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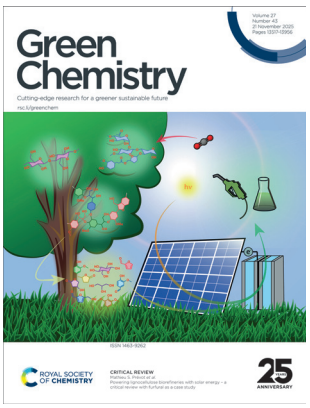
IN THIS ISSUE

ISSN 1463-9262 CODEN GRCHFJ 27(43) 13517–13956 (2025)



Cover
See Mathieu S. Prévot *et al.*, pp. 13529–13557.

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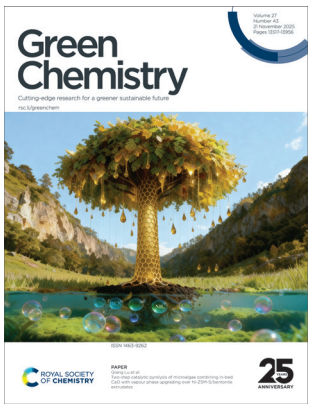

Inside cover
See Qi Niu, Xin Du, Pengyu Xing, Stef Ghysels, Kai Li, Jihong Li, Qiang Lu, Wolter Prins and Frederik Ronsse pp. 13667–13681.

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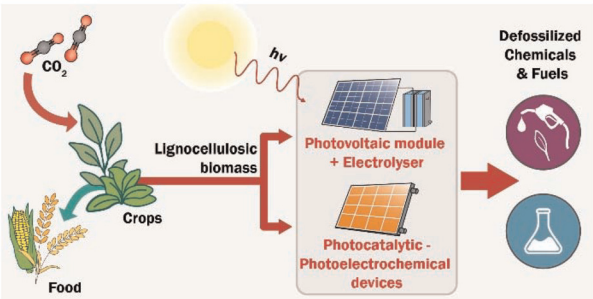
CRITICAL REVIEW

13529

Powering lignocellulose biorefineries with solar energy – a critical review with furfural as a case study

Clément Spadetto, Cyril Hachemi and Mathieu S. Prévot*

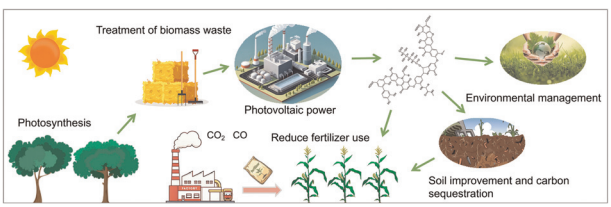


TUTORIAL REVIEWS

13558

A comprehensive review on hydrothermal humic acids: synthesis, characterization, applications, and perspectives

Hu Xu, Yangyang Li, Yexuan He, Xin Sheng, Zhiwei Zhao and Li Li*



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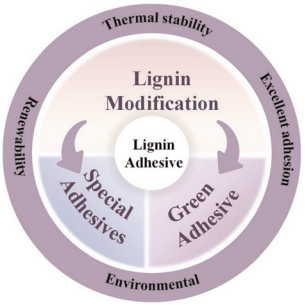
TUTORIAL REVIEWS

13577

Technology of lignin modification: progress in specialty and green adhesives' mechanical properties

Haijing Ma, Ziyang Zhang, Yuli Wang, Jiangbo Wang, Heyu Chen,* Shaohua Jiang* and Xiaoshuai Han*

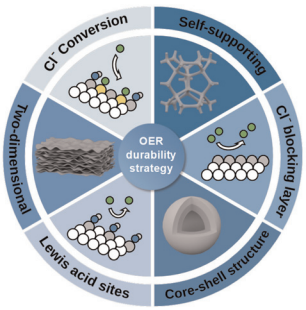


PERSPECTIVES

13607

Oxygen evolution reaction electrocatalysts for green hydrogen production in seawater: enhancement mechanism in catalytic activity and durability

