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IN THIS ISSUE

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Cover
See Anastasiia M. Afanasenko, Katalin Barta *et al.*, pp. 5947–5981.

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Inside cover
See Jiaxing Zhang, Shengping You, Wei Qi *et al.*, pp. 5982–5991.

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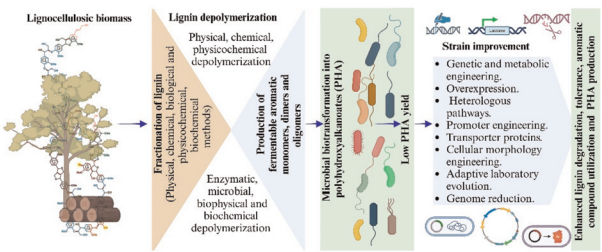
CRITICAL REVIEW

5920

Lignin valorization through microbial production of polyhydroxyalkanoates: recent trends, challenges and opportunities

Zhe Liang, Sivasamy Sethupathy,* Dang Wenqian, Hu Jinhao and Daochen Zhu*

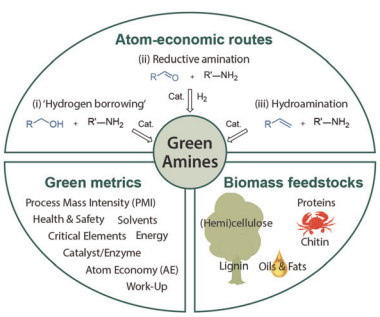


TUTORIAL REVIEW

5947

'Green' synthesis of amines from renewable resources? A detailed analysis of case studies using the CHEM21 green metrics toolkit

Anastasiia M. Afanasenko,* Noemi Deak, Jacquin October, Roberto Sole and Katalin Barta*



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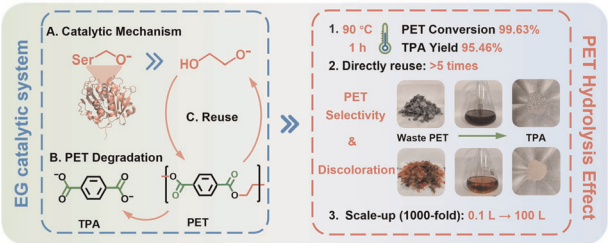
PAPERS

5982

Industrially viable and selective catalytic system: simple and sustainable pathway for efficient degradation of waste polyester textiles

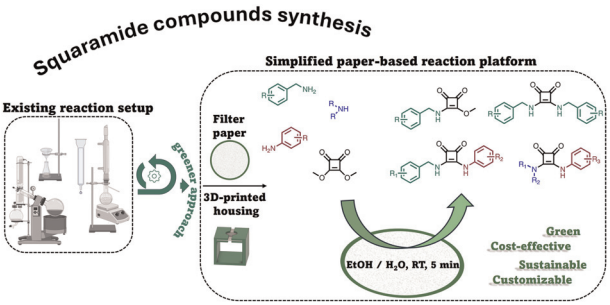
Yu Zhou, Jiaxing Zhang,* Bowen Shen, Wenyan Ba, Shengping You,* Mengfan Wang, Rongxin Su and Wei Qi*



5992

Streamlining squaramide synthesis using a sustainable and versatile paper-based platform

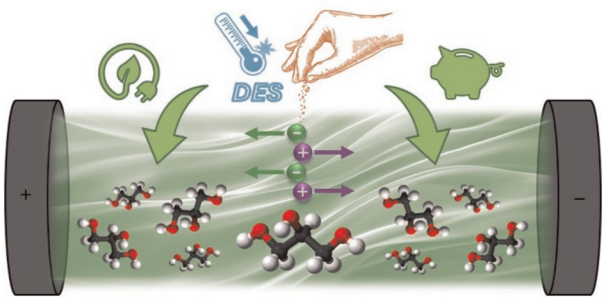
Antonella Ilenia Alfano, Panagiota M. Kalligosfyri, Valerio Baia, Margherita Brindisi* and Stefano Cinti*



