

# Green Chemistry

Cutting-edge research for a greener sustainable future

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### Cover

See Peiyuan Yao, Qiaqing Wu, Dunming Zhu et al., pp. 4667–4673.

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### Inside cover

See Paweł Mateusz Nowak, pp. 4625–4640.

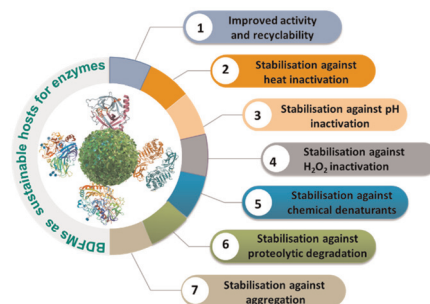
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# Green Chemistry

Cutting-edge research for a greener sustainable future

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## COMMUNICATIONS

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**Inverse vulcanization of elemental sulfur catalyzed by trialkyl amines**

Jae Hyuk Hwang, Ji Mok Lee, Jong Hwi Seo, Guk Yun Noh, Wonmoo Byun, Seonggeon Kim, Woohwa Lee, Sungmin Park,\* Dong-Gyun Kim\* and Yong Seok Kim\*

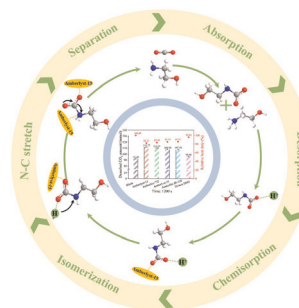
**Facile and Fast Inverse Vulcanization of Elemental Sulfur (ES) using Unreactive Crosslinkers under Eco-friendly Trialkyl Amines (TAAs) Catalysis**



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**Evaluation of hybrid amines and alcohol solvent with ion-exchange resin catalysts for energy-efficient CO<sub>2</sub> capture**

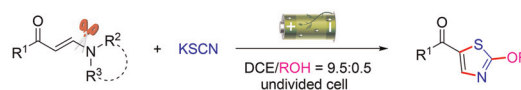
Qiang Sun, Jia Xiong, Hongxia Gao,\* Teerawat Sema, Wilfred Olson and Zhiwu Liang\*



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**An electrochemical-enabled cascaded cyclization of enaminones with potassium thiocyanate and alcohols to access 2-alkoxythiazoles**

Dandan Li,\* Long Chen, Yang Jin, Xiaochen Wang, Long Liu, Yilin Li, Gongyuan Chen, Guanhao Wu, Yujie Qin, Leilei Yang, Mengke Wang, Lulu Zhao, Zhihong Xu and Jiangwei Wen\*

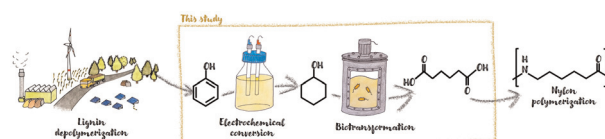


- Metal, external redox reagent free
- Three-component cascade reaction
- Cleavage of C-N bond and high effective construction of C-N/C-O/C-S bonds in one pot

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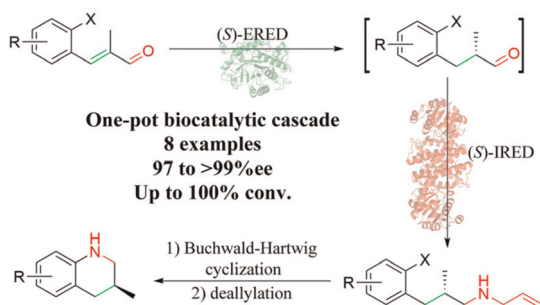
**Integrated electrosynthesis and biosynthesis for the production of adipic acid from lignin-derived phenols**

Micjel Chávez Morejón, Alexander Franz, Rohan Karande\* and Falk Harnisch\*



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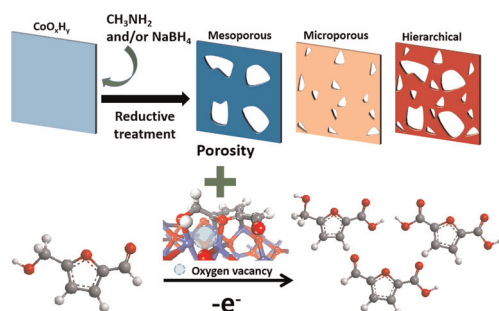
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### Chemo-enzymatic synthesis of chiral 3-substituted tetrahydroquinolines by a sequential biocatalytic cascade and Buchwald–Hartwig cyclization