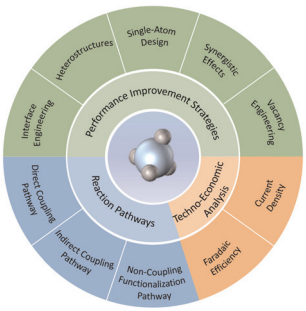
Bingxu Wang, Xiao Tang, Fahao Sun, Sailong Wang, Xiaobin Liu, Jianping Lai, Jingqi Chi* and Lei Wang*



13632

Research progress in C_{2+} products in electrocatalytic methane valorization

Zijing Suo, Yuyao Sun, Jianping Lai* and Lei Wang*

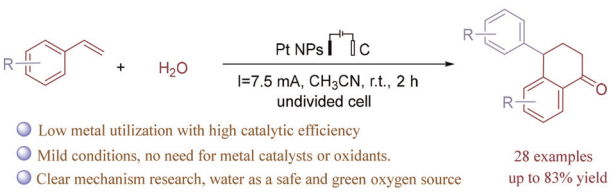


COMMUNICATIONS

13644

Electrochemical synthesis of tetralones utilizing platinum nanoparticles as the anode material

Hui Luo, Yan Wang, Yu He, Li Li, Yinfeng Ma, Guohui Wang and Jinhui Yang*



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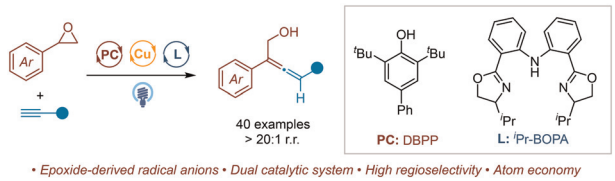
COMMUNICATIONS

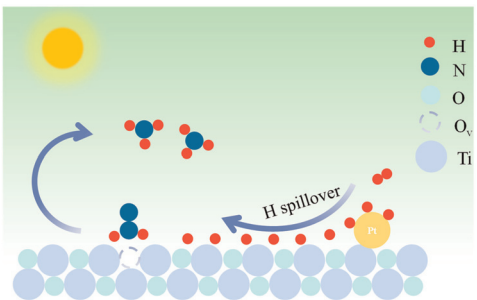
13651



Photoinduced copper-catalyzed cross-coupling of epoxides and alkynes *via* radical anions

Chen Yang, Zunsheng Chen, Zhengze Wu, Qihao Zheng, Yuchao Xue, Xiaoyuan Zeng, W. M. W. W. Kandegama,* Guozhu Zhang* and Rui Guo*

13658

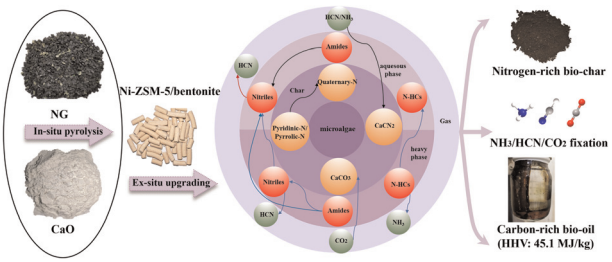


Coupling of oxygen vacancies and an anatase/TiO_2 (B) phase junction for promoting photocatalytic performance of platinum toward ammonia synthesis

Di Lei, Jinhan Liu, Xianwei Zhang, Guangming Wang, Yan Wang and Rong Fu*

PAPERS

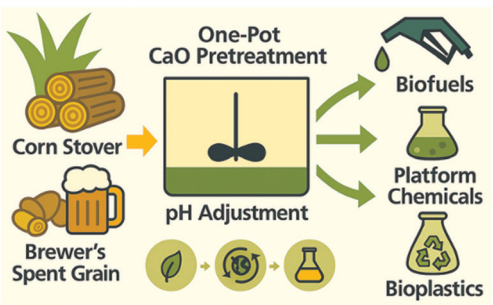
13667



Two-step catalytic pyrolysis of microalgae combining in-bed CaO with vapour phase upgrading over Ni-ZSM-5/bentonite extrudates

