

# Green Chemistry

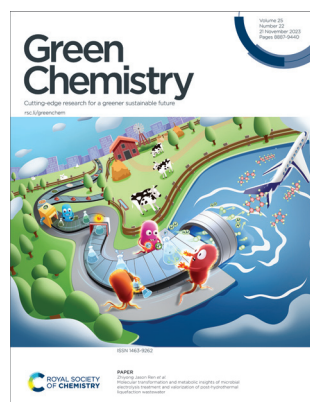
Cutting-edge research for a greener sustainable future

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ISSN 1463-9262 CODEN GRCHFJ 25(22) 8887–9440 (2023)



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See Zhiyong Jason Ren *et al.*, pp. 9115–9125.

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### Inside cover

See Mingyang Chen, Ling Zhou *et al.*, pp. 9126–9137.

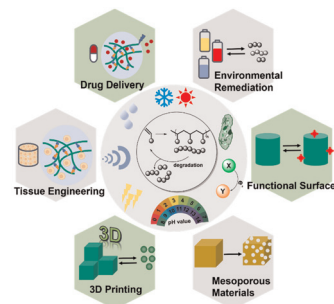
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### Stimuli-cleavable moiety enabled vinyl polymer degradation and emerging applications

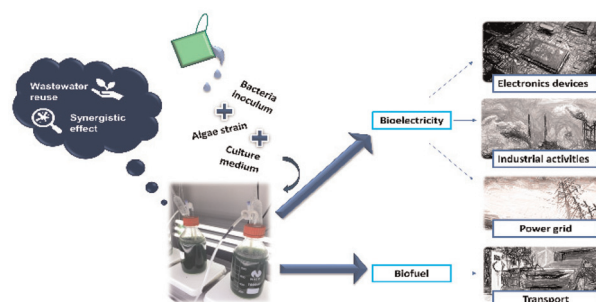
Jie Zheng, Zhuang Mao Png, Xian Chun Nicky Quek, Xian Jun Loh\* and Zibiao Li\*



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Shir Reen Chia, Jing Ling, Wen Yi Chia, Saifuddin Nomanbhay,\* Tonni Agustiono Kurniawan and Kit Wayne Chew\*



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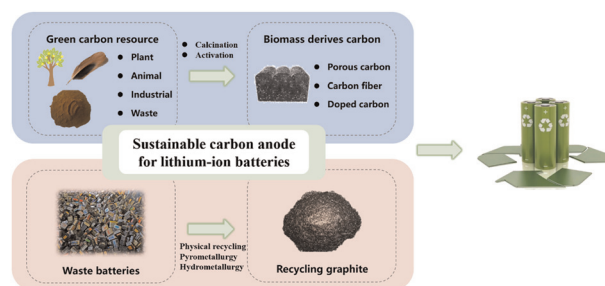


## TUTORIAL REVIEWS

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### A review on green and sustainable carbon anodes for lithium ion batteries: utilization of green carbon resources and recycling waste graphite

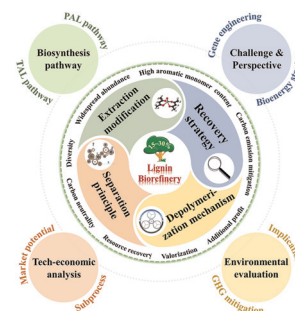
Fenqiang Luo, Taiyu Lyu, Dechao Wang\* and Zhifeng Zheng\*



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### Bio-based platform chemicals synthesized from lignin biorefinery

Rui Hu, Jiahui Zhan, Yuying Zhao, Xinyi Xu, Gang Luo, Jiajun Fan, James H. Clark and Shicheng Zhang\*

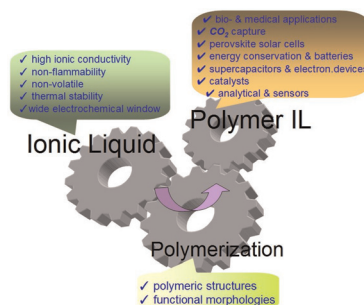


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### Advanced research and prospects on polymer ionic liquids: trends, potential and application

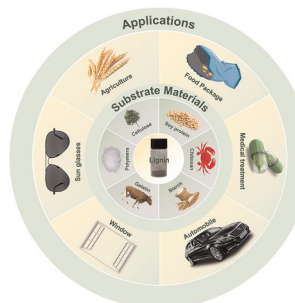
Olga Lebedeva,\* Dmitry Kultin and Leonid Kustov



