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Cutting-edge research for a greener sustainable future

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IN THIS ISSUE

ISSN 1463-9262 CODEN GRCHFJ 25(23) 9441–10102 (2023)

Cover
See Junnan Wei, He Huang *et al.*, pp. 9680–9688.

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Inside cover
See Răzvan C. Cioc, Pieter C. A. Bruijnincx *et al.*, pp. 9689–9694.

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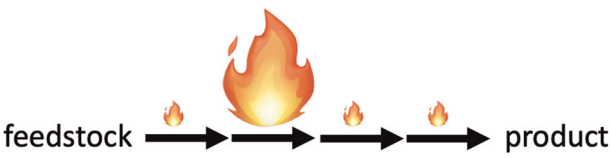
PERSPECTIVE

9457

The need for hotspot-driven research

Philip G. Jessop* and Alex R. MacDonald

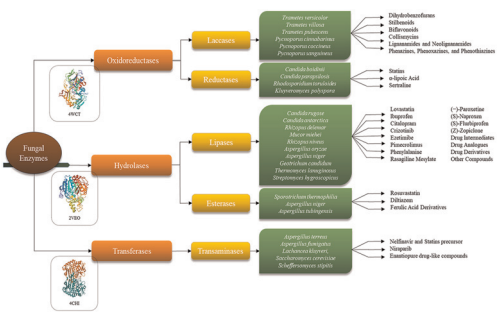


TUTORIAL REVIEWS

9463

Role of fungal enzymes in the synthesis of pharmaceutically important scaffolds: a green approach

Divas Kumar, A. K. Narula and Deepa Deswal*



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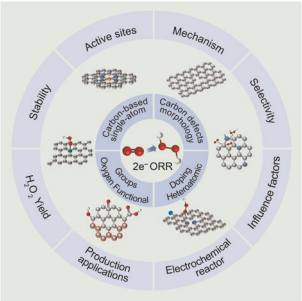
TUTORIAL REVIEWS

9501

Review and perspectives on carbon-based electrocatalysts for the production of H_2O_2 *via* two-electron oxygen reduction

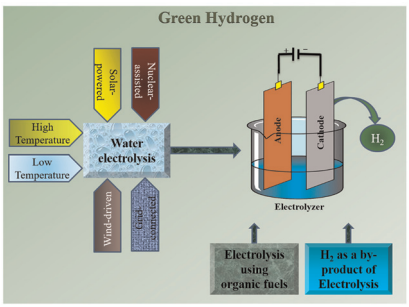
Hongjing He, Shuling Liu, Yanyan Liu,* Limin Zhou, Hao Wen, Ruofan Shen, Huanhuan Zhang, Xianji Guo, Jianchun Jiang and Baojun Li



9543

Electrochemical hydrogen production: sustainable hydrogen economy

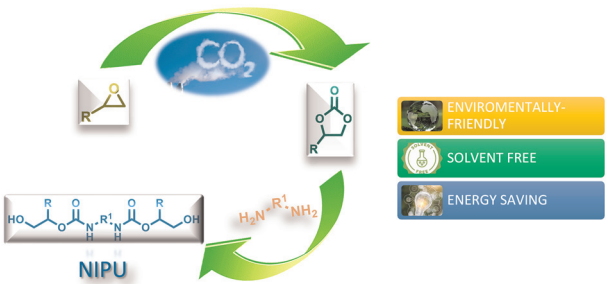
Samina Aslam, Sadia Rani, Kiran Lal, Miraj Fatima, Tomas Hardwick, Bahareh Shirinfar and Nisar Ahmed*



9574

CO_2-derived non-isocyanate polyurethanes (NIPUs) and their potential applications

Rita Turnaturi, Chiara Zagni,* Vincenzo Patamia, Vincenzina Barbera, Giuseppe Floresta and Antonio Rescifina*

