

# Green Chemistry

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## IN THIS ISSUE

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**Cover**  
See Alberto Mannu *et al.*,  
pp. 5210–5225.

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**Inside cover**  
See Xiaomeng You, Lin Dai,  
Tong-Qi Yuan *et al.*,  
pp. 5167–5192.

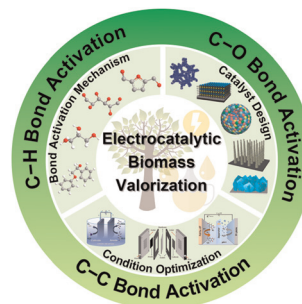
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*Green Chem.*, 2026,  
**28**, 5167.

## CRITICAL REVIEW

5131

### Electrocatalytic activation of C–H, C–O, and C–C bonds in biomass valorization: mechanisms and catalysts

Mengyuan Liu, Guohao Xu, Chendong Lin,  
Xiaotong Chen, Boyang Lin, Wei Liu\* and Shunji Xie\*

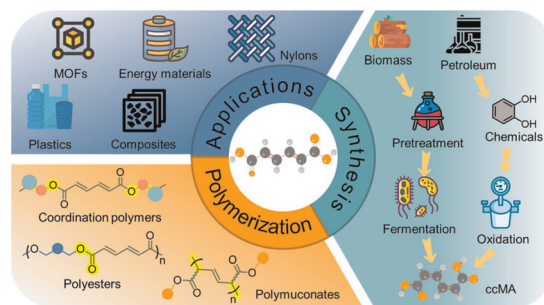


## TUTORIAL REVIEWS

5167

### Muconic acid: a renewable platform monomer for polymer materials

Aocheng Wei, Qinyang Lei, Xiaomeng You,\*  
Xiaojun Shen, Lin Dai\* and Tong-Qi Yuan\*



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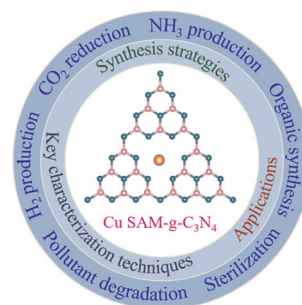
Fundamental questions  
Elemental answers

## TUTORIAL REVIEWS

5193

## A review on Cu single-atom-modified g-C<sub>3</sub>N<sub>4</sub> for applications in photocatalytic energy conversion and environmental photocatalysis

Zhuizhui Su, Peng Zhou\* and Jianling Zhang\*

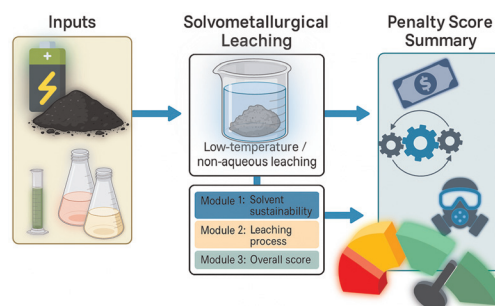


## PAPERS

5210

## Assessing the sustainability of solvometallurgy for black mass processing – the LEACH (Low-impact Extraction and Assessment of CHEmical solvometallurgy) tool

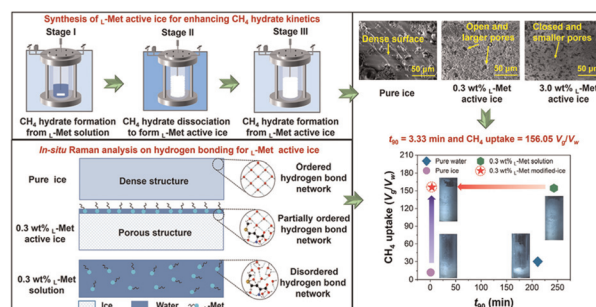
Alberto Mannu,\* Maria Enrica Di Pietro, Marco Yuri Basilico, Elza Bontempi and Andrea Mele



5226

## L-Methionine modified active ice enables ultra-rapid methane hydrate kinetics for solidified natural gas storage

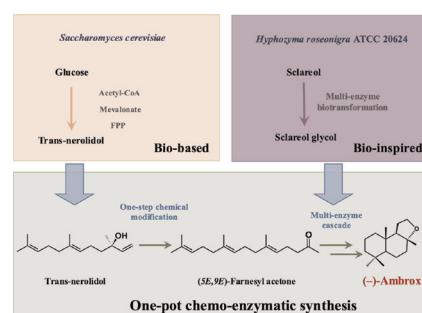
Yang Li, Jibao Zhang, Jingbo Gao, Guangjin Chen and Zhenyuan Yin\*