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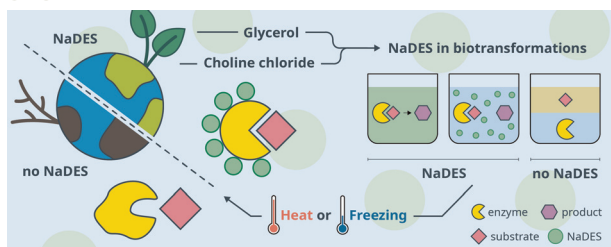
### Lignin-containing biodegradable UV-blocking films: a review

Danning Wang, Yuanjie Gu, Shu Feng, Weisheng Yang,\* Hongqi Dai, Huining Xiao, Jingquan Han,\* Danning Wang, Yuanjie Gu, Shu Feng, Weisheng Yang,\* Hongqi Dai, Huining Xiao and Jingquan Han\*



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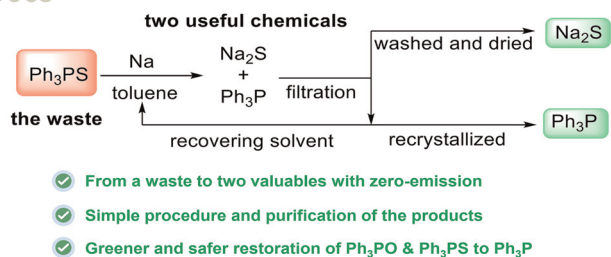


### Natural deep eutectic solvents (NaDES): translating cell biology to processing

Miša Mojca Cajnko, Filipa A. Vicente,\* Uroš Novak and Blaž Likozar

## COMMUNICATIONS

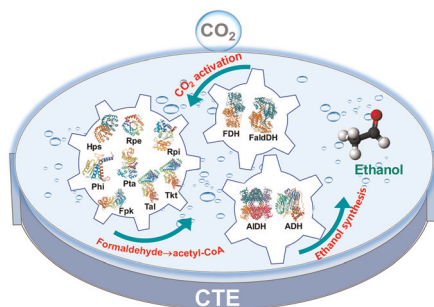
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### Restoration of triphenylphosphine using the "sulfur method": two valuable chemicals from waste products

Jian-Qiu Zhang, Xin Wang, Teng Wang, Tieqiao Chen and Li-Biao Han\*

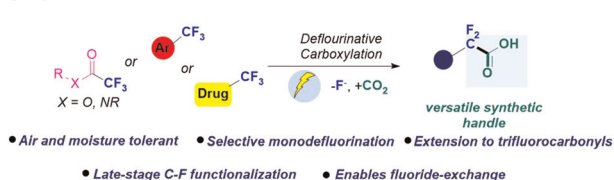
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### A cell-free artificial anabolic pathway for direct conversion of CO<sub>2</sub> to ethanol

Wanrong Dong, Xiuling Ji, Yuhong Huang,\* Yaju Xue, Boxia Guo, Dongbo Cai, Shouwen Chen\* and Suojing Zhang\*

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### A selective and mild electrochemical defluorinative carboxylation for late-stage C(sp<sup>3</sup>)-F bond functionalization

Subhojit Mondal, Soumik Sarkar, Jason W. Wang and Michael W. Meanwell\*

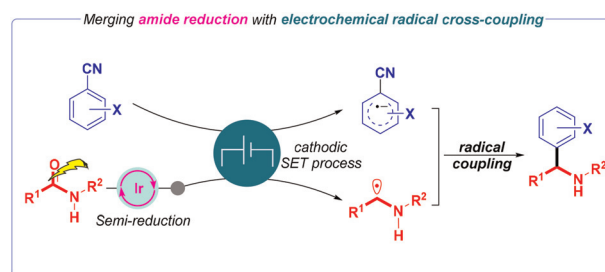


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## Deoxygenative arylation of secondary amides by merging iridium catalysis with electrochemical radical cross-coupling

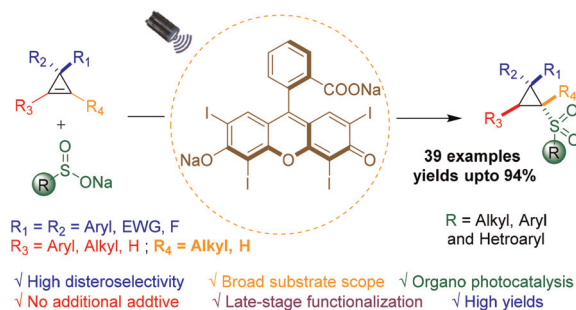
Jingan Li, Youliang He, Feng Jiang\* and Xiaoming Wang\*



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## Diastereoselective organophotocatalytic hydrosulfonylation of cyclopropenes