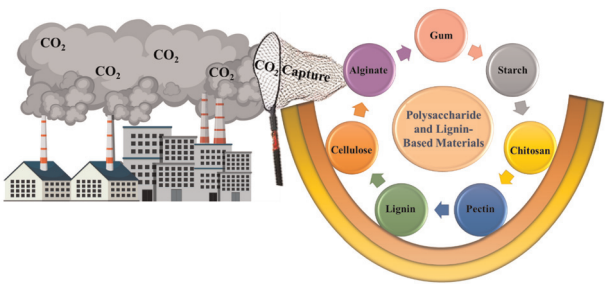


CRITICAL REVIEWS

9603

Recent developments in polysaccharide and lignin-based (nano)materials for CO_2 capture

Zahra Nezafat, Mahmoud Nasrollahzadeh,* Shahrzad Javanshir, Talat Baran and Yahao Dong



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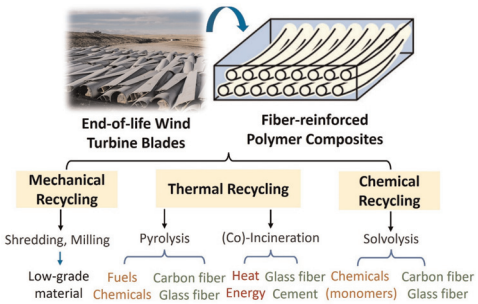
9644

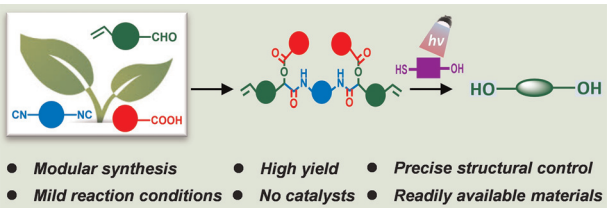


Recycling and recovery of fiber-reinforced polymer composites for end-of-life wind turbine blade management

Yafei Shen,* Sarkodie Emmanuel Apraku and Yupeng Zhu

COMMUNICATIONS

9659



A facile, general, and modular synthetic approach to biomass-based diols

Le Jiang, Li Wang, Qiang Yan, Haojun Fan and Jun Xiang*

9665

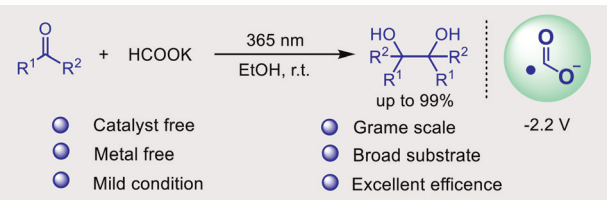
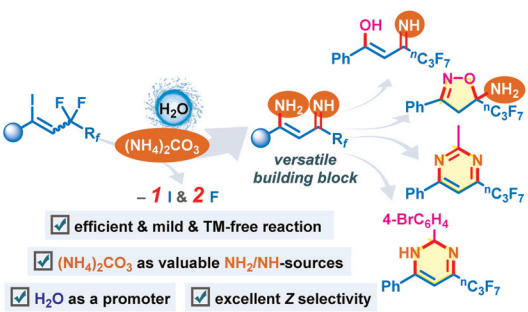


Photo-catalyst-free photomediated pinacol coupling of ketones/aldehydes by formate at room temperature

Qing Shen, Kun Cao, Xueqin Chen, Xue Li, Naiyou Zhang, Yang-Bao Miao and Jiahong Li*

9672



Water-promoted defluorinative synthesis of fluoroalkylated 1,5-diazapentadienes by using $(NH_4)_2CO_3$ as an NH_2 and NH source

Wei Han, Yu-Lan Chen, Xi Tang, Jie Zhou,* Mengtao Ma, Zhi-Liang Shen* and Xue-Qiang Chu*

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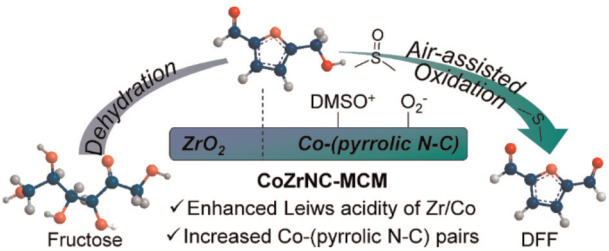
9680

