

Green Chemistry

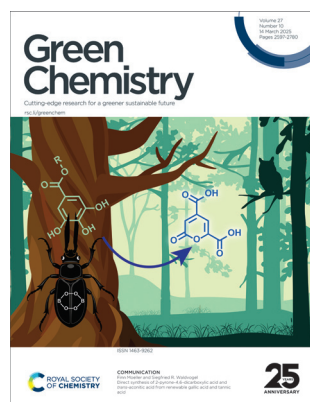
Cutting-edge research for a greener sustainable future

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IN THIS ISSUE

ISSN 1463-9262 CODEN GRCHFJ 27(10) 2597–2780 (2025)



Cover

See Finn Moeller and Siegfried R. Waldvogel, pp. 2661–2665.

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Forest background image created by Anna, beetle created by Suplab_Designer and tree trunk by Oceloti, all via Adobe Stock.



Inside cover

See Gonggang Liu, Lei Zhang, Xianjun Li *et al.*, pp. 2696–2705.

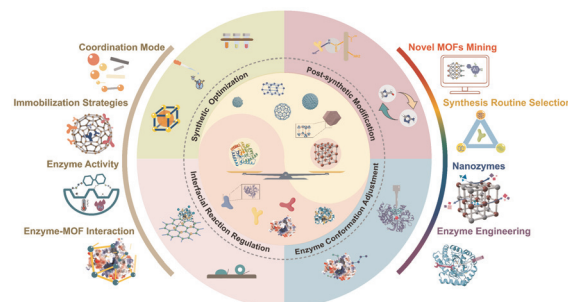
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TUTORIAL REVIEWS

2605

Exploring enzyme–MOF (metal–organic framework) catalytic systems: trade-offs between enzyme activity and MOF stability

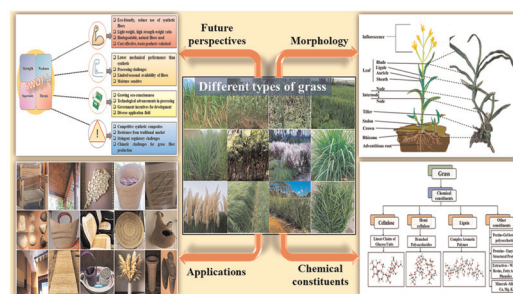
Huayang Tang, Dexun Fan, Yian Chen and Shuangyan Han*



2629

Green chemistry approaches in materials science: physico-mechanical properties and sustainable applications of grass fiber-reinforced composites

Shruti S. Pattnaik, Diptiranjan Behera, Debasish Nanda, Nigamananda Das and Ajaya K. Behera*



**GOLD
OPEN
ACCESS**

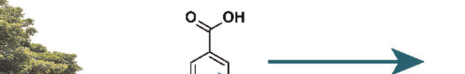
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Direct synthesis of 2-pyrone-4,6-dicarboxylic acid and *trans*-aconitic acid from renewable gallic acid and tannic acid



The diagram illustrates a chemical reaction. On the left, a tannin derivative is shown, which is a benzene ring with a carboxylic acid group (-COOH) at the top, a hydroxyl group (-OH) at the bottom-left, and a complex boron-containing side chain at the bottom-right. A large blue arrow points from a tree on the far left towards this molecule. A second blue arrow points from this molecule to the product on the right. The product is a monomer, which is a benzene ring with a carboxylic acid group (-COOH) at the top, a hydroxyl group (-OH) at the bottom-left, and a carboxylic acid group (-COOH) at the bottom-right. Below the reaction scheme, a blue box contains the text: "Direct Access to Highly Desired Monomers from Renewable Tannins".

Photo-induced enhancement of hydrogenation activity for ruthenium nanoparticles immobilized on carbon dots

UV irradiation

CDs

e^-

h^+

R^1

R^2

R^3

R^4

R^5

R^6

R^7

R^8

R^9

R^{10}

R^{11}

R^{12}

R^{13}

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A novel electrochemical recycling strategy for NdFeB swarf with minimized chemical consumption

The diagram illustrates the electrochemical process for Fe recovery from wastewater. It consists of three main stages: Fe electro-oxidation, anodic leaching, and catholyte regeneration.