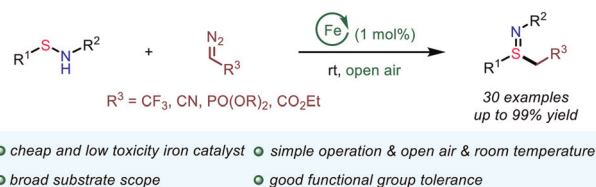
Palasetty Chandu, Sourabh Biswas, Sumit Garai and Devarajulu Sureshkumar\*



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## Synthesis of functionalized sulfilmines via iron-catalyzed sulfur alkylation of sulfenamides with diazo compounds

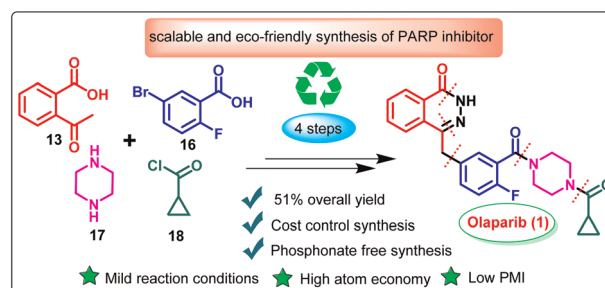
Xianda Wu, Minghong Chen, Fu-Sheng He\* and Jie Wu\*



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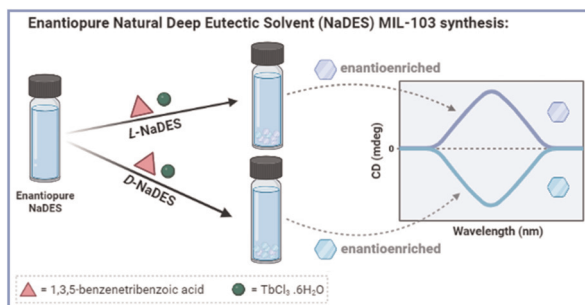
## A scalable and eco-friendly total synthesis of poly(ADP-ribose) polymerase inhibitor Olaparib

Indranil Chatterjee, Deblina Roy and Gautam Panda\*



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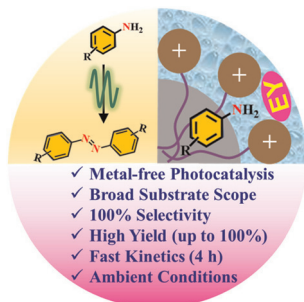
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### Enantiopure natural deep eutectic solvents for metal–organic framework chiral induction

Renata A. Maia, Audrey Fluck, Catalin Maxim, Benoît Louis\* and Stéphane A. Baudron\*

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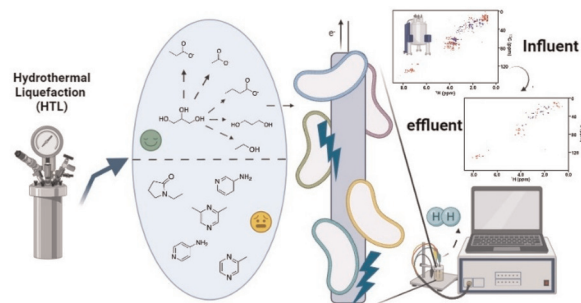


### Metal-free photocatalysis at charged aqueous interfaces: boosting the photocatalytic oxidative coupling of arylamines to azoaromatics under ambient conditions

Shivendra Singh, Vidhi Agarwal, Tridib K. Sarma\* and Tushar Kanti Mukherjee\*

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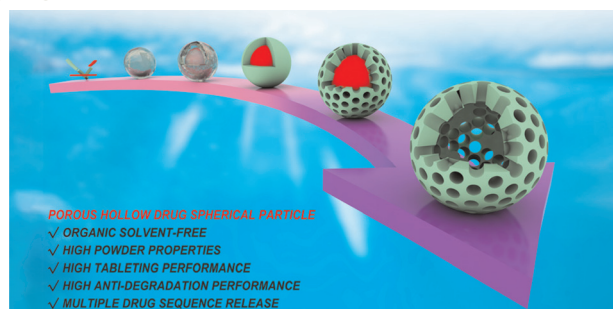
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### Molecular transformation and metabolic insights of microbial electrolysis treatment and valorization of post-hydrothermal liquefaction wastewater

Jinyue Jiang, Juan A. Lopez-Ruiz, Aaron Leininger, Lin Du, Yuqing Yan, Harold D. May and Zhiyong Jason Ren\*

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### Production of functional spherical particles with porous hollow structures in water *via* oiling-out directional agglomeration

Yanbo Liu, Maolin Li, Jiawei Lin, Xuemei Wei, Guoqi Yu, Kangli Li, Runpu Shen, Mingyang Chen,\* Ling Zhou\* and Junbo Gong