A unique air-assisted DMSO oxidation pathway for the highly efficient synthesis of 2,5-diformylfuran from 5-hydroxymethylfurfural/fructose

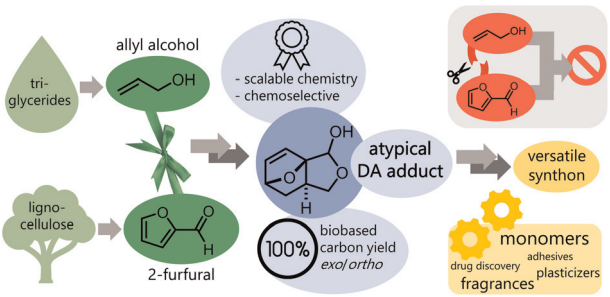
Yujia Pang, Ning Chen, Zhizhou Zhao, Lei Zhang, J. O. P. Broekman, Junnan Wei,* Xiujuan Li, Lu Lin and He Huang*



9689

Efficient synthesis of fully renewable, furfural-derived building blocks *via* formal Diels–Alder cycloaddition of atypical addends

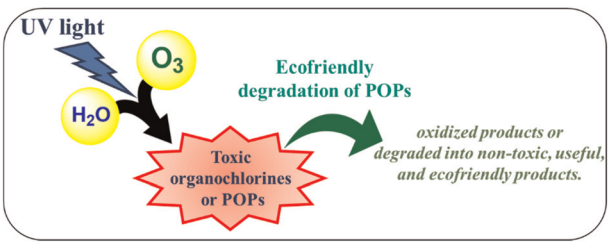
Răzvan C. Cioc,* Eva Harsevoort, Martin Lutz and Pieter C. A. Bruijnincx*



9695

Oxidative destruction of chlorinated persistent organic pollutants by hydroxyl radicals *via* ozone and UV light irradiation

Ayyakkannu Ragupathi, Vaibhav Pramod Charpe, Jih Ru Hwu and Kuo Chu Hwang*



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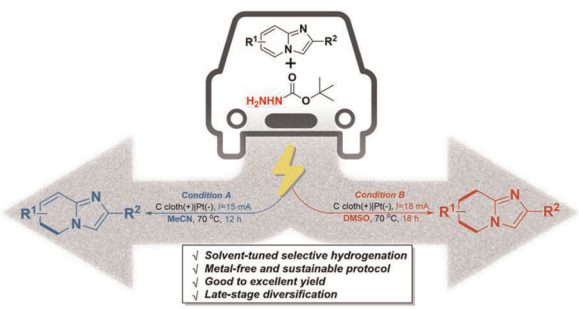
Electrochemical-induced solvent-tuned selective transfer hydrogenation of imidazopyridines with carbazates as hydrogen donors

Zhicong Tang, Gang Hong, Jian Chen, Ting Huang, Zichao Zhou and Limin Wang*



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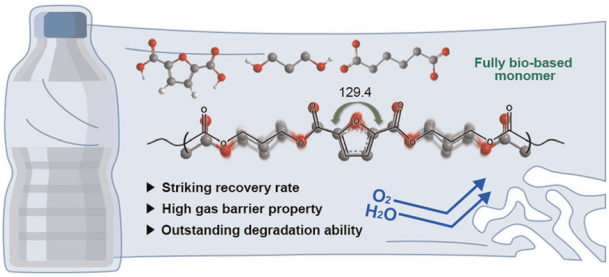
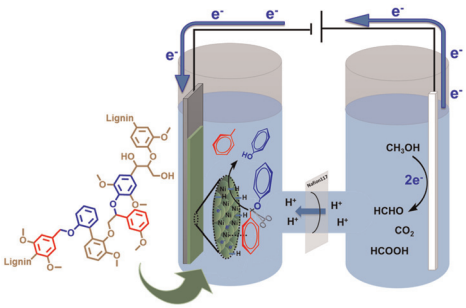


Extending the high-performing boundaries of a fully bio-based thermal shrinkage film targeted for food packaging applications

A-Yeon Lim, Sung Bae Park, Yumi Choi, Dongyeop X. Oh,* Jeyoung Park,* Hyeonyeol Jeon* and Jun Mo Koo*