6002

Eco-friendly NaCl glycerol-based deep eutectic electrolyte for high-voltage electrochemical double layer capacitor

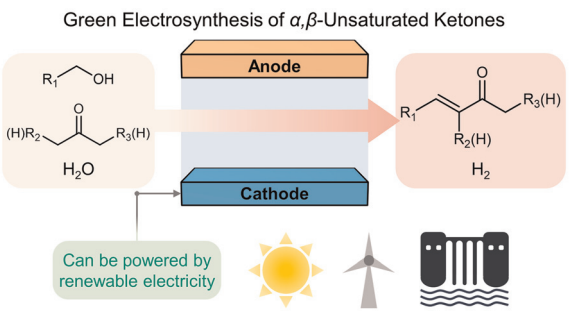
Daniele Motta, Alessandro Damin, Hamideh Darjazi, Stefano Nejrotti, Federica Piccirilli, Giovanni Birarda, Claudia Barolo, Claudio Gerbaldi, Giuseppe Antonio Elia and Matteo Bonomo*



6016

Tandem electrocatalytic benzylic alcohol oxidation and aldol condensation for efficient valuable α,β-unsaturated ketone production

Yifan Yan, Xi Cai, Jiangrong Yang, Yu Fu, Qiwei Shi, Pengjie Hao, Hua Zhou, Zhenhua Li,* Mingfei Shao* and Haohong Duan*



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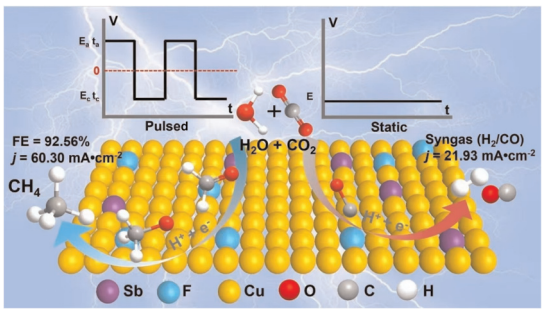
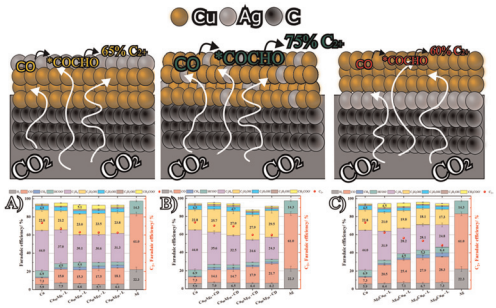
6027



Enhanced electrocatalytic CO_2 reduction to methane *via* synergistic Sb and F dual-doping on copper foil under pulsed potential electrolysis

Kuan Wan,* Xue Jiang, Xin-Peng Li, Zhe Cao, Zhen-Hong He, Weitao Wang, Huan Wang, Xiaojuan Lai* and Zhao-Tie Liu*

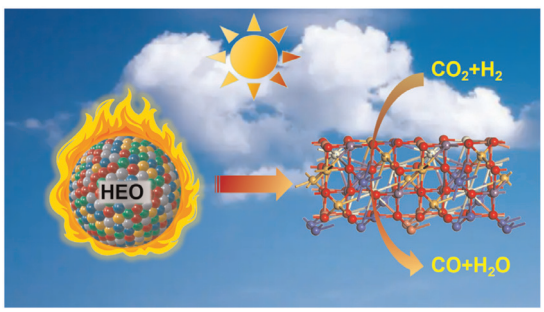
6039



Enhancing selectivity and stability in electrochemical CO_2 reduction using tailored sputtered CuAg electrodes