Qi Niu, Xin Du, Pengyu Xing, Stef Ghysels, Kai Li, Jihong Li, Qiang Lu,* Wolter Prins and Frederik Ronsse

13682



Production of ethanol, butanol, itaconic acid, 3-hydroxypropionic acid, polyhydroxyalkanoates, and lignin from lignocellulosic biomass

Haixin Peng, Mi Li, Ke Wang, Krishna Kalyani Sahoo, Deokyeol Jeong, Linjing Jia, Sumant Pandey, Eun Joong Oh, Jie Dong, Juhee Lee, Ji Qi, Nilofar Arabi, Seyedamirreza Babaei, Shubhangi Arvelli, Shang-Tian Yang, Mairui Zhang and Jikai Zhao*

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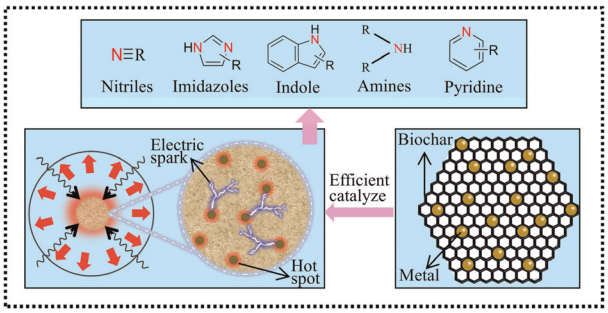
13692

Synergistic microwave–metal interactions in polyurethane/biomass co-pyrolysis: unraveling reaction mechanisms and product selectivity control

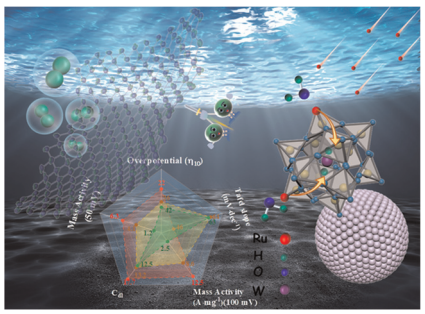
Yu Ni, Shanjian Liu,* Weiming Yi, Jiyan Ma, Qing Dong and Chengxizi Zhang



13711

Intensifying hydrogen spillover over silicotungstic acid decorated carbon black-supported Ru by green plasma preparation for boosting the electrocatalytic hydrogen evolution reaction

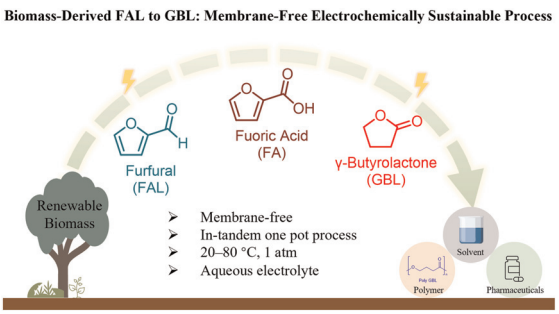
Yunzhe Ma, Hong Li, Fei Gao, Yue Hua, Xiuling Zhang, Jingsen Zhang* and Lanbo Di*



13721

Membrane-free one-pot cascaded electrocatalytic redox of furfural into gamma-butyrolactone

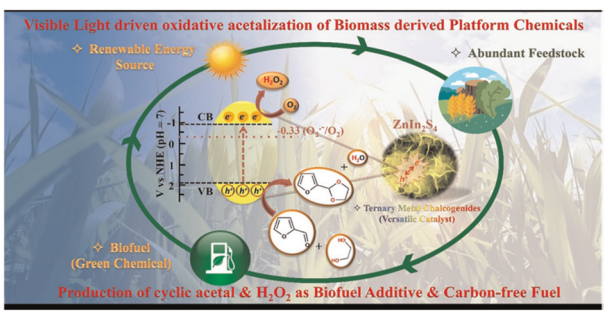
Shengqin Liu, Yangxin Jin, Qi Zhu, Xiaodan Xu, Shan Shao, Kartick Chandra Majhi, Qingguo Le, Jieming Huang, Jian Zhang, Zupeng Chen and Jason Chun-Ho Lam*