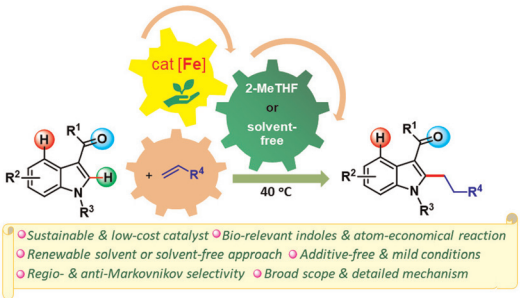
9720



Mechanistic investigation of a Ni-catalyzed electrochemical reductive cleavage of the α-O-4 bond in the lignin model compound benzyl phenyl ether

Fang Lin, Predrag V. Petrović, Ho-Yin Tse, Hanno C. Erythropel, Jason Chun-Ho Lam* and Paul T. Anastas*

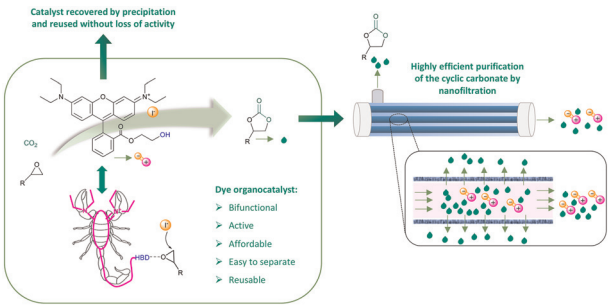
9733



Iron-catalyzed regioselective C–H alkylation of indoles: an additive-free approach in renewable solvent

Chandini Pradhan, Rahul A. Jagtap, Pragnya Paramita Samal, Sailaja Krishnamurty and Benudhar Punji*

9744



Dyes as efficient and reusable organocatalysts for the synthesis of cyclic carbonates from epoxides and CO_2

Jing Chen, Giulia Chiarioni, Gert-Jan W. Euverink and Paolo P. Pescarmona*

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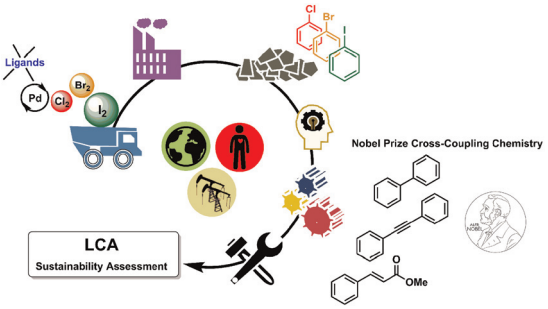
9760

The sustainability impact of Nobel Prize Chemistry: life cycle assessment of C–C cross-coupling reactions

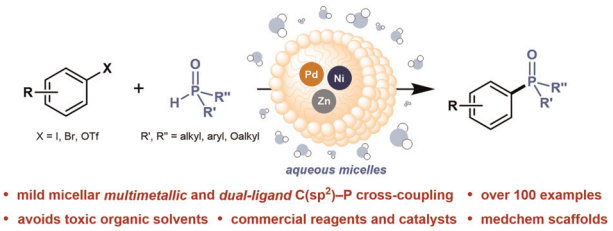
Jose Luis Osorio-Tejada, Francesco Ferlin, Luigi Vaccaro and Volker Hessel*



9779

Multimetallic Pd- and Ni-catalyzed C(sp^2)–P cross-coupling under aqueous micellar conditions

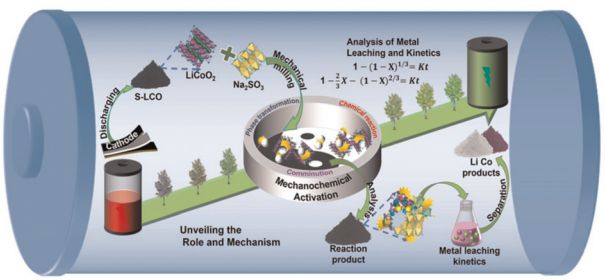
Rafael Navrátil,* Kristýna Kellovská and Ondřej Baszczyňski*