Zefei Xu, Jinhui Feng, Peiyuan Yao,\* Qiaqing Wu\* and Dunming Zhu\*

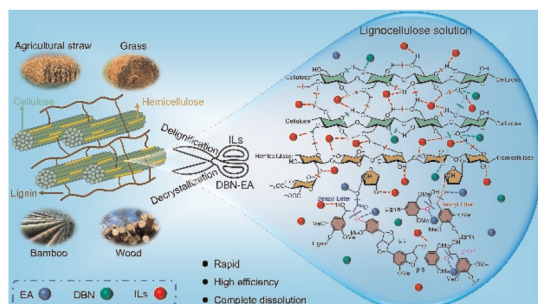
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### Room-temperature fabrication of defective $\text{CoO}_x\text{H}_y$ nanosheets with abundant oxygen vacancies and high porosity as efficient 5-hydroxymethylfurfural oxidation electrocatalysts

Ruyi Zhong, Puwei Wu, Qi Wang, Xiting Zhang, Lei Du, Yunhua Liu, Huakang Yang, Meng Gu, Z. Conrad Zhang, Limin Huang\* and Siyu Ye\*

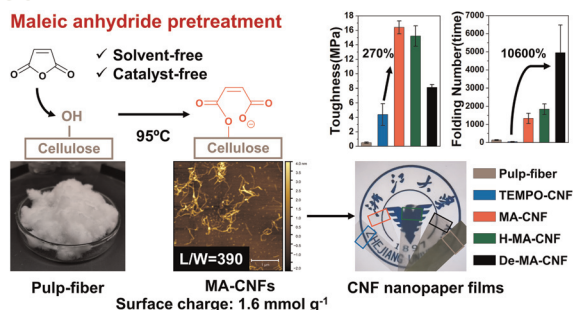
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### Robust ionic liquid/ethanolamine-superbase solvents enable rapid, efficient and mild dissolution of lignocellulosic biomass

Yang Wang, Huan Wang, Lan Chen, Weitao Wang, Zhaohui Yang, Zhimin Xue\* and Tiancheng Mu\*

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### Eco-friendly cellulose nanofibrils with high surface charge and aspect ratio for nanopaper films with ultrahigh toughness and folding endurance

Da Zhang, Kexia Jin, Khak Ho Lim, Suyun Jie, Wen-Jun Wang and Xuan Yang\*

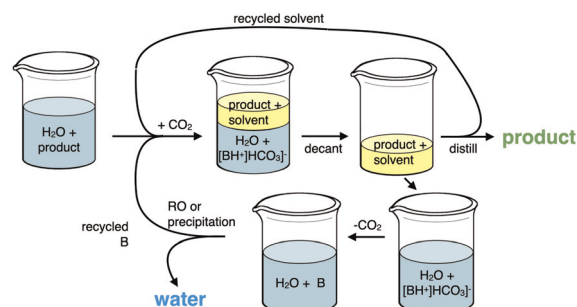


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### A CO<sub>2</sub>-responsive method for separating hydrophilic organic molecules from aqueous solutions: solvent-assisted switchable water

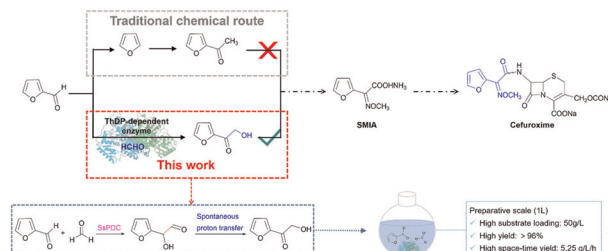
Vanessa Saab Liberato, Tatiana Felix Ferreira, Alex Redmond MacDonald, Bernardo Dias Ribeiro, Maria Alice Zarur Coelho and Philip G. Jessop\*



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### Biosynthesis of 2-furylhydroxymethylketone, an intermediate of cefuroxime, from furfural and formaldehyde using a ThDP-dependent enzyme

Xianghe Zhang, Hao Wei, Xinlin Wei, Tengting Qi, Xinrui Zong, Zixi Liu, Jie Qin, Xiuzhen Gao,\* Gengxiu Zheng\* and Qinyuan Ma\*



