

# Green Chemistry

Cutting-edge research for a greener sustainable future

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### Cover

See Per-Olof Syrén *et al.*,  
pp. 11147–11163.

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Söderberg and  
Per-Olof Syrén from  
*Green Chem.*, 2024, **26**,  
11147.

## EDITORIAL

11016

### Measuring green chemistry: methods, models, and metrics

André Bardow, Javier Pérez-Ramírez, Serenella Sala and Luigi Vaccaro

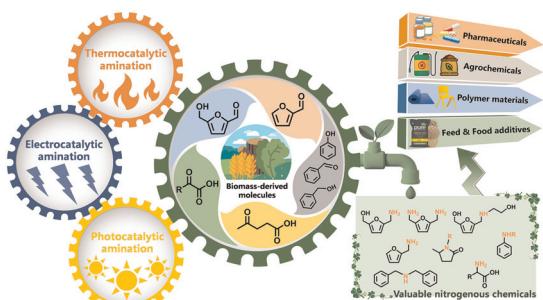


## CRITICAL REVIEW

11019

### Catalytic C–N bond formation strategies for green amination of biomass-derived molecules

Yan Zhong, Feng Liu, Jingsha Li and Chunxian Guo\*



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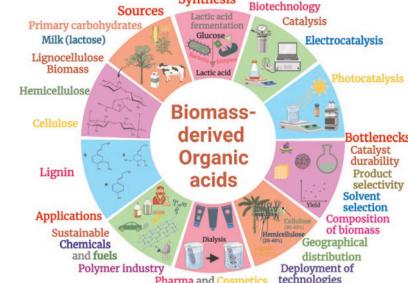


## TUTORIAL REVIEWS

11061

**Scaling up clean production of biomass-derived organic acids as a step towards the realization of dual carbon goals: a review**

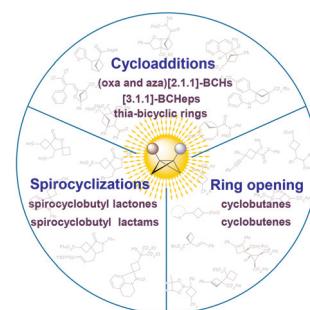
Zulfiqar Ali, Jiliang Ma\* and Runcang Sun\*



11083

**Visible light-induced strain-release transformations of bicyclo[1.1.0]butanes**

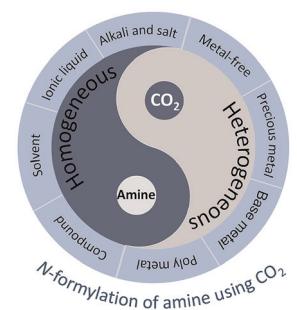
Qing-Bao Zhang,\* Feng Li, Bin Pan, Shanshan Zhang, Xiang-Guo Yue and Qiang Liu\*



11106

**Recent advances in *N*-formylation reaction for the chemical recycling of carbon dioxide**

Qiang Yuan, Xiao Cai, Weiping Ding and Yan Zhu\*

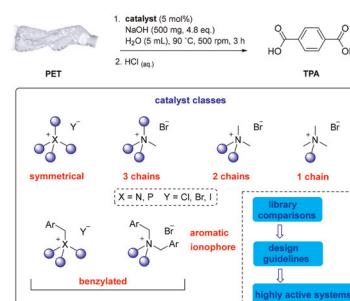


## COMMUNICATIONS

11125

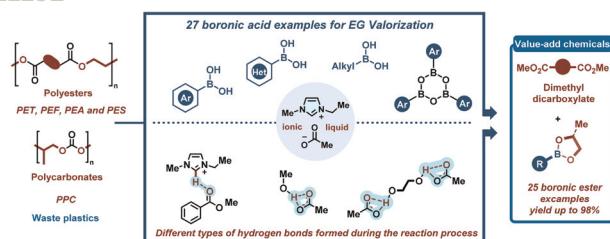
**Effect of a phase transfer catalyst structure on the alkaline hydrolysis of poly(ethylene terephthalate)**

Lee B. Anderson, Conall Molloy, Lorenzo Pedrini, Ian L. Martin and Stephen J. Connon\*



