

Green Chemistry

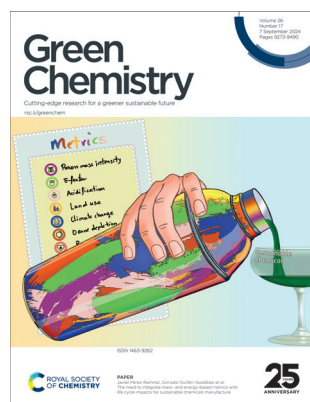
Cutting-edge research for a greener sustainable future

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See Javier Pérez-Ramírez, Gonzalo Guillén-Gosálbez *et al.*, pp. 9300–9309.

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Inside cover

See Chuanling Si, Lin Dai *et al.*, pp. 9281–9294.

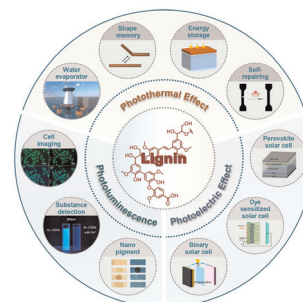
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TUTORIAL REVIEW

9281

The development of lignin towards a natural and sustainable platform for optical materials

Hai Liu, Yanhua Guan, Li Yan, Yong Zheng, Chuanling Si* and Lin Dai*

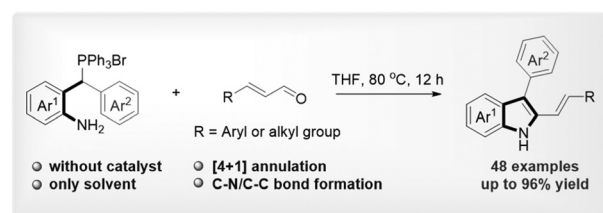


COMMUNICATION

9295

A concise protocol for the synthesis of 2-alkenylindoles through [4 + 1] annulation of aminobenzyl phosphonium salts with acrylaldehydes

Jia-Cheng Yang, Mao-Lin Liao, Ping-Gui Li* and Liang-Hua Zou*



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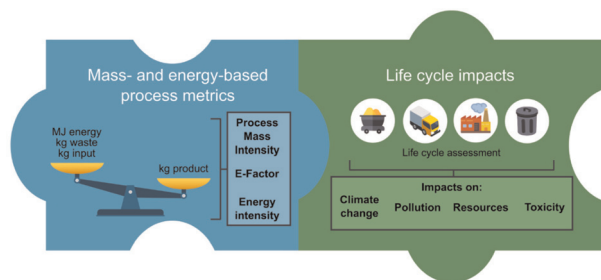
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Fundamental questions
Elemental answers

9300

The need to integrate mass- and energy-based metrics with life cycle impacts for sustainable chemicals manufacture

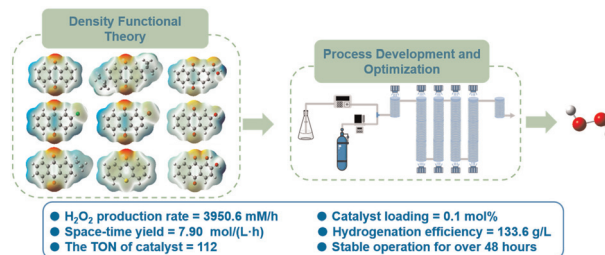
Elysia Lucas, Antonio J. Martín, Sharon Mitchell, Abhinandan Nabera, Lucas F. Santos, Javier Pérez-Ramírez* and Gonzalo Guillén-Gosálbez*



9310

Continuous photocatalytic preparation of hydrogen peroxide with anthraquinone photosensitizers

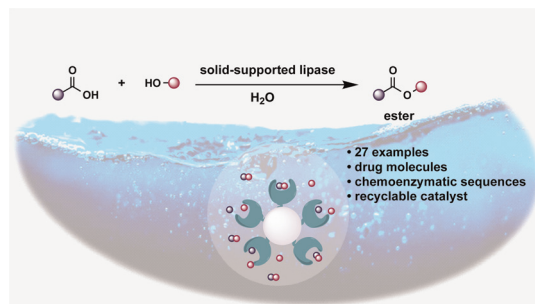
Zongyi Yu, Shichang Li, Yufeng Wu, Cunfei Ma, Jianing Li, Liyuan Duan, Zunchao Liu, Huinan Sun, Guofeng Zhao, Yue Lu, Qilei Liu,* Qingwei Meng* and Jingnan Zhao*



9320

Dehydration in water: solid-supported lipases as green catalysts for esterification