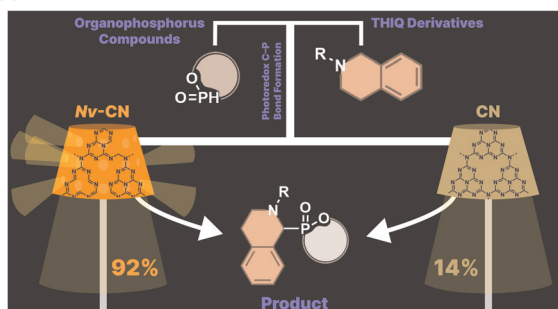
5240

## A bio-inspired environmentally friendly and cost-effective chemo-enzymatic synthesis of (–)-ambrox from *trans*-nerolidol

Jianlin Liu, Yi Zhang, Shaoping Zhang, Changle Zhao, Ganlu Zhang, Shengbin Zhou, Xiaoguang Yan, Weiguo Li,\* Qinggele Caiyin\* and Jianjun Qiao\*



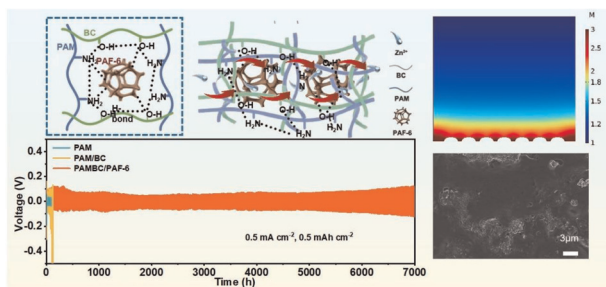
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### Sustainable photoredox C(sp<sup>3</sup>)-P bond formation *via* nitrogen-vacancy-engineered carbon nitride

Barbaros Bolat, Melek Sermin Ozer, Kang Sun, Hai-Long Jiang, Zafer Eroglu\* and Onder Metin\*

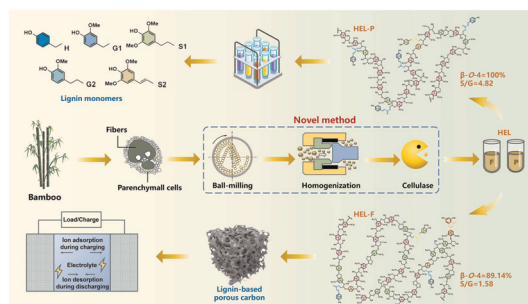
5275



### A green bacterial cellulose/PAF hydrogel electrolyte guiding ordered Zn<sup>2+</sup> transport for dendrite-free zinc batteries

Chengzhe Liu, Yangyang Yu, Yuhan Liu, Zhaoyan Sun, Baijun Liu, Yunfeng Lu and Wei Hu\*

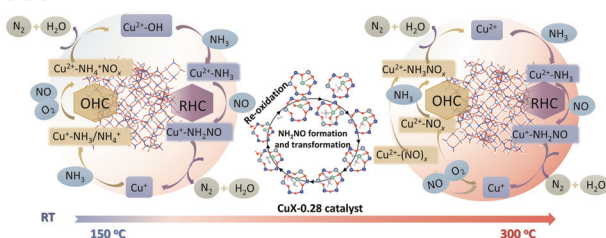
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### Unveiling the heterogeneous structure of native lignin in bamboo cell walls *via* a novel isolation method for high-value applications

Cheng-Ye Ma, Qian Sun, Ling-Hua Xu, Haozhi Zhang, Jia-Long Wen,\* Shumin Yang, Xinge Liu and Tong-Qi Yuan

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### Revealing the evolution of Cu<sup>II</sup> species and ammonia intermediates at different temperatures for selective catalytic reduction of NO over cost-effective Cu-exchanged zeolite X catalysts

