

# Green Chemistry

Cutting-edge research for a greener sustainable future

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## IN THIS ISSUE

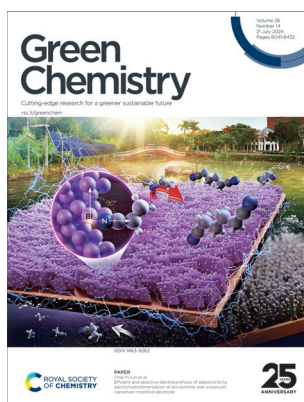
ISSN 1463-9262 CODEN GRCHFJ 26(14) 8041–8432 (2024)



### Cover

See Robert Wojcieszak, Ivaldo Itabaiana *et al.*, pp. 8211–8219.

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### Inside cover

See Chia-Yu Lin *et al.*, pp. 8220–8229.

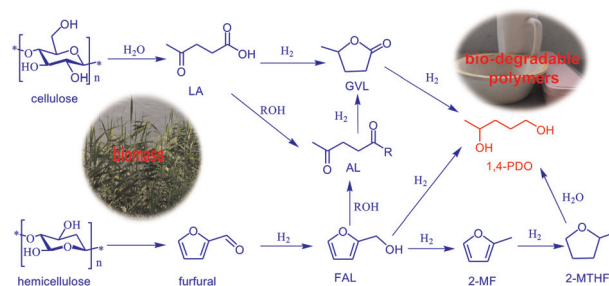
Image reproduced by permission of Chia-Yu Lin and NCKU Material from *Green Chem.*, 2024, **26**, 8220.

## CRITICAL REVIEWS

8052

### Catalytic production of 1,4-pentanediol from lignocellulosic biomass

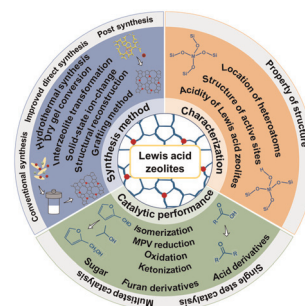
Shanhui Zhu,\* Zexiang Lv, Jiamin Wang, Xiangyu Jia, Xiaoming Li, Mei Dong, Jianguo Wang\* and Weibin Fan\*



8068

### Heteroatom Lewis acid zeolites: synthesis, characterization and application in the conversion of biomass-derived oxygenates

Zijun Yang, Qingfeng Ge and Xinli Zhu\*



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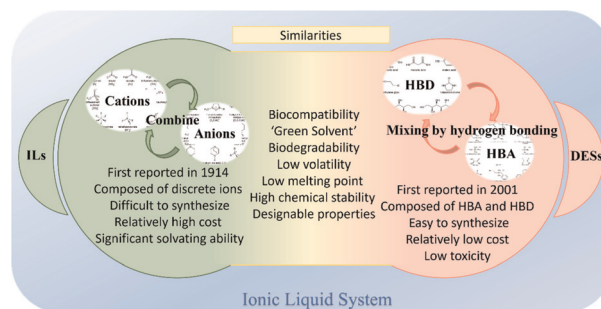
**Fundamental questions  
Elemental answers**

## CRITICAL REVIEWS

8100

## Review of the application of ionic liquid systems in achieving green and sustainable recycling of spent lithium-ion batteries

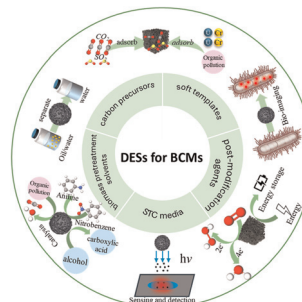
Huiying Shi, Yi Luo, Chengzhe Yin and Leming Ou\*



8123

## Emerging applications of deep eutectic solvents in the preparation and functionalization of biomass-derived carbonaceous materials: challenges and prospects

Yiyi Shen, Haiqin Zhou, Xiaotong He, Feng Shen, Zhixiang Xu, Bo Yang, Lingzhao Kong and Lichun Dai\*