## COMMUNICATIONS

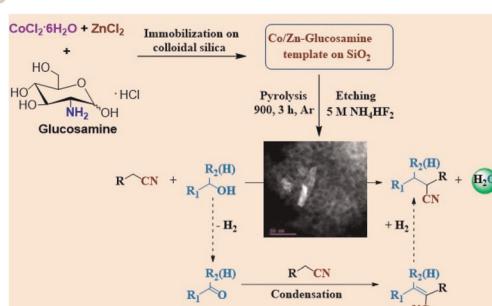
11132



## Converting waste PET into dimethyl terephthalate and diverse boronic esters under metal-free conditions

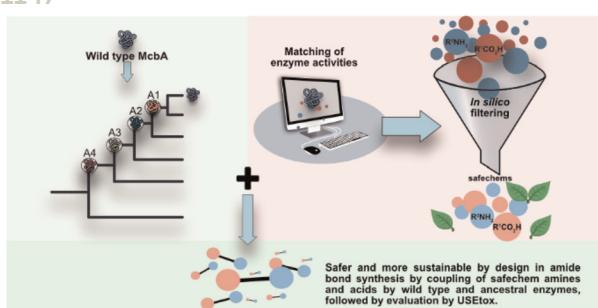
Minghao Zhang, Yunkai Yu, Zhuo Wang, Shaoyu Zhang, Xiong Gao, Jiaming Liu, Jing Li, Weixiang Wu and Qingqing Mei\*

11140



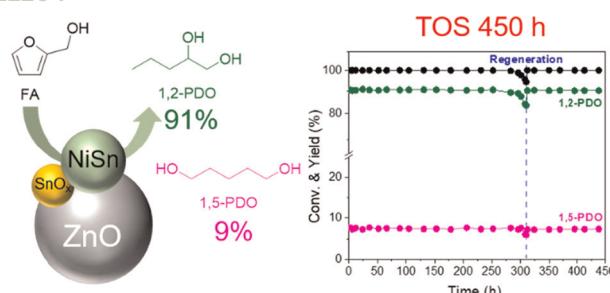
## PAPERS

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Reusable Co-catalysts for general and selective  $\alpha$ -alkylation of nitriles with alcohols

Zhuang Ma, Zechen Wu, Carsten Kreyenschulte, Stephan Bartling, Henrik Lund, Matthias Beller\* and Rajenahally V. Jagadeesh\*

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## Toward safer and more sustainable by design biocatalytic amide-bond coupling

Elisabeth Söderberg, Kerstin von Borries, Ulf Norinder, Mark Petchey, Ganapathy Ranjani, Swapnil Chavan, Hanna Holmquist, Magnus Johansson, Ian Cotgreave, Martin A. Hayes, Peter Fantke and Per-Olof Syrén\*

## Continuous production of 1,2-pentanediol from furfuryl alcohol over highly stable bimetallic Ni–Sn alloy catalysts

Ajaysing S. Nimbalkar, Kyung-Ryul Oh, Do-Young Hong, Byung Gyu Park, Maeum Lee, Dong Won Hwang, Ali Awad, Pravin P. Upare,\* Seung Ju Han\* and Young Kyu Hwang\*

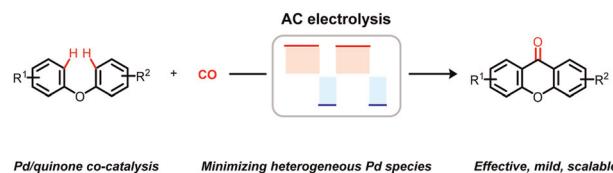


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**Augmentation of Pd-catalysed oxidative C–H/C–H carbonylation through alternating current electrosynthesis**

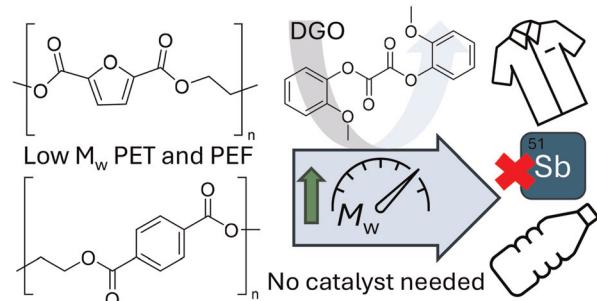
Haoran Li, Jiaqi Peng, Li Zeng,\* Linpu Zhou, Muhammad Shabbir, Feiran Xiao, Jiaxin Yuan, Hong Yi\* and Aiwen Lei\*