- Fe electro-oxidation:** Fe(OH)₃ is oxidized to Fe³⁺ in the Fe electro-oxidation step.
- Anodic leaching:** Fe³⁺ is leached from the anode in the anodic leaching step, forming Fe²⁺ and Fe³⁺ species.
- Catholyte regeneration:** The catholyte (NaOH) is regenerated in the catholyte regeneration step, where NaOH is converted to NaOH and H₂O.

The diagram also shows the flow of filtrate (Na₂SO₄) and the use of an AEM and CEM membrane.

Defect-engineered metal–organic frameworks for volumetrically and kinetically co-enhanced atmospheric water harvesting

Pristine MOF Crystal

Defective MOF Crystal

Microporous & Limited site

Hierarchical porous & Exposed site

VS.

<p>✗ Limited capacity</p> <p>✗ Slow kinetics</p>	<p>✓ Large capacity</p> <p>✓ Fast kinetics</p>
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COMMUNICATIONS

2689

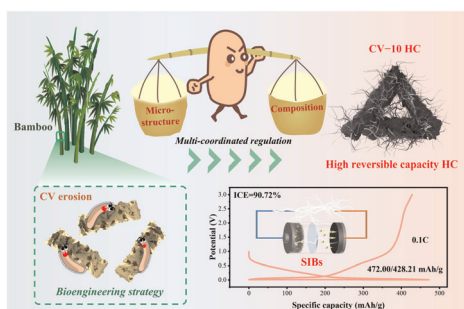


Photo-induced solvent-enabled catalyst-/additive-free selective C(α)-C(β) bond cleavage of β-O-4 ketone lignin model compounds at room temperature

Ke Liu, Zhaolun Ma, Mingjing Deng, Tongtong Ma, Shengying Li, Qingsheng Qi and Longyang Dian*

PAPERS

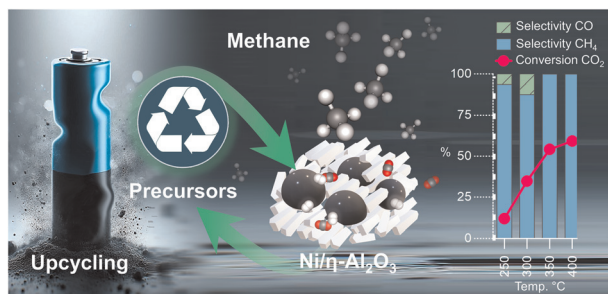
2696



Multi-synergistic regulation of hard carbon via a green bioengineering strategy to achieve high-capacity sodium-ion storage

Min Li, Jinbo Hu, Laiqiang Xu, Gonggang Liu,* Yating Sun, Yuzhang Lei, Xiang Zhang, Lei Zhang* and Xianjun Li*

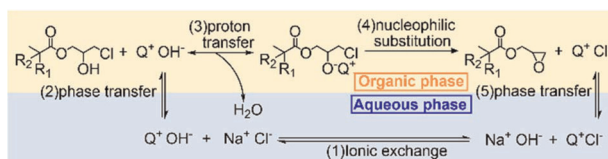
2706



Upcycling hazardous waste into high-performance Ni/η-Al₂O₃ catalysts for CO₂ methanation

Qaisar Maqbool, Hamilton Uchenna Aharanwa, Michael Stöger-Pollach and Günther Rupprechter*

2723



Process intensification of heterogeneous dehydrochlorination of β-chlorohydrin using phase transfer catalysts

Grace Dai Zhen Lee, Zifei Yan, Jing Song, Jian Deng and Guangsheng Luo*

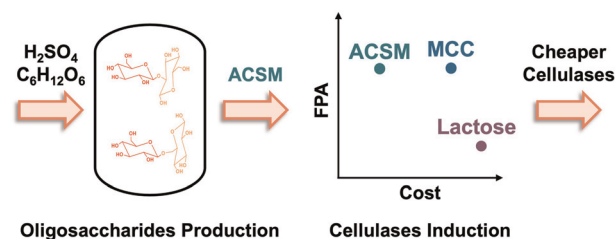


PAPERS

2733

Developing a soluble inducer for robust production of cellulases by *Trichoderma reesei* through submerged fermentation