13731

Upgrading biomass-derived platform chemicals into biofuel additives in synergism with H_2O_2 *via* a $ZnIn_2S_4$ photocatalyst: towards solar fuels

Arpna Jaryal, Shivali Dhingra, Nisha Mehla, Md. Ehesan Ali and Kamalakannan Kailasam*



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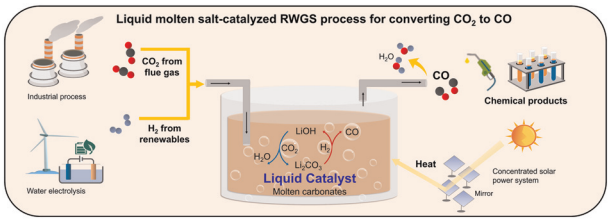
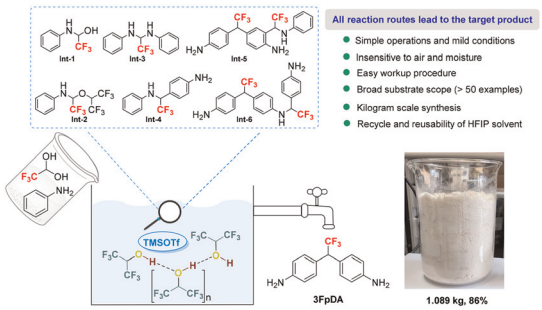


A liquid molten salt catalyst with dynamic active sites for efficient conversion of CO_2 to CO

Rui Yu,* Baoxin Gao, Xi Xiong, Kaifa Du and Kaiming Wu*

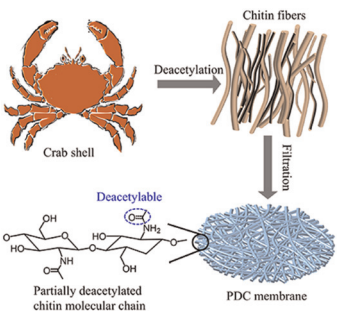
13751



Different paths lead to the same destination: a highly efficient TMSOTf/HFIP catalytic system for large-scale synthesis of fluoroalkyl-containing 4,4′-methylenedianiline (MDA) monomers

Ziyan Wu, Guodong Fang, Xindi Li, Yuhao Wu, Jinshan Li,* Yan Feng, Jialin Xie, Xueqing Zhou, Zhenchang Wen and Chunman Jia*

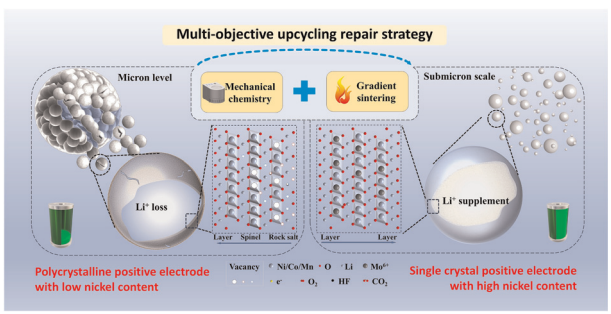
13762



Crab shell-derived chitin nanofiber separator for high-rate potassium-ion batteries

Taohong Wang,* Haoxian Shi, Junyi Wen, Donghao Yang, Boyang Zhou, Hao Xi and Zhen Zhang*

13773



Upcycling spent polycrystal $LiNi_{1/3}Co_{1/3}Mn_{1/3}O_2$ cathodes into single-crystal Ni-rich materials *via* the "four-in-one" upcycling regeneration strategy

Fu Wan,* Da Yang,* Ruiqi Liu, Yupeng Lin, Wenwei Yin, Kaida Hu, Changding Wang, Yujie Zheng* and Weigen Chen