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### High-purity polypropylene from disposable face masks *via* solvent-targeted recovery and precipitation

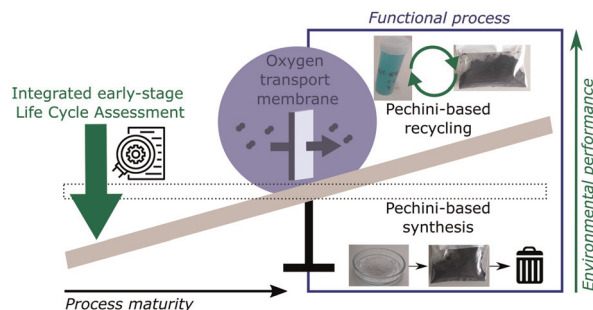
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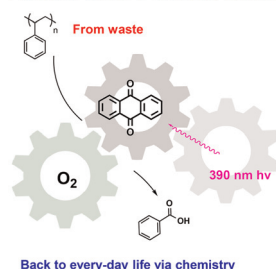
Melanie Johanning, Marc Widenmeyer,\* Giamper Escobar Cano, Vanessa Zeller, Sebastian Klemenzen, Guoxing Chen, Armin Feldhoff and Anke Weidenkaff





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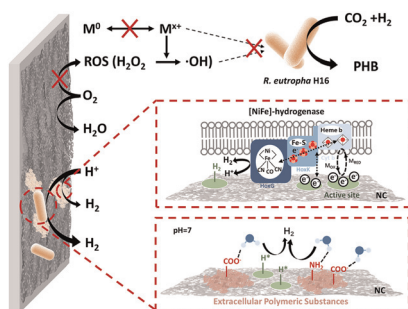
## Photochemical Aerobic Upcycling of Polystyrene Plastics to Commodity Chemicals



## Photochemical aerobic upcycling of polystyrene plastics to commodity chemicals using anthraquinone as the photocatalyst

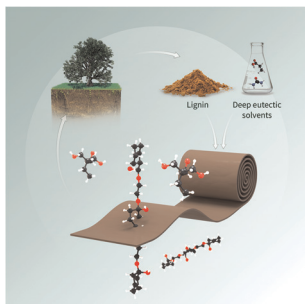
Nikolaos F. Nikitas, Elpida Skolia, Petros L. Gkizis, Ierasia Triandafillidi and Christoforos G. Kokotos\*

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Efficient  $CO_2$  conversion by biocompatible N-doped carbon nanosheets coupled with *Ralstonia eutropha*: synergistic interactions between microbial and inorganic catalysts

Jiani Yao, Youzhi Li, Siyuan Xiu, Shujie Zheng, Ying Huang, Zijing Zhou, Yang Hou, Bin Yang, Lecheng Lei and Zhongjian Li\*

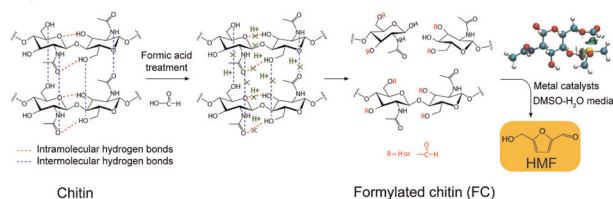
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## A lignin-based membrane fabricated with a deep eutectic solvent

Abaynesh Yihdego Gebreyohannes, Sandra L. Aristizábal, Liliana Silva, Eyad A. Qasem, Stefan Chisca, Lakshmeesha Upadhyaya, Daniyah Althobaiti, João A. P. Coutinho and Suzana P. Nunes\*

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## Efficient conversion of chitin into 5-hydroxymethylfurfural via a simple formylation step under mild conditions

