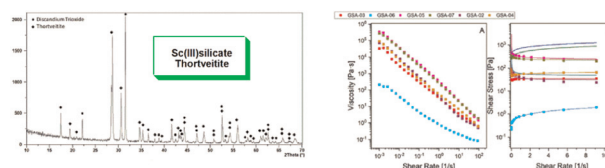
Panyi Huang, Yan Xu, Haijing Song, Jiayin Wang, Jiayang Wang, Jianjun Li, Bin Sun* and Can Jin*



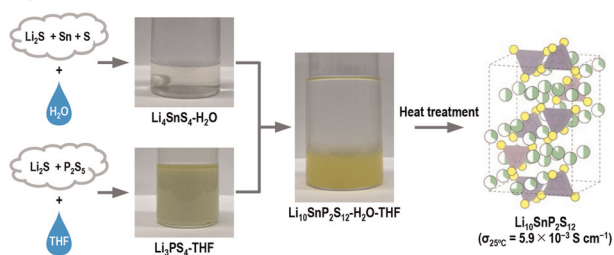
9250

A new scandium based catalyst for the green synthesis of polyols-polyesters starting from waste raw materials

Onofrio Losito, Lorenzo Veronico, Alessia De Cataldo, Michele Casiello, Caterina Fusco, Luigi Gentile, Ernesto Mesto, Emanuela Schingaro and Lucia D'Accolti*



9264



Aqueous solution synthesis of lithium-ion conductive tin-based sulphide electrolytes

Takuya Kimura, Hayata Tanigaki, Atsushi Sakuda, Masahiro Tatsumisago and Akitoshi Hayashi*