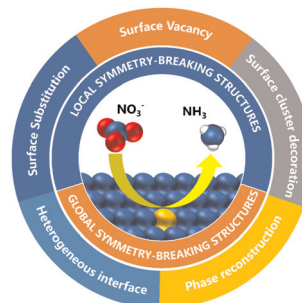


## TUTORIAL REVIEWS

8145

## Symmetry-breaking structure electrocatalysts for nitrate reduction to ammonia

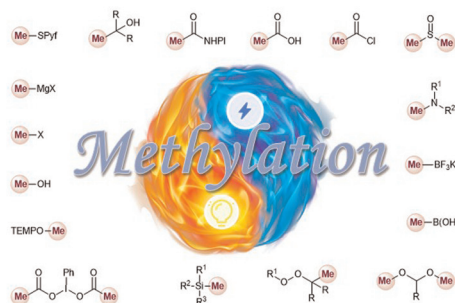
Yifan Han, Jiachangli Shang, Shuai Yin, Rong Cao, Jing Zhang,\* Wei Jiang\* and Guigao Liu\*



8161

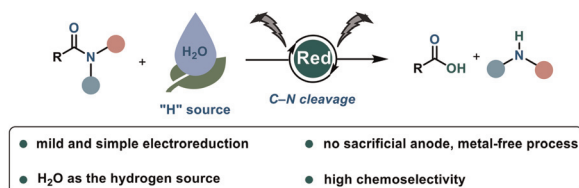
## Demystifying the recent photochemical and electrochemical strategies in installing the magic methyl group: a comprehensive overview

Feiyang Liao, Zenghui Wei, Yunhao Guan, Zhe Zhuang, Kun Xu\* and Jiajing Tan\*



## COMMUNICATION

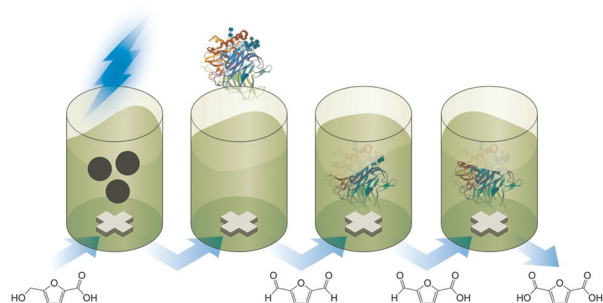
8204

Electroreductive hydrolysis of amides by H<sub>2</sub>OHighly selective hydrolysis of amides *via* electroreduction

Jin-Yu He, Yan-Zhao Wang, Wen-Xi Duan, Jia-Rong Li, Hao Xu\* and Cuiju Zhu\*

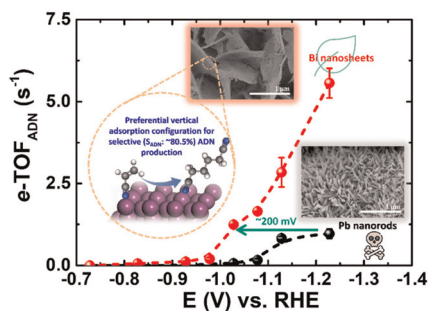
## PAPERS

8211

Optimization of 5-hydroxymethylfurfural oxidation *via* photo-enzymatic cascade process

Marcelo A. do Nascimento, Bernardo Haber, Mauro R. B. P. Gomez, Raquel A. C. Leão, Mariusz Pietrowski, Michał Zieliński, Rodrigo O. M. A. de Souza, Robert Wojcieszak\* and Ivaldo Itabaiana, Jr\*

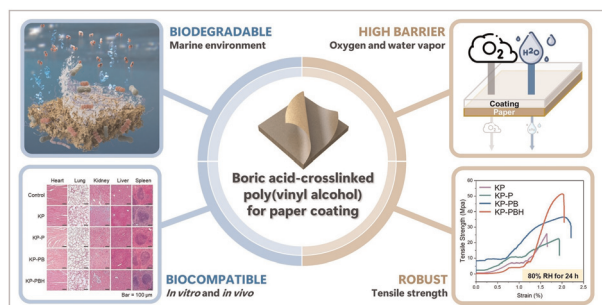
8220



## Efficient and selective electrosynthesis of adiponitrile by electrohydrodimerization of acrylonitrile over a bismuth nanosheet modified electrode