Lin Chen,\* Yuanpei Lan,\* Chaoyi Chen, Shan Ren,\* Junqi Li and Davide Ferri

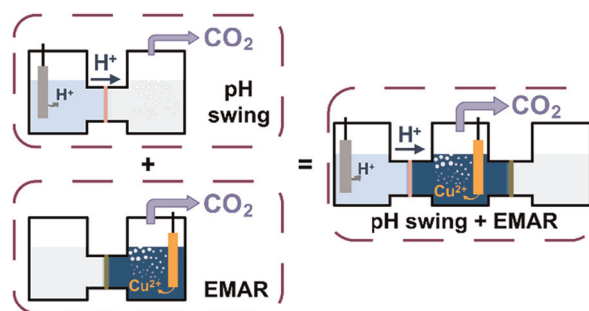


## PAPERS

5316

**Electrochemical regeneration of amine-based CO<sub>2</sub> capture systems: a study on CO<sub>2</sub> desorption efficiency**

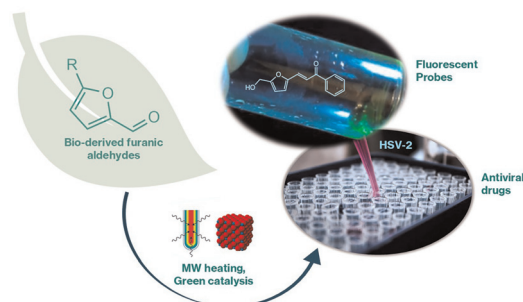
Barbara Bohlen, Luis F. Leon-Fernandez, Nick Daems and Tom Breugelmans\*



5334

**Sustainable route to antiviral furano-chalcones via microwave-assisted solvent-free synthesis with recyclable MgO**

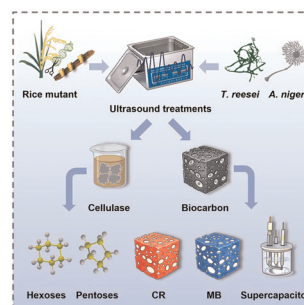
Laura Tedesco, Federico Verdini, Emanuela Calcio Gaudino,\* Silvia Tabasso, Irene Arduino, David Lembo, Manuela Donaliso, Giancarlo Cravotto and Maela Manzoli\*



5347

**Cascading integration of genetically reduced cellulose nanofibers and ultrasound-dissected fungi mycelium for the synergistic enhancement of cellulases and saccharification with high-value bioproducts**

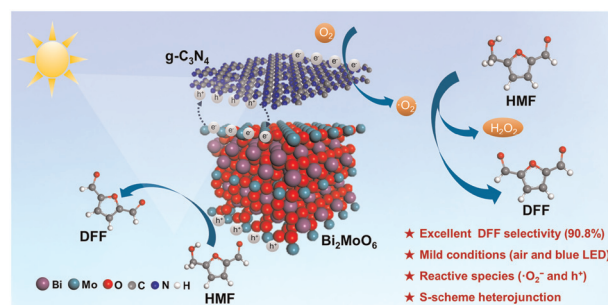
Hao Peng, Peng Liu, Jingyuan Liu, Junsheng Yu, Boyang He, Yujing Yang, Hua Yu, Heng Kang, Mengzhou Zhou, Wanbin Zhu, Muhammad Nauman Aftab, Yanting Wang,\* Chunxiang Fu\* and Liangcai Peng\*



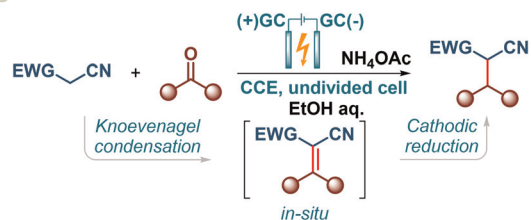
5362

**g-C<sub>3</sub>N<sub>4</sub>/Bi<sub>2</sub>MoO<sub>6</sub> heterojunctions for enhanced visible light photocatalytic oxidation of biomass-derived 5-hydroxymethylfurfural to 2,5-diformylfuran under ambient conditions**

Lin-Yu Jiao,\* Ze-Long Sun, Wen-Yu Luo, Ying-Ying Xu, Fei Wen, Yanfei Xu, Zhuo Li, Wei Zhao, Shanshan Liu\* and Mingyue Ding\*