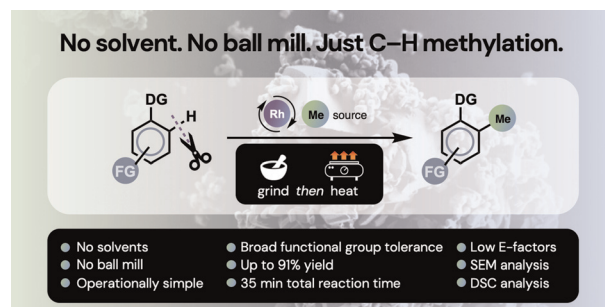


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## Solvent-free and ball mill-free catalytic C–H methylation

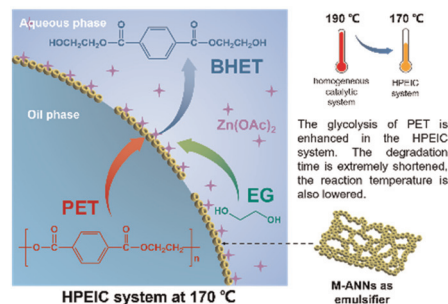
Matic Hribersek, Carolina Méndez-Gálvez, Martin Huber, Paul J. Gates, Patrick Shakari, Ayan Samanta and Lukasz T. Pilarski\*



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## Hot Pickering emulsion interfacial catalysis accelerates polyethylene terephthalate (PET) glycolysis

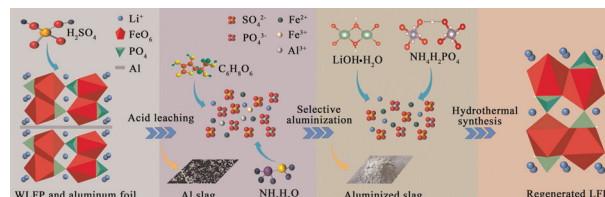
Qinan Chen, Shuyao Wu,\* Po Zhang, Xi-Ming Song and Zhining Song\*



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A closed-loop process for high-value regeneration of spent LiFePO<sub>4</sub> cathodes after selective aluminium precipitation

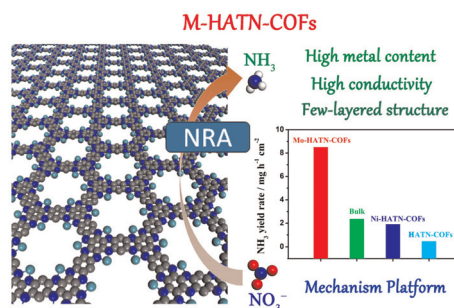
Kang Yan, Qing Chen, Zhongtang Zhang,\* Huaping Nie, Ruixiang Wang and Zhifeng Xu



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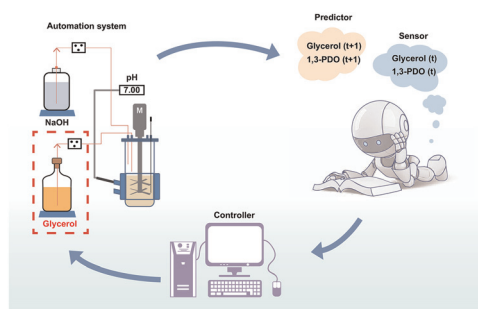
## Conductive metal-covalent organic frameworks as novel catalytic platforms for reduction of nitrate to ammonia

Hao Huang and Kaiying Wang\*



## PAPERS

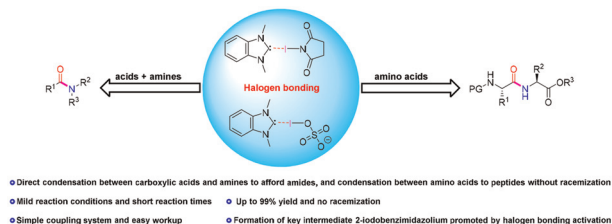
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### Artificial intelligence system for enhanced automated 1,3-propanediol green biosynthesis

Jiacheng Huang, Chade-Deng Li, Haodong Zhao, Meng Yu, Aihui Zhang\* and Baishan Fang\*

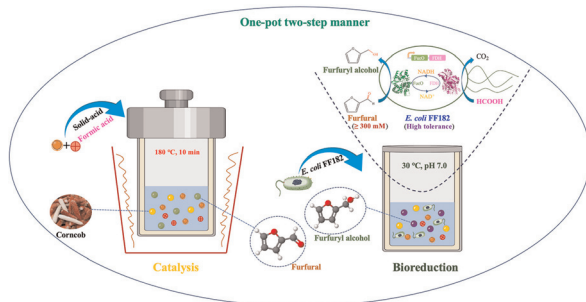
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### Halogen-bonding-mediated synthesis of amides and peptides