Chunxiao Gong, Zhaoyang Ju, Kuichuan Sheng and Ximing Zhang\*

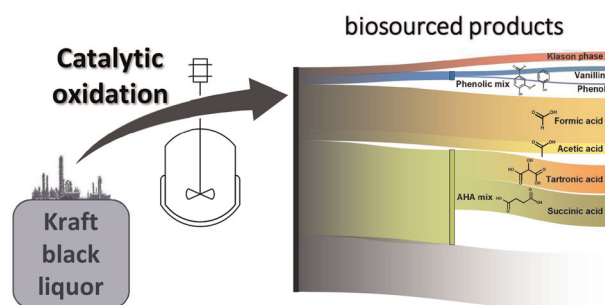


## PAPERS

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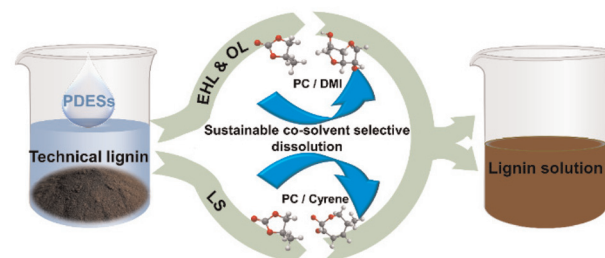
Léa Vilcocq,\* Nicolas Chaussard, Antonio Hernández Mañas, Olivier Boyron, Manel Taam, Frédérique Bertaud, Pascal Fongarland and Laurent Djakovitch\*



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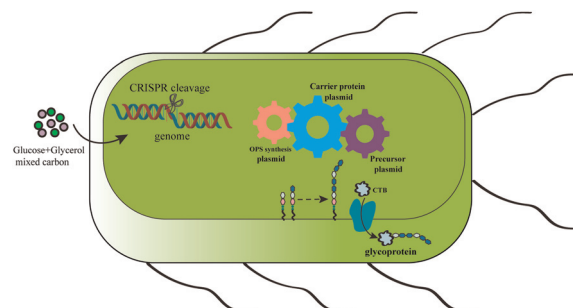
Qiaoling Liu, Yang Wang, Jing Bian, Ming-Fei Li, Jun-Li Ren, Xiang Hao\* and Feng Peng\*



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Sustainable production of a polysaccharide-based glycoprotein by simultaneous conversion of glucose and glycerol in engineered *Escherichia coli*

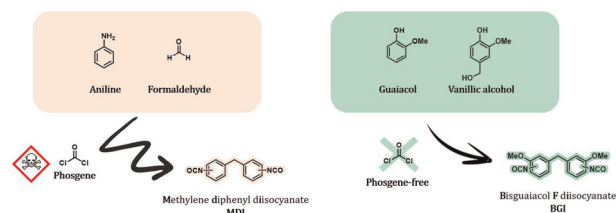
Yuhui Wang, Xiaohan Wang, Guozhen Ma, Lijie Xie, Dan Liu, Yanling Wang, Xinyu Zhao, Yingying Su, Andrei V. Perepelov, Peng Ding, Xiao Zhang, Bo Xu, Bin Liu\* and Di Huang\*



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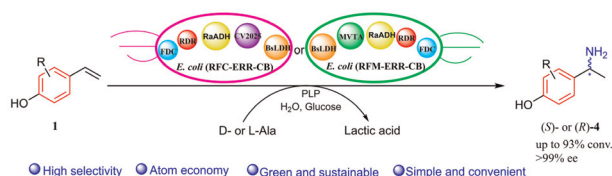
## Lignin-based bisguaiacol diisocyanate: a green route for the synthesis of biobased polyurethanes

Sébastien Lemouzy, Aliénor Delavarde, Frédéric Lamaty, Xavier Bantreil, Julien Pinaud and Sylvain Caillol\*



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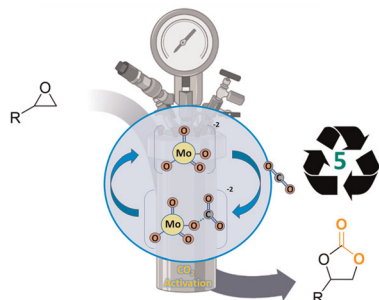
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### Biocatalytic formal regio- and enantioselective Markovnikov hydroamination of aryl alkenes to chiral amines

Qi Jin, Jingqi Zhang, Shuangping Huang, Lili Gao, Honghong Chang and Jiandong Zhang\*

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Nicola Bragato, Alvise Perosa, Maurizio Selva, Giulia Fiorani\* and Roberto Calmanti\*

## CORRECTION

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### Correction: Sustainable pathway to furanics from biomass via heterogeneous organo-catalysis

Sanny Verma, R. B. Nasir Baig, Mallikarjuna N. Nadagouda, Christophe Len and Rajender S. Varma\*