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**Catalyst free PET and PEF polyesters using a new traceless oxalate chain extender**

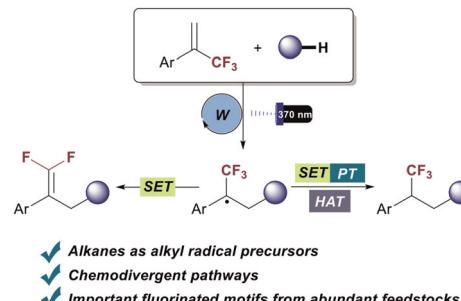
Kevin van der Maas, Daniel H. Weinland, Robert-Jan van Putten, Bing Wang and Gert-Jan M. Gruter\*



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**Chemodivergent alkylation of trifluoromethyl alkenes via photocatalytic coupling with alkanes**

Pol Martínez-Balart, Álvaro Velasco-Rubio, Sergio Barbeira-Arán, Hugo Jiménez-Cristóbal and Martín Fañanás-Mastral\*



11206

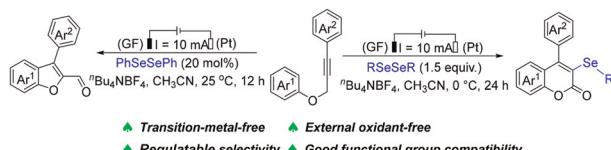
**A spatially integrated electrochemical–thermal tandem reaction for continuous mild synthesis of propylene oxide**

Yuefeng Qiu, Peng Jiang, Wenkai Ye, Jiahao Hu, Bin Zhang, Tuo Ji, Liwen Mu, Xin Feng, Xiaohua Lu and Jiahua Zhu\*



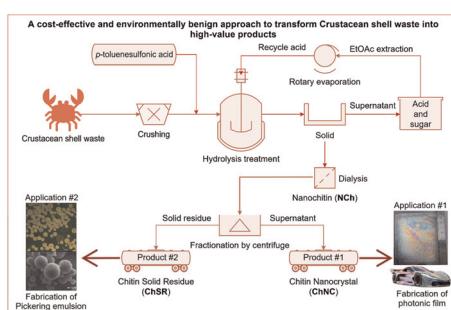
## PAPERS

11216

Regulatable selective synthesis of benzofurans and coumarins from aryl propargyl ethers *via* an electrochemical tandem cyclization reaction

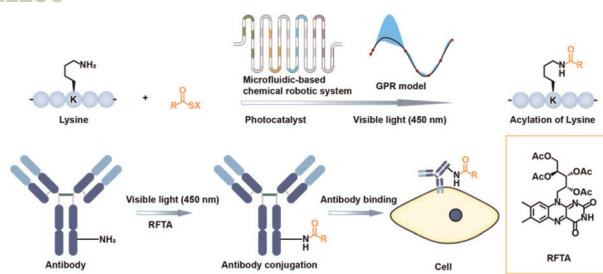
Zhaoyue Feng, Xueyi Guan, Haiyang Ma, Yingsibing Fan, Ping Liu\* and Peipei Sun\*

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Production of nanochitins *via* a shell biorefinery process for self-assembly applications as photonic films and Pickering emulsions

Xuhai Zhu, Fuyan Peng, Hui Li, Rongjun Lin, Rui Lu and Fang Lu\*

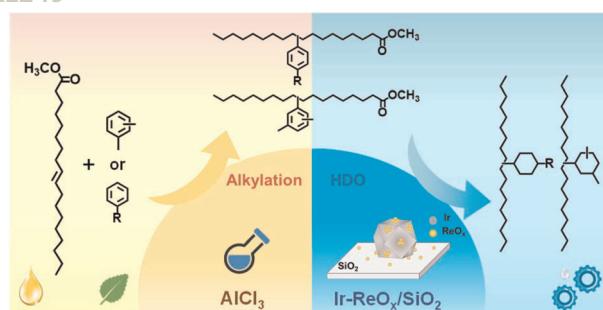
11238



## Photocatalytic acylation of lysine screened using a microfluidic-based chemical robotic system

Zhanfeng Hou, Chuan Wan, Heming Jiang, Yuena Wang, Yun Xing, Jinpeng Wang, Zhihong Liu, Xiaochun Guo, Yuhao An, Wei Han, Rui Wang,\* Xinhao Zhang,\* Feng Yin\* and Zigang Li\*