Mingqin Huang, Jun-Jie Li and Chi Zhang\*

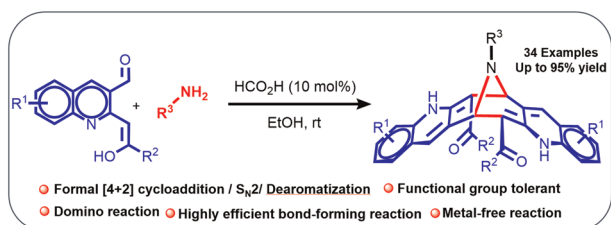
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### Significantly enhanced bioconversion of high titer biomass-derived furfural to furfuryl alcohol by robust endogenous aldehyde reductase in a sustainable way

Junhua Di, Xiaolong Liao, Qi Li, Yu-Cai He\* and Cuiluan Ma\*

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Kamran Amiri, Behrouz Nayebzadeh, Mohammad Kamangar, Mohammad Babazadeh, Alireza Ariafard, Farshad Shiri, Frank Rominger and Saeed Balalaie\*

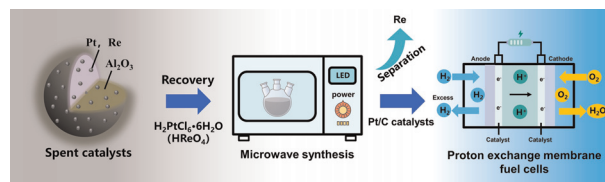


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### Pt/C electrocatalysts derived from recycled Pt/Re mixed solutions: synthesis, characterization, and electrochemical behaviour in fuel cells

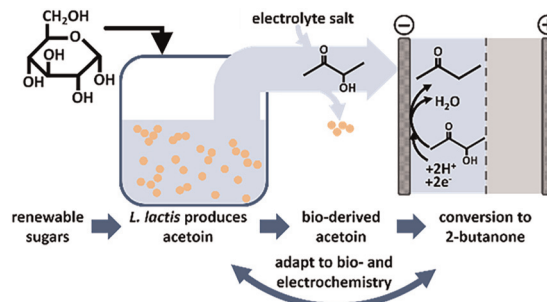
Jian Cui, Fengshan Yu, Maolin Tian, Chengcheng Yan, Tongjun Shen, Xueli Wang, Umme Hani Prova, Chunxia Wang,\* Guoyong Huang\* and Shengming Xu



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### Acetoin production by resting cells of *Lactococcus lactis* for direct electrochemical synthesis of 2-butanone

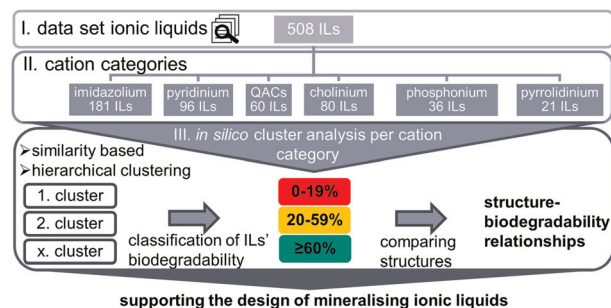
Carolin Grütering, Tobias Harhues, Fabian Speen, Robert Keller, Martin Zimmermann, Peter R. Jensen, Matthias Wessling and Lars M. Blank\*



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### Identification of structure–biodegradability relationships for ionic liquids – clustering of a dataset based on structural similarity

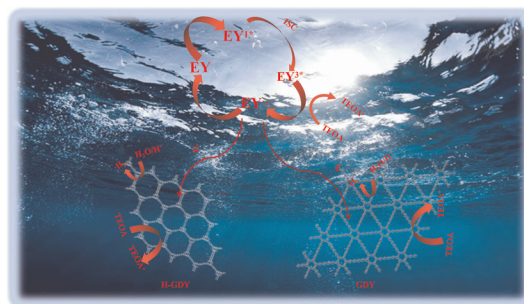
Ann-Kathrin Amsel, Oliver Olsson and Klaus Kümmerner\*



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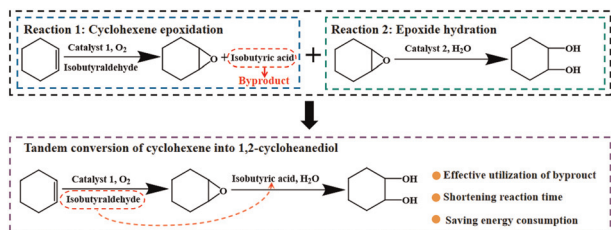
### A low-cost and high-yield green preparation method of graphdiyne and hydrogen-substituted graphdiyne and their photocatalytic properties