5373



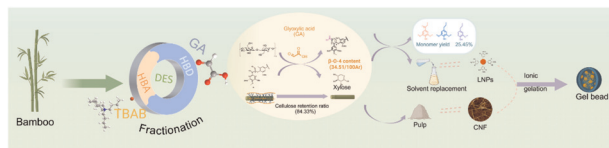
Key electrode parameters for efficient process:

- low HER overpotential for cathode
- high OER overpotential for anode
- $\Delta G_{H^+}$  far from 0 for cathode

### Electrochemical cascade of Knoevenagel condensation and reduction: a green strategy for intermolecular C(sp<sup>3</sup>)-C(sp<sup>3</sup>) bond formation

Oleg V. Bityukov, Andrey S. Kirillov, Fedor A. Litvin, Vera A. Vil'<sup>\*</sup> and Alexander O. Terent'ev<sup>\*</sup>

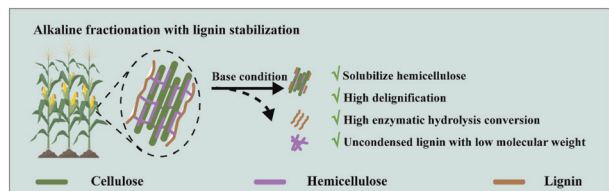
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### Efficient separation of uncondensed lignin and high-quality cellulose from bamboo using reactive deep eutectic solvents for versatile valorization

Ruojin Shen, Chao Wang,<sup>\*</sup> Keqin Zhang, Changyi Zhu, Lupeng Shao,<sup>\*</sup> Kai Zhang, Xianhai Zeng, Feng Xu, Guihua Yang<sup>\*</sup> and Jiachuan Chen

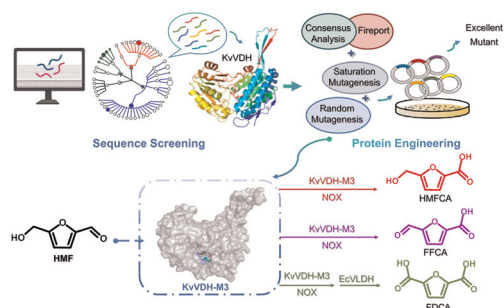
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### Lignin-stabilizing fractionation enables production of uncondensed lignin and digestible carbohydrates

Shi-Chang Liu, Zi-Jing He, Guo-Qiang Kang, Kai Chen, Zhi-Hua Liu and Bing-Zhi Li<sup>\*</sup>

5409



### Novel iterative genome mining and engineering of a bifunctional KvVDH enable selective production of furan carboxylic acids from high-concentration 5-hydroxymethylfurfural

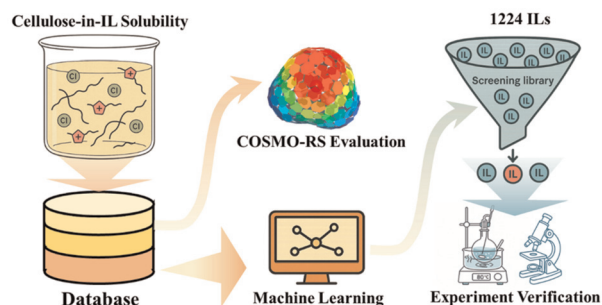
Yanan Cui, Jie Zhang, Xijun Xing, Hanwen Zhang, Yutong Chen, Liqiang Fan, Xu Li, Yongjun Qiu, Chen Deng<sup>\*</sup> and Liming Zhao<sup>\*</sup>



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### Machine learning-enabled screening and experimental validation of ionic liquids for highly efficient cellulose dissolution

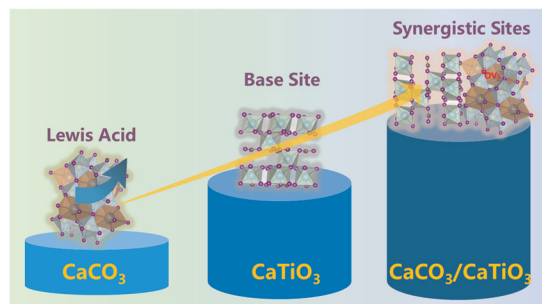
Bocheng Zhao, Zixin Chen, Kunchi Xie, Yuxin Qiu, Zhiwen Qi, Linfeng Lei\* and Zhen Song\*