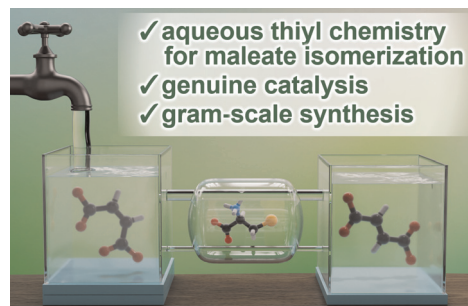
Xiao-Yan Huang, Lin Deng, Xue Zhang, Xin-Qing Zhao, Chen-Guang Liu* and Feng-Wu Bai*



2743

Thiyl chemistry: cysteine-catalyzed maleate isomerization via aqueous thiyl radical processes

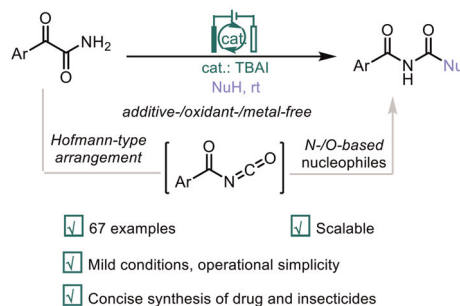
Satoru Kosaka, Kentaro Kurebayashi, Naoki Yamato, Hiroshi Tanaka, Naoki Haruta* and Masanori Yamamoto*



2751

A novel electrochemical Hofmann-type rearrangement enables facile access to α -oxoisocyanates for the synthesis of *N*-carbamoylacetamides

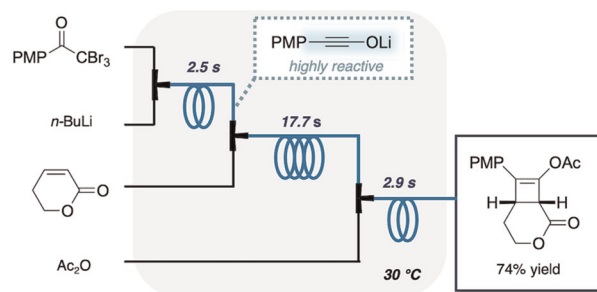
Xinxin Zhao, Jian Wang, Dabo Guo, Wenmin Liu, Yongqi Yu, Wenguang Li, Ting Li* and Ming Chen*



2760

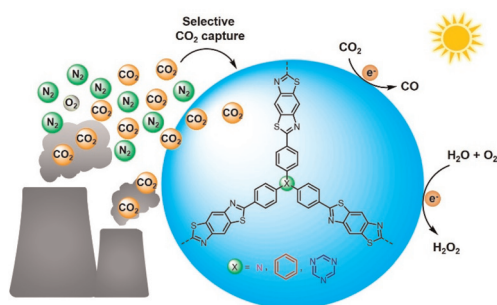
Continuous flow synthesis of cyclobutenes via lithium ynolates

Aki Kohyama,* Motoki Namioka, Hiroshi Naka, Yosuke Ashikari, Aiichiro Nagaki, Hiroshi Takikawa, Yousuke Yamaoka* and Kiyosei Takasu*



PAPERS

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Metal-free polymer photocatalysts for efficient gas-phase reduction of atmospheric CO₂ and simultaneous H₂O₂ production

Wei Wu, Mantao Chen, Chunyuan Feng, Waner Li, Tingting Zhang, Chao Zeng, Bo Wang, Lixiang Zhong* and Chunhui Dai*

CORRECTION

2776

Correction: Fluorescent carbon dots from birch leaves for sustainable electroluminescent devices

Shi Tang, Yongfeng Liu, Henry Opoku, Märta Gregorsson, Peijuan Zhang, Etienne Auroux, Dongfeng Dang, Anja-Verena Mudring, Thomas Wågberg, Ludvig Edman* and Jia Wang*