Zhiliang Jin\* and Youlin Wu



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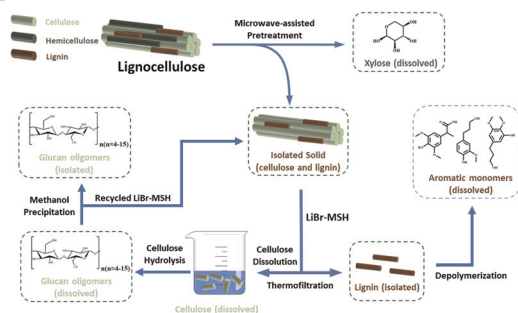
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### Room-temperature tandem conversion of cyclic alkenes into 1,2-diols using molecular oxygen and $\beta$ -MnO<sub>2</sub> heterogeneous catalyst

Shihao Su, Guojun Lv,\* Xuyang Zou, Jiangzhang Wang, Chaoyi Zhou, Yan Chen, Jialing Shen, Yangbin Shen and Zhongmin Liu

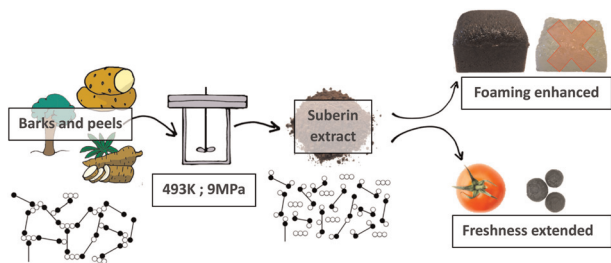
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### Cascade fractionation of birch into xylose, glucan oligomers, and noncondensed lignin improved using microwave assistance and molten salt hydrates

Xinyi Xie, Xiangyu Wang, Xinping Ouyang,\* Qiyu Liu\* and Xueqing Qiu\*

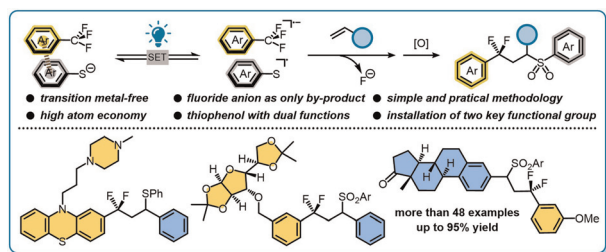
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### Towards green chemicals and edible coatings from barks and peels with near critical extraction of suberin

Brieuc Lecart, Chloé Baumsteiger, Florent Monie, Andrea Di Maria, Christophe Detrembleur, Aurore Richel and Hervé Vanderschuren\*

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### Light-induced aryldifluoromethyl-sulfonylation/thioetherification of alkenes using arenethiolates as a photoreductant and sulfur source

Jiayu Li, Zipeng Guo, Xiaofeng Zhang, Xiaoli Meng, Zhenyang Dai, Meiyun Gao, Shuo Guo\* and Pingping Tang

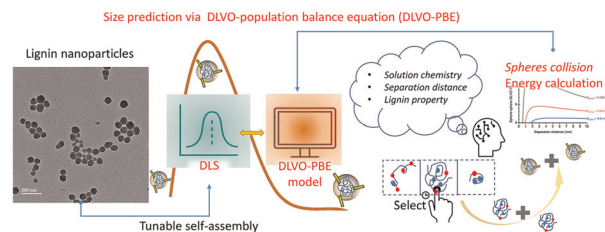


## PAPERS

9301

### Size-tailorable lignin nanoparticle synthesis: effects of solution chemistry and DLVO forces on amphiphilic balance of lignin

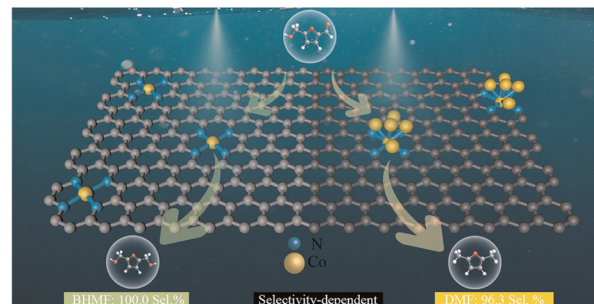
Qianwei Li, Hanwen Zhang, Jaewon Lee\* and Caixia Wan\*



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### Construction of isolated Co–N<sub>x</sub> and dual Co<sub>n</sub>–CoN<sub>x</sub> sites for the regulation of hydrogenation and hydrodeoxygenation selectivity of biomass-derived chemicals