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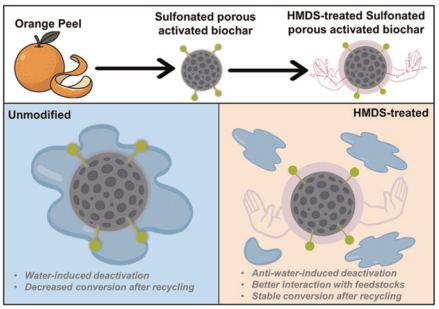
13789

Design and synthesis of biobased superhydrophobic biochar catalyst derived from *Citrus sinensis* for biodiesel production using inedible oil feedstocks

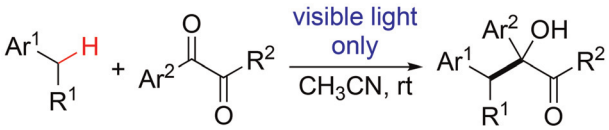
Supongsenla Ao, Shuyang Zhang, Peter K. Karoki, Rohit Kousika, Gabriel A. Goenaga-Jimenez, Tyler McCoy, Wei Wang, Nara Han, Chang Geun Yoo, Chandrakanta Guchhait, Bimalendu Adhikari, Xianzhi Meng, Thomas A. Zawodzinski, Samuel Lalthazuala Rokhum* and Arthur J. Ragauskas*



13804

External photocatalyst- and additive-free visible light-driven direct benzylic C–H functionalization with 1,2-diketones

Xiaofeng Yu, Nan Huang, Yuhua Lu, Yanping Huo, Yang Gao, Xianwei Li and Qian Chen*

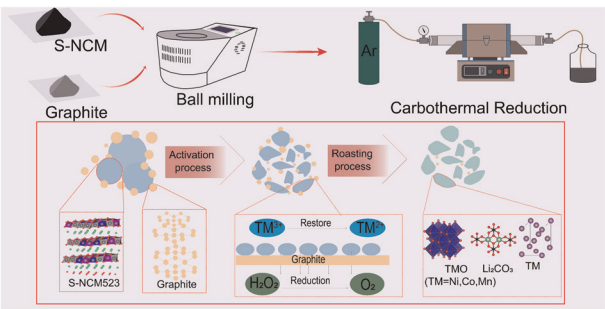


- *broad substrate scope*
- *54 examples, up to 93% yield*
- *external PC-, HAT reagent-, and additive-free*

13811

Mechanochemical-assisted carbothermal reduction for recycling spent lithium-ion batteries: a green and economical recycling strategy

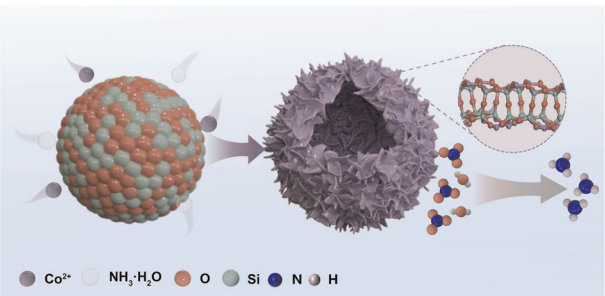
Weixin Li, Pengwei Li,* Bai Song, Peng Yue, Yinyi Gao, Dianxue Cao and Kai Zhu*



13824

Co–O–Si interface engineering for sustainable ammonia synthesis with nearly 100% faradaic efficiency

Weize Chen, Hui Su, Xuan Zheng, Xiaoping Chen, Jing Tang, Yi Li, Qingxiang Wang and Yun Ling*



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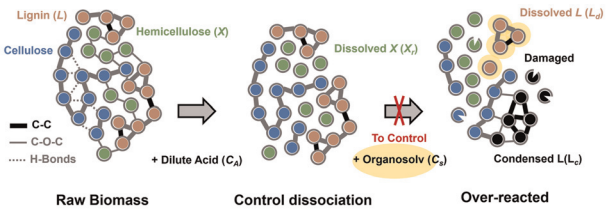
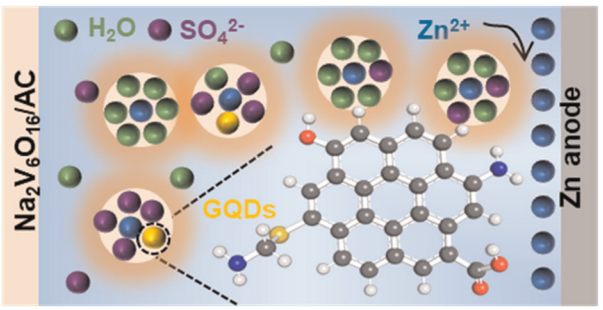