Mathias van der Veer, Nick Daems, Pegie Cool and Tom Breugelmans*

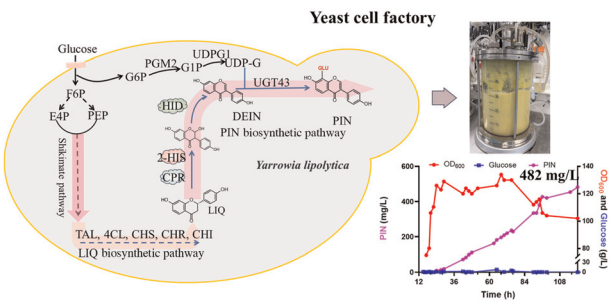
6056



Order–disorder hybrid high-entropy Co–Cu-Fe–Mn–Ce oxides for photothermal CO_2 hydrogenation

Xin-Yan Wei, Zhen-Hong He,* Mei-Xia Yang, Hui Ma, Wen-Jing Shi, Kuan Wang, Hongye Zhao,* Weitao Wang, Huan Wang and Zhao-Tie Liu*

6067



Engineering *Yarrowia lipolytica* as a green yeast cell factory for *de novo* biosynthesis of daidzein and puerarin

Tao Qian, Wenping Wei, Jiayun Xu, Ping Zhang, Mengfan Li, Yihui Zhu, Xiaochuan Chen and Bang-Ce Ye*

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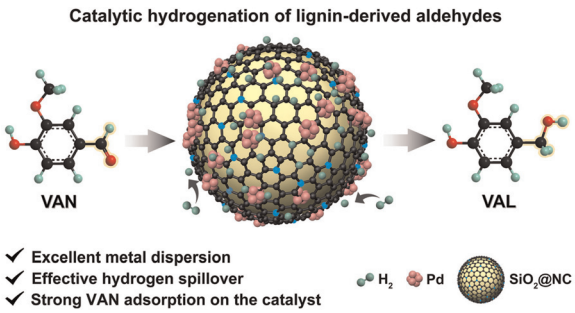
6077

Synergistic SiO_2@NC core–shell nanospheres enhance catalytic hydrogenation of lignin-derived aromatic aldehydes

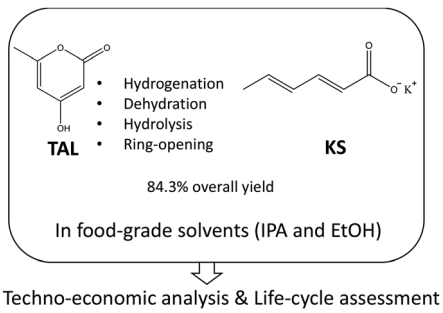
Qian Jiang, Shuguang Xu, Zuzhi Li, Xingjie Guo, Rui Zhang, Zhicheng Jiang* and Bi Shi



6087

Sustainable potassium sorbate production from triacetic acid lactone in food-grade solvents

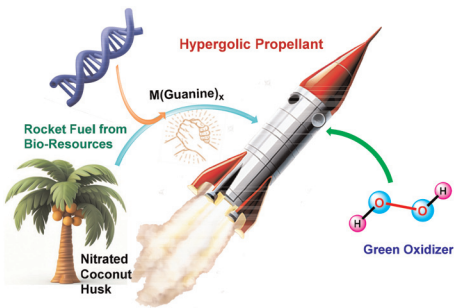
Min Soo Kim, Sarang S. Bhagwat, Leoncio Santiago-Martínez, Xiaolei Shi, Kyuhyeok Choi, Jeremy S. Guest and George W. Huber*



6105

Biomass-derived sustainable hypergolic rocket propellants with hydrogen peroxide

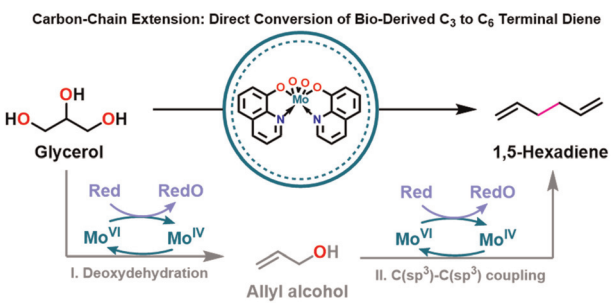
Ramlithin Mavila Chathoth, Charlie Oommen, Michael Gozin, Srinivas Dharavath, Manojkumar Jujam, Deepan Chowdhury and Jagadish Das*