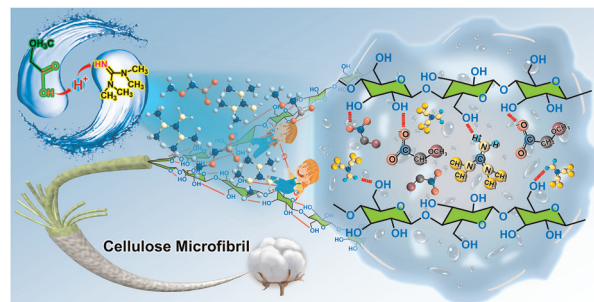
Zhanghui Xia, Libo Niu,\* Qi Wu, Yadan An and Guoyi Bai\*



9322

### Guanidine-based protic ionic liquids as highly efficient intermolecular scissors for dissolving natural cellulose

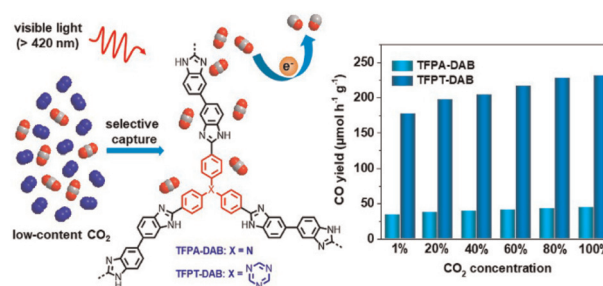
Shi-Peng Chen, Jin-Long Zhu, Xing-Ru Chen, Zhi-Hao Wang, Yong-Jie Dan, Jing Wang, Sheng-Yang Zhou, Gan-Ji Zhong, Hua-Dong Huang\* and Zhong-Ming Li\*



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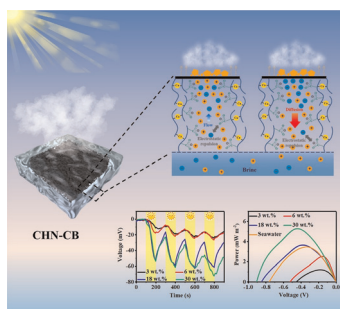
### Novel benzimidazole-linked microporous conjugated polymers for highly selective adsorption and photocatalytic reduction of diluted CO<sub>2</sub>

Wei Wu, Chunyuan Feng, Mantao Chen, Qin Tan, Yue Deng, Chao Zeng, Lixiang Zhong\* and Chunhui Dai\*



## PAPERS

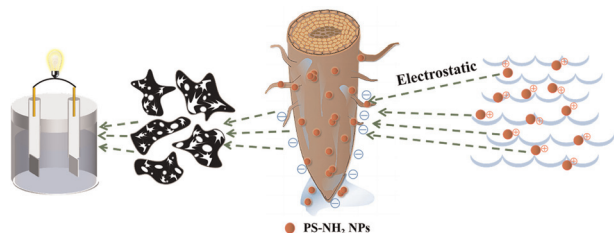
9343



### A photothermal and conductive composite hydrogel membrane for solar-driven synchronous desalination and salinity power generation

Hongjiang He, Xi-Ming Song, Mengnan Huang, Xing Hou, Zhining Song\* and Yu Zhang\*

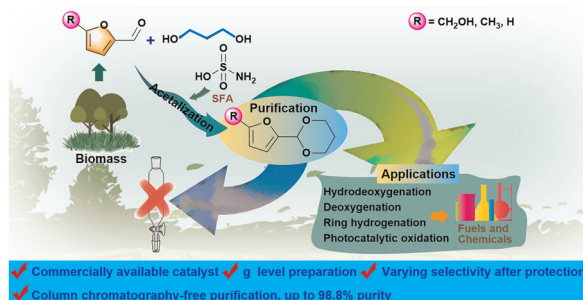
9351



### Fabricating carbon-based electrode materials via uptake of amino nano-polystyrene into *Pistia stratiotes* roots for enhancing supercapacitance

Liru Su, Jinling Li and Fen Ran\*

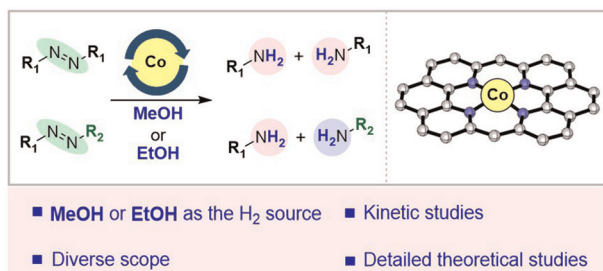
9363



### Scale-up preparation, column chromatography-free purification of protected carbonyl-containing biomass molecules and their derivatizations