9795

Interfacial process engineering of a co-grinding agent for recycling spent lithium-ion batteries

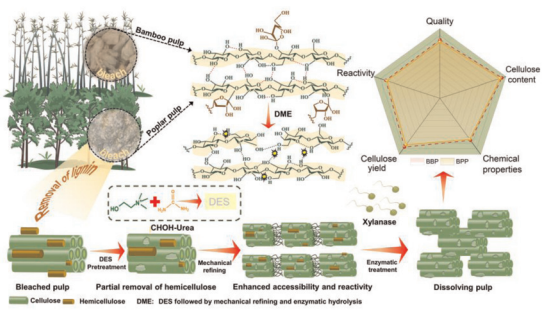
Jie Ren, Zhewen Zhang, Zikang Chen, Li Wan, Kaixiang Shi, Xiaoyuan Zeng, Junhao Li* and Quanbing Liu*



9805

The complete conversion of bleached kraft pulp into dissolving pulp and two xylo-oligosaccharides through a deep eutectic solvent-assisted biorefinery

Qiongyao Su, Yujie Guo, Mei Huang, Li Zhao, Churui Huang, Jianmei Zou, Yan Liu, Jinguang Hu, Fei Shen and Dong Tian*



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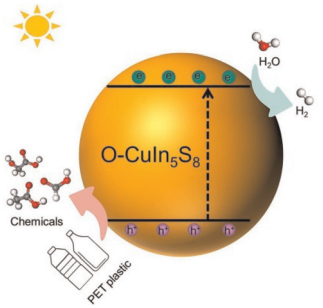
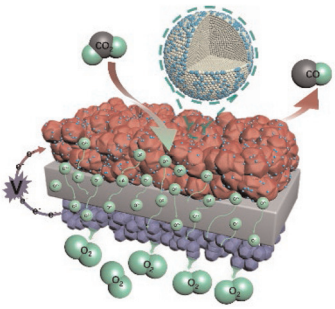


Upgrading polyethylene terephthalate plastic into commodity chemicals paired with hydrogen evolution over a partially oxidized $CuIn_5S_8$ nanosheet photocatalyst

Mengmeng Du, Mengyuan Xing, Wenfang Yuan, Liang Zhang, Tao Sun,* Tian Sheng,* Chunyu Zhou and Bocheng Qiu*

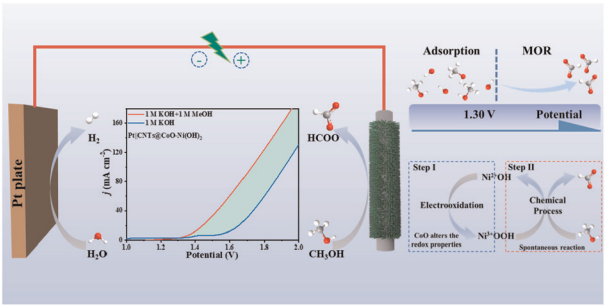
9826



***In situ* passivation of Fe nanoparticles exsolved from perovskite cathodes through zinc doping for CO_2 electrolysis**

Shuai Liu, Meiting Yang, Ruijia Xu, Xinghe Xiang, Guangming Yang,* Haoran Xu, Gang Xiao, Ran Ran, Wei Zhou and Zongping Shao*

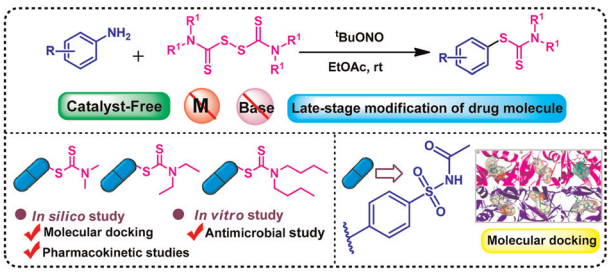
9837



Synergism of $CoO–Ni(OH)_2$ nanosheets and MOF-derived CNTs array for methanol electrolysis