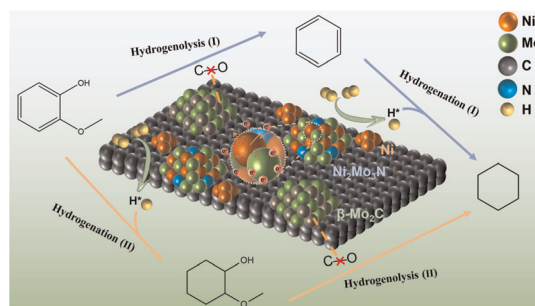
Rohan M. Thomas, Monica S. Lopez Lemus, Krithika Ganesh, David B. Obbard, Karthikeyan Sivashanmugam, Ganesh Sambasivam, Yang Yang and Bruce H. Lipshutz*



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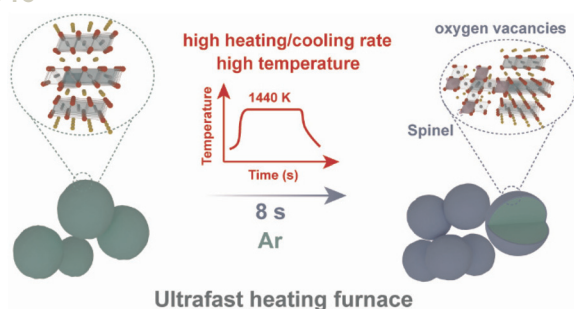
Efficient hydrodeoxygenation of lignin-derived phenolic compounds under acid-free conditions over carbon-supported NiMo catalysts

Shan Jiang, Riyang Shu,* Anqi Wang, Zhuoli Deng, Yuhong Xiao, Jiajin Li, Qingwei Meng and Qian Zhang*



PAPERS

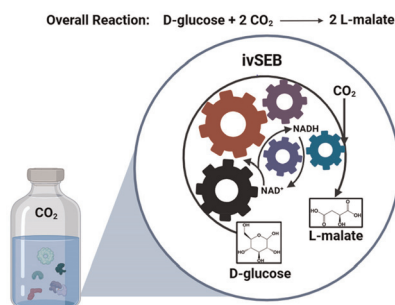
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Ultrafast, *in situ* transformation of a protective layer on lithium-rich manganese-based layered oxides for high-performance Li-ion batteries

Yun-Chao Yin, Yan Li, Xueshan Hu, Zhi Zou, Yuanmao Chen, Zheng Liang, Lihui Zhou,* Jinlong Yang* and Jiayu Wan*

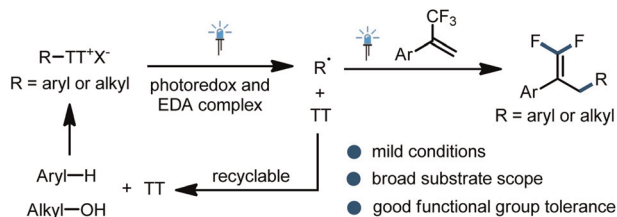
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Green method of synthesizing L-malate from D-glucose via CO₂ fixation using an ATP-free *in vitro* synthetic enzymatic biosystem

Lin Fan, Shangshang Sun, Zhidan Zhang, Yanmei Qin, Peter Ruhdal Jensen* and Chun You*

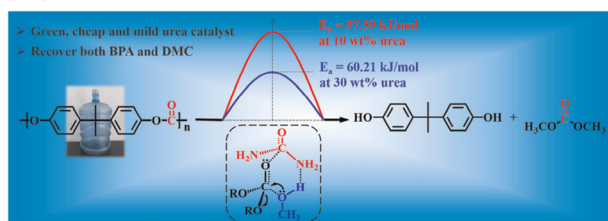
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Visible light-promoted defluorinative alkylation/arylation of α -trifluoromethyl alkenes with thianthrenium salts

Yue Zhang, Jianyou Mao, Zhihong Wang, Liangfu Tang* and Zhijin Fan*

9378



Degradation of polycarbonate waste to recover bisphenol A and dimethyl carbonate using urea as a cheap green catalyst

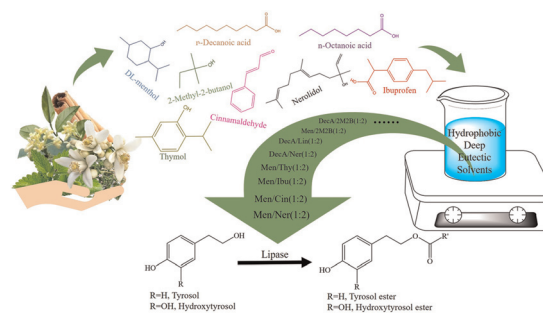
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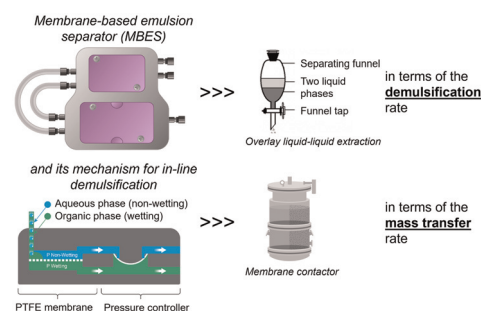
Kang-Hong Wang, Cheng Yang, Guo-Bin Liang, Ying-Fen Meng, Yong Zou, Shuangfei Li and Zhen Yang*