Jia-Sheng Su, Shih-Ching Huang, Ming-Chi Tsai, Chia-Hui Yen and Chia-Yu Lin\*

8230



## Boric acid-crosslinked poly(vinyl alcohol): biodegradable, biocompatible, robust, and high-barrier paper coating

Shinhyeong Choe, Seulki You, Kitae Park, Youngju Kim, Jehee Park, Yongjun Cho, Jongchul Seo, Hanseul Yang and Jaewook Myung\*

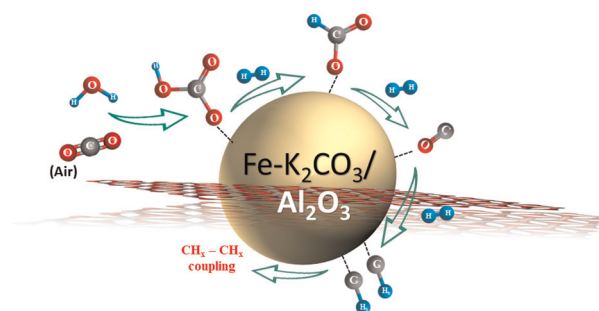


## PAPERS

8242

# Reactive direct air capture of CO<sub>2</sub> to C–C coupled products using multifunctional materials

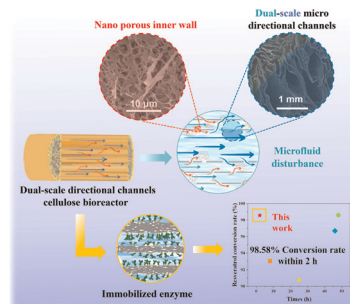
Shazia Sharmin Satter, Johnny Saavedra Lopez, Michael L. Hubbard, Yuan Jiang, Robert A. Dagle and Jotheeswari Kothandaraman\*



8256

# Wood-inspired dual-scale directional channel cellulose bioreactors with high mass transfer efficiency for continuous flow catalytic green conversion

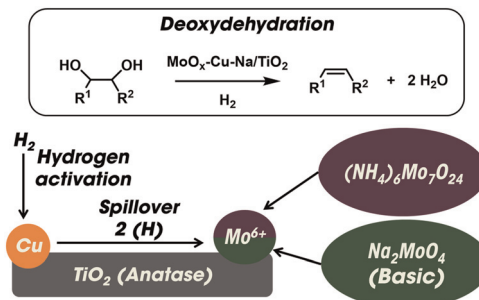
En-Jiang Liu, Yu-Shi Shen, Mei-Yan Ling, Chen-Xi He, Xing Zhou, Jun Wang, Shuai You, Wei-Guo Zhao, Xiao-Hui Yao and Dong-Yang Zhang\*



8267

# Non-noble metal heterogeneous catalysts for hydrogen-driven deoxydehydration of vicinal diol compounds

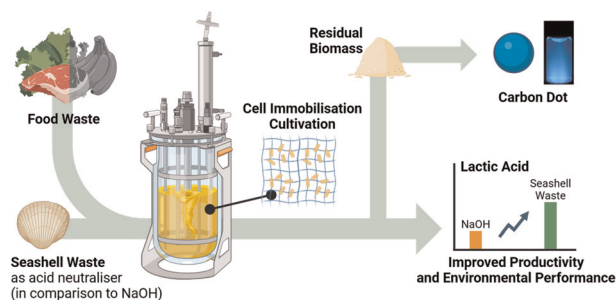
Jianxing Gan, Yoshinao Nakagawa,\* Mizuho Yabushita and Keiichi Tomishige\*



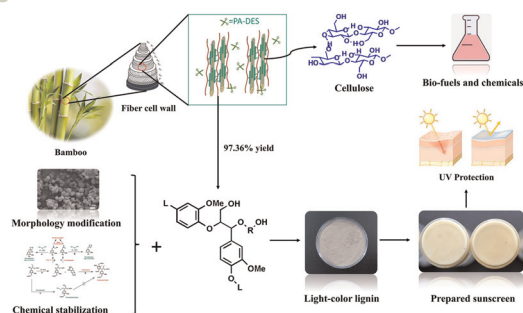
8282

# Green synthesis of lactic acid and carbon dots using food waste and seashell waste

Jin-Hua Mou, Ling-Feng Ouyang, Zi-Hao Qin, Ya-Hui Miao, Xin-Tian Jiang, Mui-Choo Jong, Man-Chung Tang, Chenyu Du, Season Si Chen\* and Carol Sze Ki Lin\*