Kuan Deng, Peng Liu, Xuesong Liu, Hongjiao Li, Wen Tian and Junyi Ji*

9847



Metal-free, *tert*-butyl nitrite promoted $C(sp^2)–S$ coupling reaction: the synthesis of aryl dithiocarbamates and analysis of antimicrobial activity by '*in silico*' and '*in vitro*' methods for drug modification

Satyajit Pal, Subhankar Sarkar, Anindita Mukherjee, Anupam Kundu, Animesh Sen, Jnanendra Rath, Sougata Santra, Grigory V. Zyryanov and Adinath Majee*

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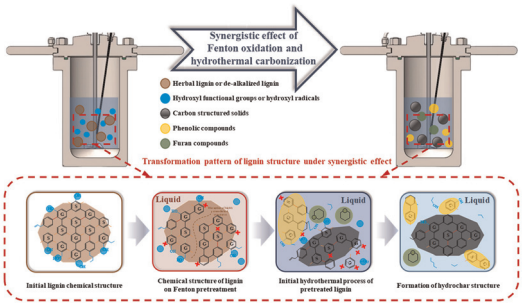
9857

Synergistic effect of Fenton pretreatment and hydrothermal carbonization of lignin on the physicochemical properties of the resulting hydrochar

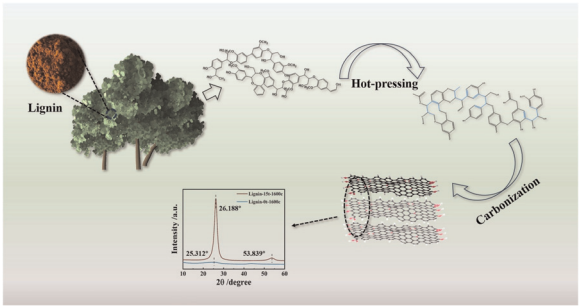
Jiaqian Fu, Li Bai,* Mingshu Chi,* Xiuling Xu, Kecheng Yu and Miao Wang



9873

Unlocking the graphitization potential of lignin: insights into its transformation through hot pressing and carbonization

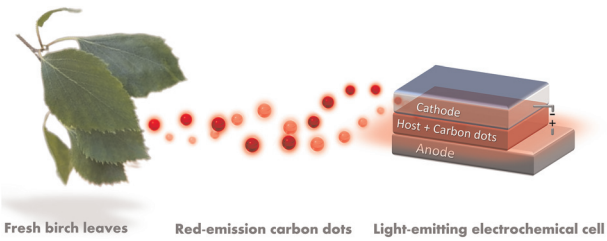
Wangda Qu,* Xiao Han, Jing Liu, Linghong Yin, Chen Liang and Pengyu Hu



9884

Fluorescent carbon dots from birch leaves for sustainable electroluminescent devices

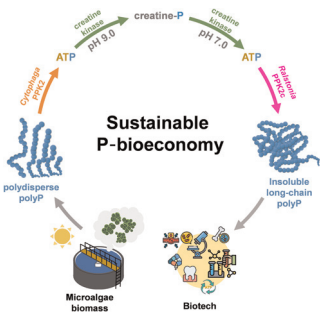
Shi Tang, Yongfeng Liu, Henry Opoku, Märta Gregorsson, Peijuan Zhang, Etienne Auroux, Dongfeng Dang, Anja-Verena Mudring, Thomas Wågberg, Ludvig Edman* and Jia Wang*



9896

One-pot chemo-enzymatic synthesis and one-step recovery of length-variable long-chain polyphosphates from microalgal biomass

Yi-Hsuan Lin, Shota Nishikawa, Tony Z. Jia, Fang-I. Yeh, Anna Khusnutdinova, Alexander F. Yakunin, Kosuke Fujishima and Po-Hsiang Wang*