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## Catalytic synthesis of renewable lubricant base oils with methyl oleate and aromatics

Binbin Zhou, Nan Wang, Sibao Liu\* and Guozhu Liu\*

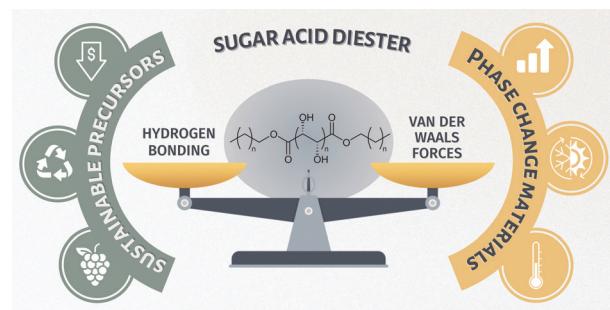


## PAPERS

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**Biomass-derived polyol esters as sustainable phase change materials for renewable energy storage**

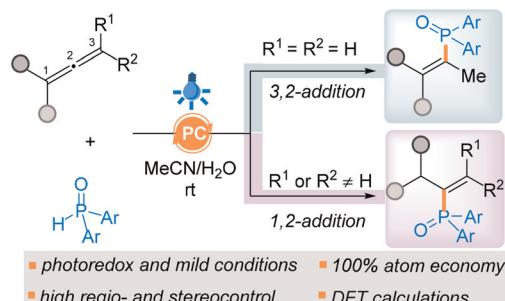
Magdalena Gwóźdź, Marta Markiewicz, Stefan Stolte, Anna Chrobok, David R. Turner, Karolina Matuszek\* and Alina Brzeczek-Szafran\*



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**Substrate-controlled regioselective hydrophosphorylation of allenes to enable photocatalytic synthesis of alkenylphosphoryl compounds**

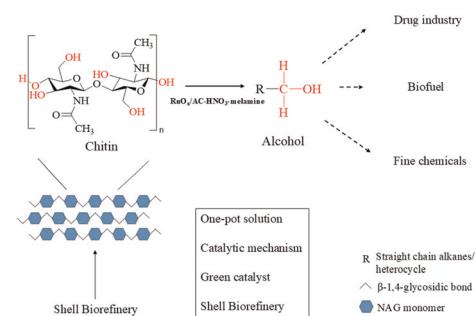
Tian-Ming Yang, Xin-Lu Fan, Wei Shi, Xuefei Zhao\* and Xu-Hong Hu\*



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**Shell biorefineries: mixed biofuel production from chitin**

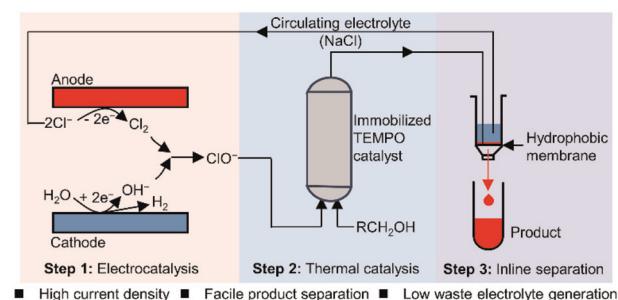
Hao Huang, Guangping Zhou, Xiaolan Cai, Min Zhuang and Shaoqu Xie\*



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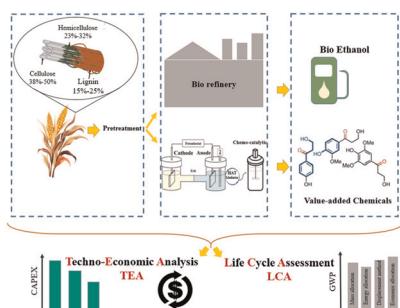
**Selective electrosynthesis of aldehydes at industrially relevant current densities via tandem electrochemical–chemical catalysis**

Ting Lin, Menglu Cai, Huijie Chen and Yiming Mo\*



## PAPERS

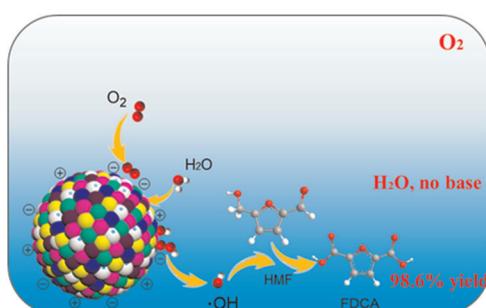
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### Comparative techno-economic and life cycle assessment of electrocatalytic processes for lignin valorization