6123

Upgrading biomass-derived glycerol into terminal olefins *via* molybdenum-catalyzed carbon-chain extension

Han Yin, Xiangtao Kong, Rui Lu,* Xi Zhang, Wenbing Yu, Huifang Jiang, Xuhai Zhu and Fang Lu*



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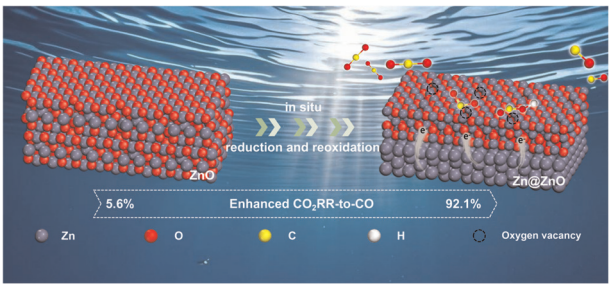
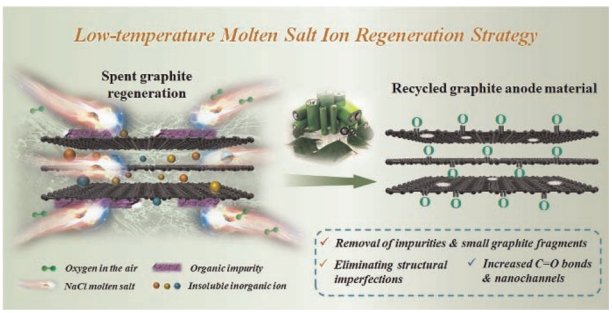
6133



Activating dynamic Zn–ZnO interface with controllable oxygen vacancy in CO_2 electroreduction for boosting CO production

Xueqi Liu, Jingmin Ge, Shiying Li, Huanhuan Yang,* Huiwen Tian, Hongpo Liu, Yaxi Li, Xiaoli Zheng, Yapeng Tian, Xinwei Cui and Qun Xu*

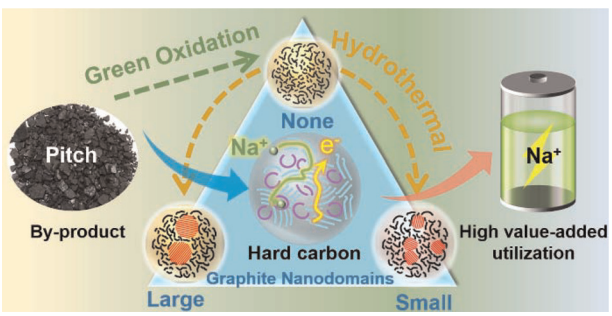
6145



Low-temperature molten salt ion regeneration strategy towards green and efficient spent graphite recycling

Wenchao Zhu, Gonggang Liu,* Jinbo Hu, Geng Su, Miaohua Liu, Xianjun Li and Binghui Xu*

6156



Molecular-level design and green process engineering: optimizing pseudo-graphitic domains in pitch-derived hard carbon for fast sodium storage

Dan Zhao, Hanqing Zhao,* Lingwei Kong, Shulian Lei, Boyan Cui, Tingjun Fu and Zhong Li*

6170

Waste-minimized, ecofriendly, and chemoselective room-temperature hydrogenation of C=C bonds using a homogeneous recyclable imidazole-based Ru(II)-*p*-cym catalyst

Rahul Daga Patil, Sandip Bapu Khatal, Manohar Shivaji Padmor and Sanjay Pratihar*

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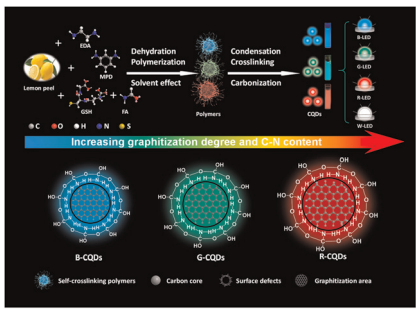
6184