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Liquid–liquid extraction for *in situ* carboxylic acid recovery via continuous membrane-based emulsion separations

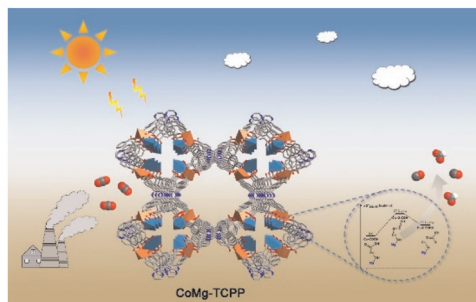
Yian Chen, Patrick O. Saboe, Jacob S. Kruger, Eric C. D. Tan, Jacob W. Dempsey, Jeffrey G. Linger, Violeta Sánchez i Nogué, Eric M. Karp and Gregg T. Beckham*



9415

Promoted CO₂ photoreduction toward HCOOH generation through a nucleophilic effect in Co/Mg synergistic catalysis

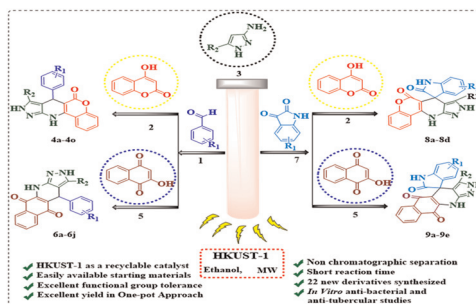
Luyao Wang, Siqi You, Yaru Gong, Jianxia Gu, Jiangwei Zhang, Guogang Shan,* Bo Zhu,* Weiting Yang, Chunyi Sun,* Xinlong Wang and Zhongmin Su



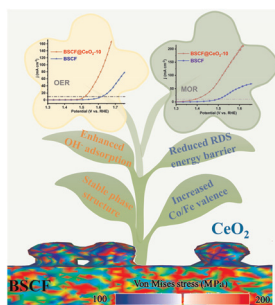
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Catalytic activity of HKUST-1 for the synthesis of fused *N*-heterocycles under microwave irradiation and studies of their *in vitro* anti-bacterial and anti-tubercular activities

Munmee Goswami, Pooja Paul, Ridahunlang Nongkhaw, Jyothi Kumari, Dharmarajan Sriram and Rishanlang Nongkhaw*



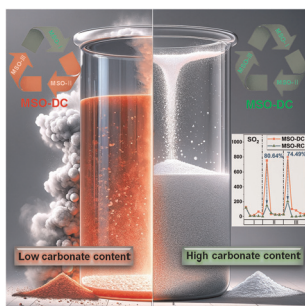
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A novel $\text{Ba}_{0.5}\text{Sr}_{0.5}\text{Co}_{0.8}\text{Fe}_{0.2}\text{O}_{3-\delta}$ and CeO_2 hybrid electrocatalyst for both the oxygen evolution and methanol oxidation reactions

Fuyue Liu, Fei Wu, Ran Guo, Jiabin Dang, Haoqi Qiu, Qiuju Zhang,* Chao Yang, He Miao* and Jinliang Yuan

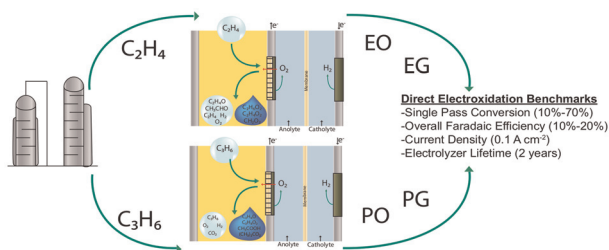
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Enhancing molten salt oxidation sustainability: thermodynamic insights for spent salt reuse and carbonate cycle replenishment

Qingguo Zhang, Yongde Yan,* Yun Xue, Fuqiu Ma, Guanqing Hu, Yuelin Wang, Jingping Wang* and Milin Zhang

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Setting benchmarks for ethylene and propylene oxidation *via* electrochemical routes: a process design and techno-economic analysis approach

Adam P. Sibal, Richa Ghosh, David W. Flaherty* and Ashlynn S. Stillwell*

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Superstructure optimization for management of low-density polyethylene plastic waste

Borja Hernández, Dionisio G. Vlachos and Marianthi G. Ierapetritou*