Zahra Ebrahimpourbou, Manish Mosalpuri, Cheng Yang, Aditya Ponukumati, Corey Stephenson, Marcus Foston and Mark Mba Wright\*

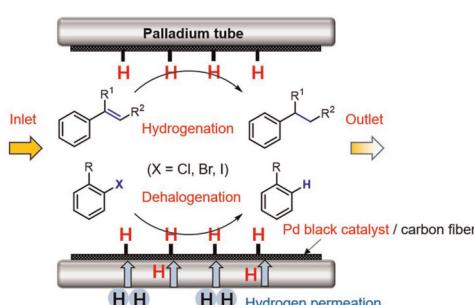
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### Thermodynamically stable synthesis of high entropy alloys and efficiently catalyzed oxidation of 5-hydroxymethylfurfural into 2,5-furandicarboxylic acid under base-free conditions

Guangqiang Lv,\* Shan Liu, Xiaoyan Chen, Mengxin Chen, Yanjuan Wu, Yuji Gao, Shuai Wang, Furong Tao, Jingui Wang\* and Liwei Niu\*

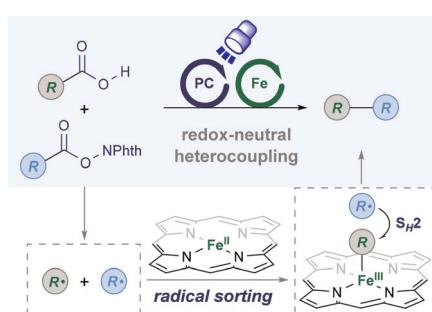
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### Development of a highly efficient electrocatalytic hydrogenation and dehalogenation system using a flow cell with a Pd tube cathode

Hiroaki Tajima, Hideki Ishii, Shinsuke Inagi and Toshio Fuchigami\*

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### Iron/photoredox dual-catalyzed redox-neutral double decarboxylative $C(sp^3)-C(sp^3)$ cross-coupling

Qi Zhang, Shanghui Wu and Xuesong Wu\*

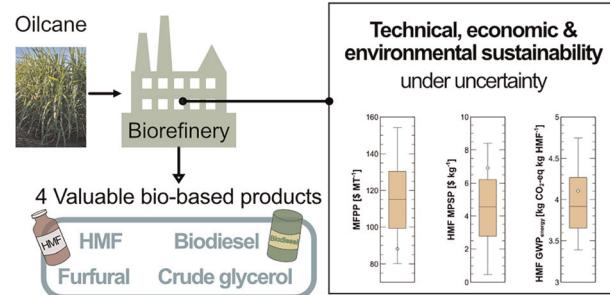


## PAPERS

11340

**Economic and environmental sustainability of bio-based HMF production and recovery from lignocellulosic biomass**

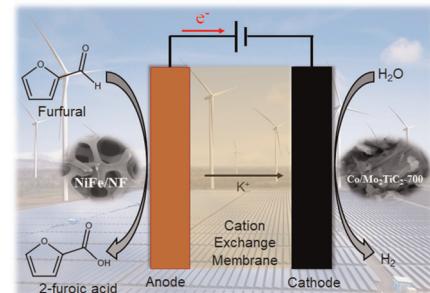
Yuyao Jia, Shraddha Maitra, Lavanya Kudli, Jeremy S. Guest and Vijay Singh\*



11351

**A paired alkaline electrolyzer for furfural oxidation and hydrogen evolution over noble metal-free NiFe/Ni and Co/MXene catalysts**

Xiaopeng Liu, Mohammad Albloushi, Michael Galvin, Connor W. Schroeder, Yue Wu\* and Wenzhen Li\*



## CORRECTION

11364

**Correction: Continuous production of 1,2-pentanediol from furfuryl alcohol over highly stable bimetallic Ni–Sn alloy catalysts**

Ajaysing S. Nimbalkar, Kyung-Ryul Oh, Do-Young Hong, Byung Gyu Park, Maeum Lee, Dong Won Hwang, Ali Awad, Pravin P. Upare,\* Seung Ju Han\* and Young Kyu Hwang\*