Highly efficient fabrication of lemon peel-derived carbon quantum dots for multicolor light-emitting diodes

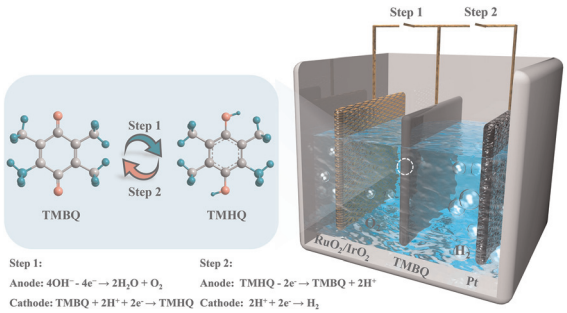
Lingli Zhu, Jin Cao, Hongmin Yang,* Dekui Shen,* Haitao Hu and Mengjia Dou



6196

Dipole moment regulation of a small-molecule quinone mediator boosts long-term cycling stability for decoupled water electrolysis

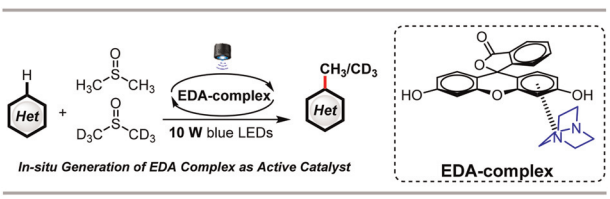
AJing Song, Xin Jin, Yuan Wei, Chunmao Xiong, Tongna Shi, Yuanyuan Ma* and Jianping Yang*



6206

A photo-Fenton-like (trideutero)methylation reaction of N/O heterocycles with DMSO(-d_6) induced by EDA complex photocatalysis

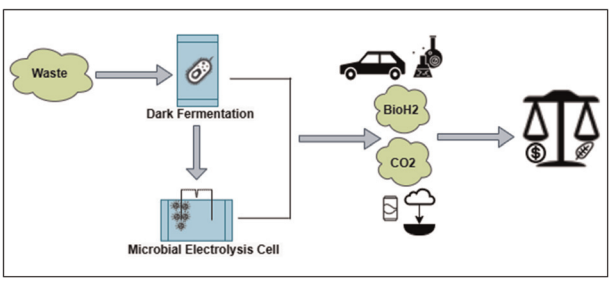
Changsheng Qin, Chenxu Li, Fang Gao, Jingfang Wang, Zhihua Zhang, Shuai Zhang, Xinyue Li, Yi Sun, Meiqian Hu, Shoucai Wang, Fanghua Ji* and Guangbin Jiang*



6213

Techno-economic and life cycle analysis of bio-hydrogen production using bio-based waste streams through the integration of dark fermentation and microbial electrolysis

Arna Ganguly, Pingping Sun,* Xinyu Liu, Hernan E. Delgado, Lili Sun and Amgad Elgowainy



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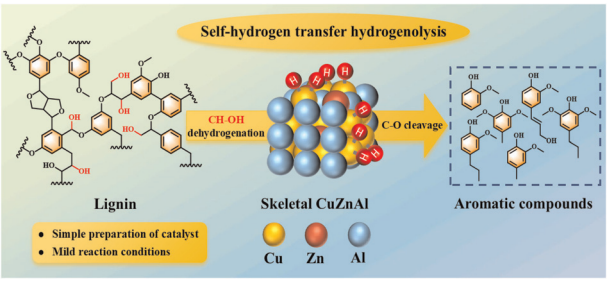
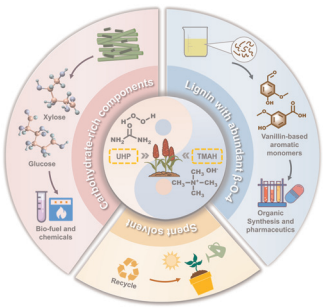