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### Enhanced depolymerization of poly(bisphenol A carbonate) via robust mesoporous $\text{CaCO}_3/\text{CaTiO}_3$ nanocomposites featuring synergistic acid–base sites and oxygen vacancies

Shuoxian Li, Tao Song,\* Yi Sun, Hongbin Hou, Guangqian Zhu,\* Liang Wang,\* Qinggang Wang and Guangqiang Xu\*



5447

### Mn-catalyzed hydroxyalkylation of $\alpha$ -trifluoromethylstyrenes with cyclopropanols: facile synthesis of $\delta$ -trifluoromethyl- $\delta$ -hydroxyketones

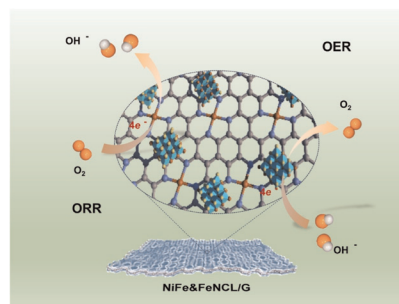
Zhi-Xin Deng, Zhi-Gang Liu, Ji-Yao Han, Tong-Yao Zhou, Dang Cheng, Xiao Xiao\* and Fen-Er Chen\*



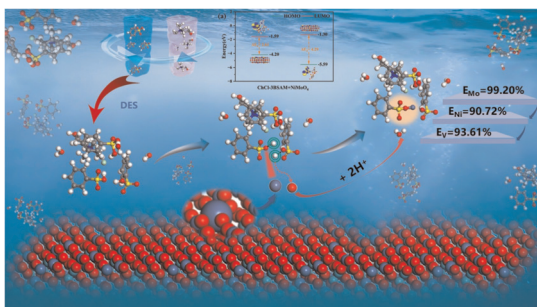
5457

### Stabilizing sub-3 nm NiFe hydroxides on atomic Fe– $\text{N}_4$ moieties for efficient oxygen reactions in rechargeable Zn–air batteries

Xiao Du, Peng-Fei Xie, Du Wang, Yi-Long Chen, Binbin He,\* Shi-Yong Zhao, Yun Zu and Jin-Cheng Li\*



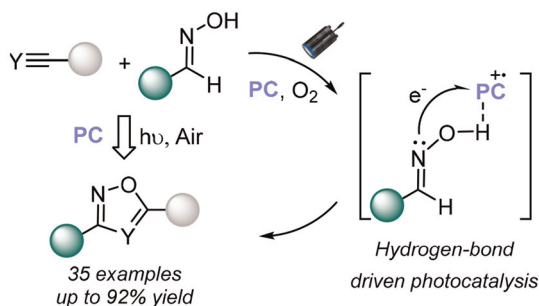
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### Green and efficient recovery of Mo, Ni, and V from spent residue hydrotreating catalysts with deep eutectic solvents

Xinran Fu, Xiaoning Cao, Ruinian Xu, Ke Xu, Huandi Hou,\* Zijun Wang, Chengna Dai\* and Biaohua Chen

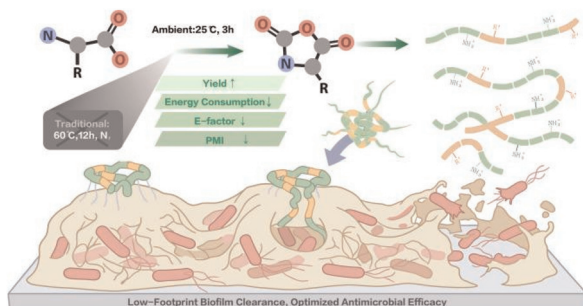
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### H-bond mediated photocatalyzed oxidation of oximes under visible light and air. A general route toward dioxazoles, oxadiazoles and isoxazoles

Younes Massad, Arkadiusz Zych, Mathieu Duttine, Dario M. Bassani, Frédéric Robert and Yannick Landais\*

5493



### Structure–function mapping of host defense peptide mimics reveals strategies for antibacterial activity and eradication of mature bacterial biofilms

Xueyang Yin, Yufang Bi, Xiehe Wang, Jing Ren, Jinrong Yao,\* Xin Chen, Shengjie Ling\* and Zhengzhong Shao\*