Novel control of fractionation–depolymerization for rapid dissociation of lignin-associated xylan: toward complete lignocellulosic biomass valorization in lignin-first biorefinery

Jianyu Guan, Ho-Yin Tse, Huaimin Wang, Wancheng Zhao, Raffel Dharma Patria, Molly Meng-Jung Li, Song Cheng, Tuo Wang* and Shao-Yuan Leu*

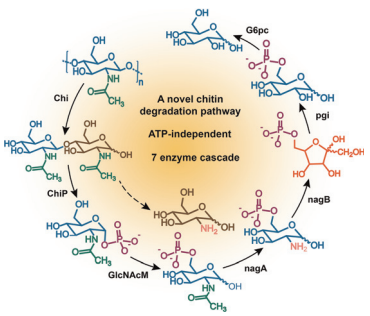
13849



Sulphur-doped graphene quantum dot electrolyte additives for enhanced cycling stability of aqueous zinc-ion batteries

Juanyun Li, Bin Wang, Zaohong Zhang, Peng Xie, Yanming Huang, Chengjie Xin and Ding Chen*

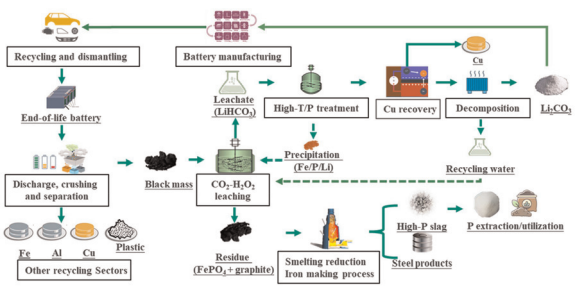
13863



ATP-independent enzymatic cascade for chitin-to-glucose bioconversion

Jin-Da Zhuang, Jin-Min Shi, Ai-Min Lu, Li Liu* and Josef Voglmeir*

13871



The proposed process for recycling end-of-life LFP

Oxidation-CO_2 leaching of spent $LiFePO_4$ for lithium extraction and impurity control

Zhiming Yan,* You Wu, Zepeng Lv, Shiying Qin, Mingrui Yang, Anwar Sattar and Zushu Li*

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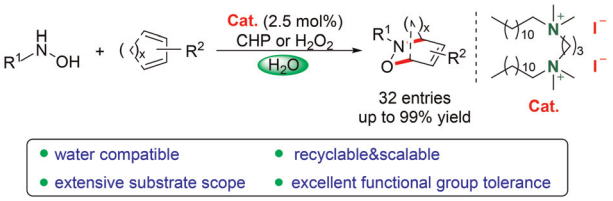
13885

A bifunctional recyclable Gemini surfactant catalyst for oxidative nitroso Diels–Alder reactions in water

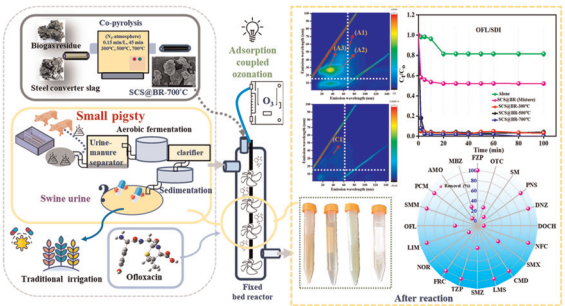
Longxia Jia, Hongling Liu, Weiwei Shi, Yingru Xu, Ruihan Sun, Jia Zuo, Bin Wang,* Jianjian Huang,* Fangrui Zhong and Dangui Wang*