Facile depolymerization of lignin into phenolics *via* self-hydrogen transfer hydrogenolysis over a skeletal CuZnAl catalyst

Li Zhao, Qun-Xing Liu, Hao Wu, Ji-Long Zhang, Ke-Ming Li, Yao Xiao, Feng-Shuo Guo, Yao-Bing Huang* and Qiang Lu*

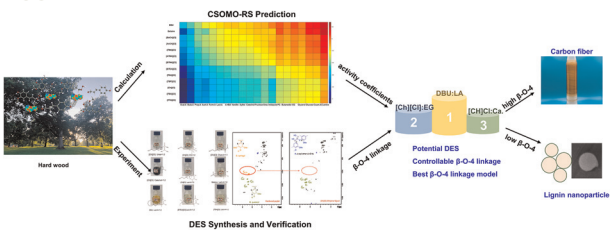
6244



One-pot lignocellulose fractionation towards efficient whole sugar conversion and aromatic monomer production using a mild alkaline oxidation system

Ziyi Yang, Feiyue Shen, Weihong Dai, Zhiwen Zeng, Jiayi Xu, Li Zhao, Wei Qi, Jinguang Hu, Dong Tian and Fei Shen*

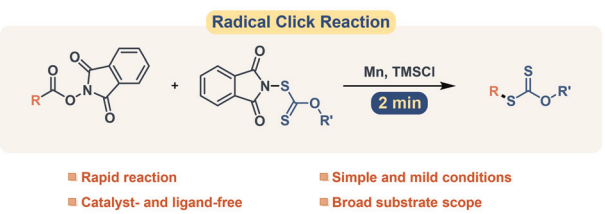
6260



Computational modeling-guided design of deep eutectic solvents for tailoring lignin chemistry during lignocellulose pretreatment

Le Zhou, Xianzhi Meng, Weiwei Li, Jiali Yu, Christian O. Kemefa, Susie Y. Dai, Arthur J. Ragauskas and Joshua S. Yuan*

6272



Radical click reaction for C–S bond construction *via* reductive coupling of phthalimide derivatives

Jia-Fan Qiao, Tian-Zhang Wang, Peng-Hui Shen, Yu-Qiu Guan, Ya-Xin Yu and Yu-Feng Liang*

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PAPERS

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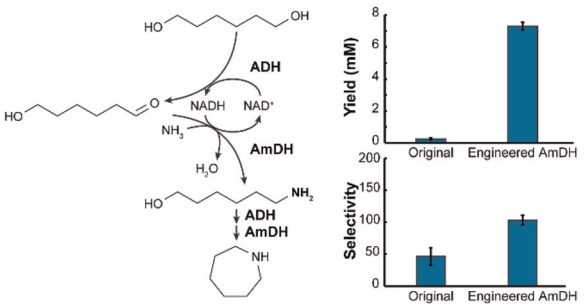
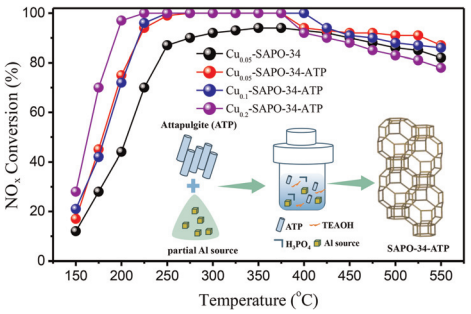
Engineered enzymatic cascade converts diols to amino alcohols

Hannah R. Valentino, Liangyu Qian, Jerry M. Parks, Erin E. Drufva, Ada Sedova, Pankti S. Mehta, Mary P. Watson, Richard J. Giannone, Stephanie S. Galanie and Joshua K. Michener*



6293

Boosting NH_3-SCR of NO_x performance through sustainable and economical synthesis of Cu-SAPO-34 zeolites from attapulgite

Yao Wang, Zhangpei Liu, Yongjun Feng,* Christopher Hardacre, Sarayute Chansai and Zhiming Liu*