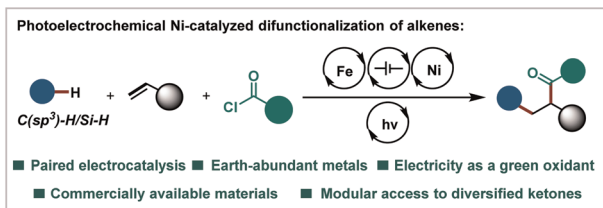
8298



### Low-chromophore lignin isolation from natural biomass with polyol-based deep eutectic solvents

Jinyuan Cheng, Xuelian Zhou, Caoxing Huang, Chang Geun Yoo, Xianzhi Meng, Guigan Fang,\* Arthur J. Ragauskas and Chen Huang\*

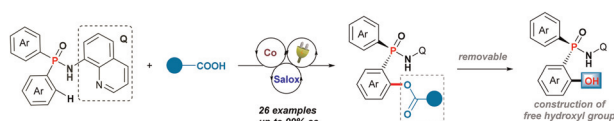
8315



### Photoelectrochemical nickel-catalyzed carboacylation/silanoylation of alkenes with unactivated C/Si-H bonds

Lanfen Wang, Xiangyu Huo, Xiaozhi He, Lutz Ackermann\* and Dingyi Wang\*

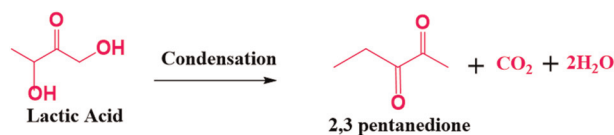
8323



### Electrochemically enabled cobalt catalyzed enantioselective C-H acyloxylations of aryl phosphamides with carboxylic acid

Xuying Xia, Changdi Zheng, Yunfei Hang, Jiyuan Guo, Tao Liu, Dingguo Song, Zhiwei Chen, Weihui Zhong and Fei Ling\*

8330



### Highly efficient production of 2,3-pentanedione from condensation of bio-derived lactic acid over polymorphic $\text{ZrO}_2$

Neha Dhiman, B. Moses Abraham, Deepti Agrawal, Sudhakara Reddy Yenumala, Jyoti Porwal and Bipul Sarkar\*



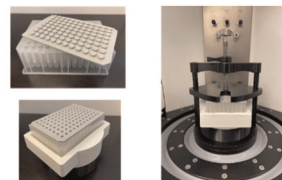
## PAPERS

8341

### Nickel-catalyzed cross-coupling aminations via high-throughput mechanochemistry enabled by resonant acoustic mixing

Alice Nanni, Deshen Kong, Chen Zhu and Magnus Rueping\*

- ✓ Media-free mixing
- ✓ Reliable and safe
- ✓ Easy scale-up
- ✓ 96-well plate compatible
- ✓ suitable for HTE



8348

### Steam-assisted electro-reduction of NiO: a sustainable alternative to conventional hydrogen reduction

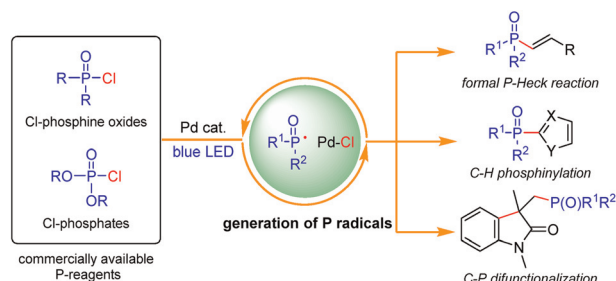
Kaiyu Xie and Ali Reza Kamali\*



8360

### A general platform for phosphorylation reactions enabled by photoinduced palladium catalysis

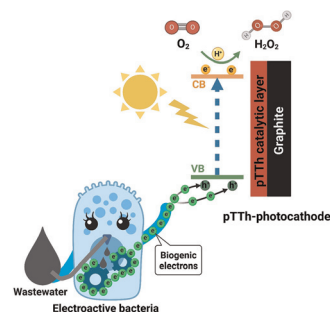
Yu-Jie Zhang, Xue-Song Wang, Jian Cao\* and Li-Wen Xu\*