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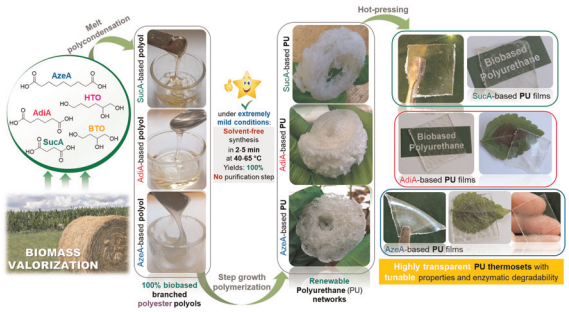
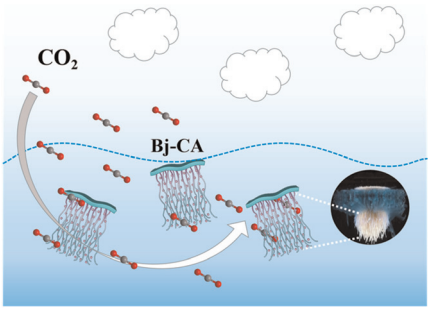
9908



Highly transparent polyurethane thermosets with tunable properties and enzymatic degradability derived from polyols originating from hemicellulosic sugars

Nejib Kasmi,* Yosra Chebbi, Alessandra Lorenzetti and Minna Hakkarainen*

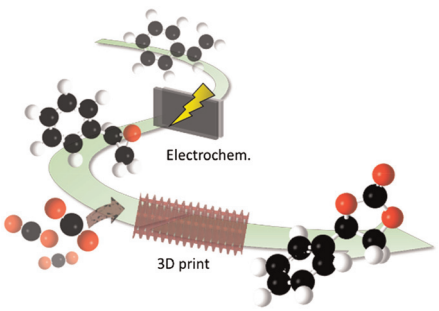
9926



Enhancing carbon capture efficiency with a large-sized bionic jellyfish-carbonic anhydrase complex

Xing Zhu, Chenxi Du, Bo Gao and Bin He*

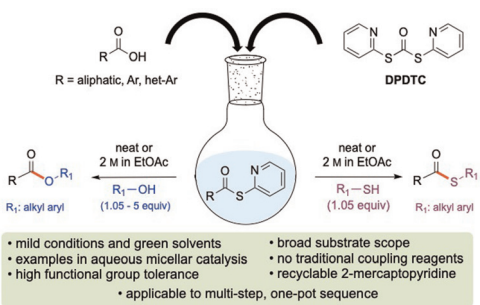
9934



Multi-step oxidative carboxylation of olefins with carbon dioxide by combining electrochemical and 3D-printed flow reactors

Diego Iglesias, Cristopher Tinajero, Simone Marchetti, Ignazio Roppolo, Marcileia Zanatta* and Victor Sans*

9941



Use of dipyridyldithiocarbonate (DPDTC) as an environmentally responsible reagent leading to esters and thioesters under green chemistry conditions

Kaitlyn M. Freiberg, Erika Ghiglietti, Matthew Scurria and Bruce H. Lipshutz*

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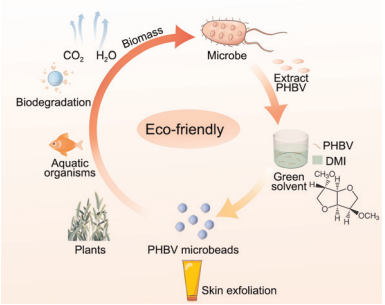
9948

Green fabrication of PHBV microbeads using a dimethyl isosorbide solvent for skin exfoliators

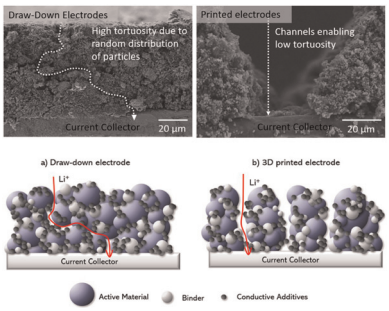
Xianzhu You, Yating Zhou, Xuru Jin,* Sheng Xiang, Xiaopeng Pei, Hua Zhou, Zhiyong Liao* and Ying Tan*



9959

Design principles for $LiFePO_4$ electrodes with improved recyclability

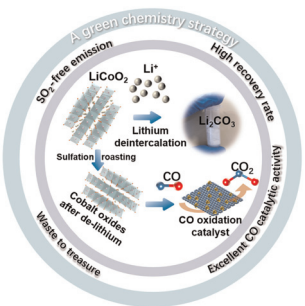
Lechen Yang, Dominika Gastol and Emma Kendrick*