13893

A greener strategy for ultra-fast adsorption-promoted ozonation of livestock-excreted pharmaceuticals by co-pyrolysis of steel converter slag and biogas residues: synergistic effects, environmental impacts and DFT study

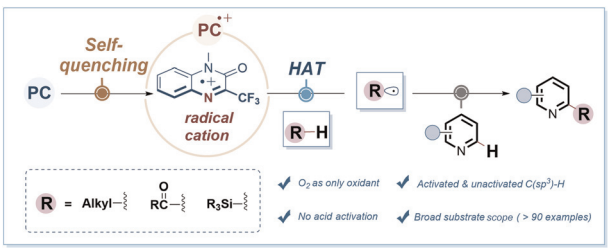
Muhammad Noman, Dinkayehu Tsegaye Awugichew, Guangwei Yu* and Tekuma Abdisa Bakare



13910

Direct C–H alkylation, acylation, and silylation of N-heteroarenes enabled by the self-quenching of quinolinones

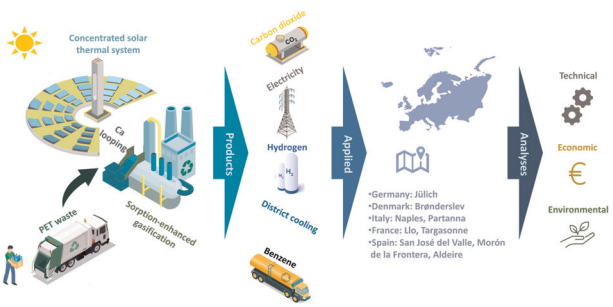
Bin Sun, Jianjie Wang, Qian Zhang, Yuanyi Chen, Yan Xu, Xiaohui Zhuang, Chun Lv, Xiao Yang, Weike Su and Can Jin*



13920

Transforming PET recycling *via* solar-assisted sorption-enhanced gasification for a circular economy: integrated techno-economic and life cycle assessment

Shouzhuang Li, Yuming Wen,* Yi Fang, Xian Li, Wujun Wang, Lili Zhang, Chi-Hwa Wang, Kevin M. Van Geem and Mika Järvinen



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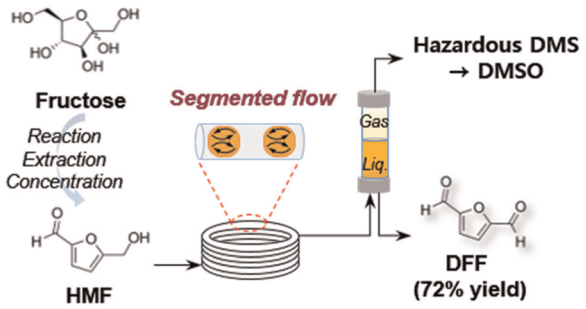
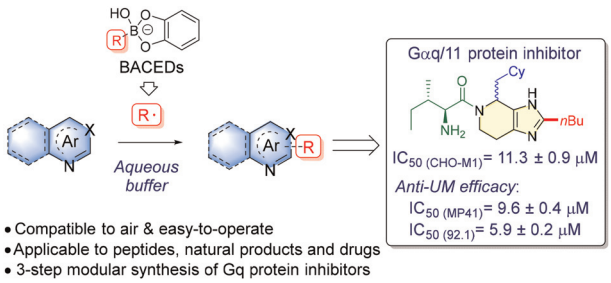


Scalable synthesis of 2,5-diformylfuran in single-phase continuous flow and segmented flow

Min Jeong Kang, Yea Seul Jang and Chan Pil Park*

13944



Chemoselective Minisci alkylation in aqueous medium: a general strategy for functionalization of complex N-heteroarenes and biomolecules

Qi-Long Hu, Jun-Jie Deng, Jia Ye, Jian Li, Albert S. C. Chan, Hang Su* and Xiao-Feng Xiong*

CORRECTION

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Correction: A dynamic sulfur-rich network from silicone industry waste

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