8367

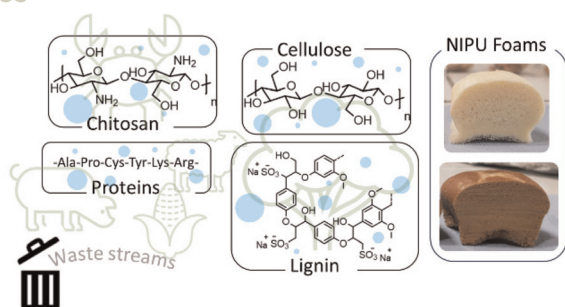
### Novel bio-solar hybrid photoelectrochemical synthesis for selective hydrogen peroxide production

Rusen Zou, Babak Rezaei, Xiaoyong Yang, Wenjing Zhang, Stephan Sylvest Keller and Yifeng Zhang\*



## PAPERS

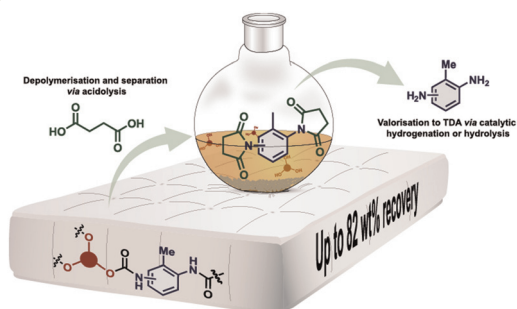
8383



### Valorization of waste biomass for the fabrication of isocyanate-free polyurethane foams

Dagmara Trojanowska, Florent Monie, Giovanni Perotto,\*  
Athanasia Athanassiou, Bruno Grignard, Etienne Grau,  
Thomas Vidil, Henri Cramail\* and  
Christophe Detrembleur\*

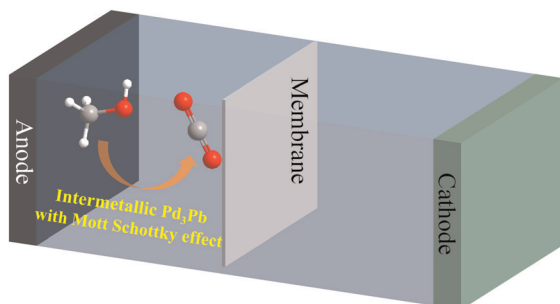
8395



### Chemical separation of polyurethane via acidolysis – combining acidolysis with hydrolysis for valorisation of aromatic amines

Thomas B. Bech, Bjarke S. Donslund,  
Steffan K. Kristensen\* and Troels Skrydstrup\*

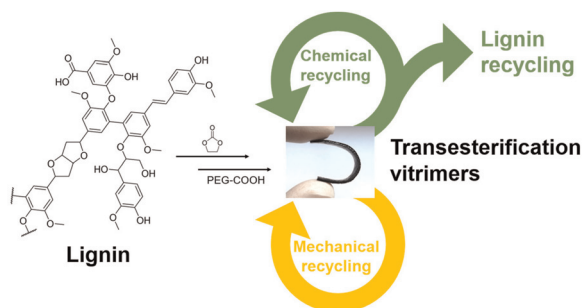
8405



### Ultrafine Pd<sub>3</sub>Pb intermetallic nanowires with Mott–Schottky effect achieve a complete oxidation pathway for methanol oxidation catalysis

Shuanglong Zhou, Zuochao Wang, Mo Zhang,  
Xiaoming Mou, Yu Dai, Lei Wang and Jianping Lai\*

8414



### Turning lignin into a recyclable bioresource: transesterification vitrimers from lignins modified with ethylene carbonate

Antoine Duval,\* Wissam Benali and Luc Avérous\*



## CORRECTION

8428

**Correction: Comparative environmental assessment of zeolites synthesized from chemicals and natural minerals**

Xiaoling Chen, Guoxi Xiao, Tiesen Li,\* Chan Wang, Qingyan Cui, Xiaojun Bao and Yuanyuan Yue\*