Lei Huang, Chen Li, Zhidong An, Heqi Zhang, Dionisios G. Vlachos\* and Jiang Li\*

9374



### Co-SAC catalyzed utilization of methanol and ethanol in the transfer hydrogenation of azo bonds: experimental and theoretical studies

Dibyajyoti Panja, Sadhan Dey, Rohini Saha, Rajib Sahu, Gourab Kanti Das, Preeti Bhowe and Sabuj Kundu\*

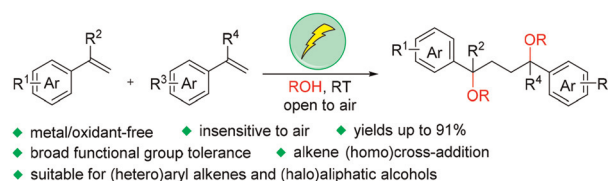


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9388

## Electricity-driven 1,4-alkoxydimerization of alkenes via radical–polar crossover

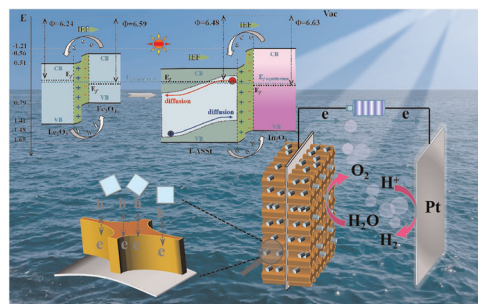
Yu-Fang Tan, Dan Yang, Yu-Hao Yang, Jin-Feng Lv, Lan-Xi Zong, Zhi Guan\* and Yan-Hong He\*



9394

Electrochemically grown  $\text{Fe}_2\text{O}_3/\text{Fe}_3\text{O}_4$  hetero-structure nanotubes with  $\text{In}_2\text{O}_3$  induced tandem internal electric fields for enhanced photoelectrochemical water oxidation

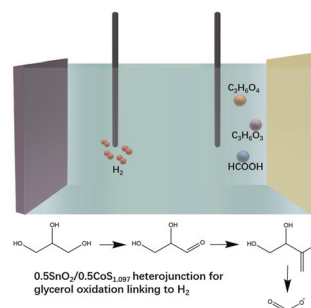
Xiaohui Yan, Gang Li,\* Kai Shen, Congwei Wang\* and Kaiying Wang\*



9405

 $\text{SnO}_2/\text{CoS}_{1.097}$  heterojunction as a green electrocatalyst for hydrogen evolution linking to assistant glycerol oxidation

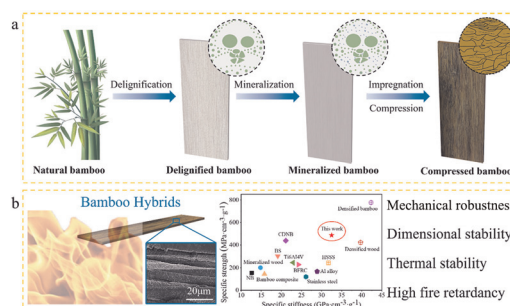
Xinjie Xie, Chunyong Zhang, Meng Xiang, Chengbin Yu, Wangxi Fan, Shuang Dong\* and Zhou Yang\*



9413

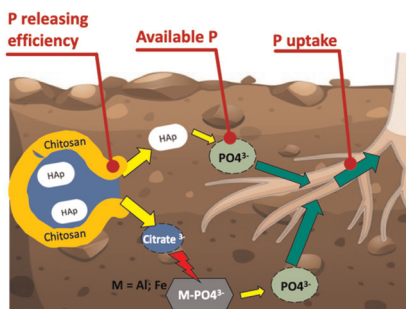
## High strength, superior fire retardancy, and dimensional stability of cellulosic hybrids

Wen He,\* Rui Wang, Qunyan Pang, Ziliang Dai, Shuang Liang, Bairen Wei, Qiuling Ji, Wenxuan Li, Gangzheng Hu, Xingfeng Li, Yue Jiao,\* Tripti Singh and Qiliang Fu\*



## PAPERS

9422



### Microflow synthesis of a formulation of phosphorus fertiliser to enhance the P content in soil and P uptake in wheat

Tu Nguyen Quang Le, Karen Robertson, Marc Escribà-Gelonch, Petra Marschner, Nam Nghiep Tran, Philip Michael Williams, Ian Fisk and Volker Hessel\*

## CORRECTION

9438

### Correction: Enzymatic amide bond formation: synthesis of aminooxo-acids through a *Mycobacterium smegmatis* acyltransferase

Michael S. Christodoulou,\* Martina Letizia Contente,\* Sabrina Dallavalle and Andrea Pinto