9969

A green strategy for the selective recovery of lithium and the synthesis of $CoFe_2O_4$ catalyst for CO oxidation from spent lithium-ion batteries

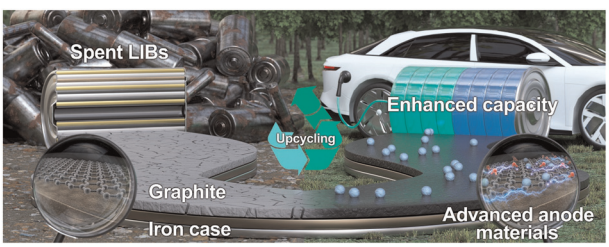
Minyu He, Weizao Liu,* Meijie Gao, Pengyang Zhang, Xi Jin, Hongli Wu* and Qingcai Liu



9981

Upcycling of spent graphite and iron housing from waste lithium-ion batteries for fabricating cost-effective high-capacity anodes

Seokju Maeng, Jaeyun Ha, Jinhee Lee, Yong-Tae Kim* and Jinsub Choi*



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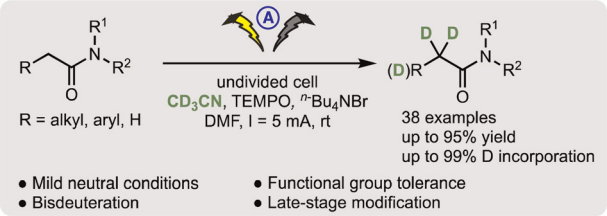
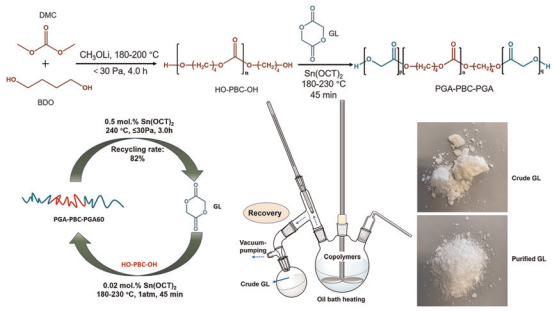
9993



Electrochemical α-deuteration of amides

Shulin Ning, Cheng Wu, Lianyou Zheng, Mian Liu, Yan Zhang, Xin Che and Jinbao Xiang*

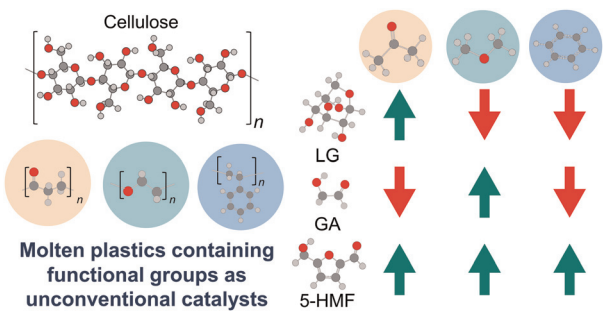
9998



Synthesis of biodegradable PGA-PBC-PGA triblock copolymers and closed-loop recycling *via* a thermal depolymerization strategy

Yong Wang, Liang Wen,* Jiajian Liu,* Chuncheng Li,* Zijian Zhang, Yaonan Xiao, Tian Yin, Shaohua Wu, Zhikui Jiang and Bo Zhang

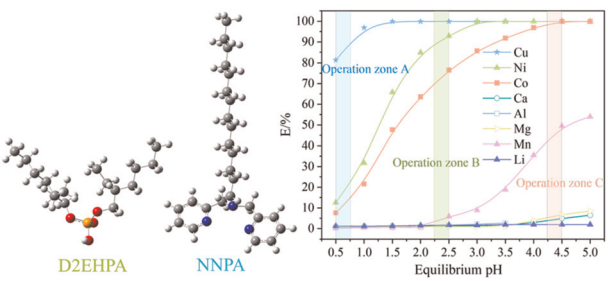
10010



Molten plastic induced noncovalent interactions for tunable cellulose fast pyrolysis

Fuat Sakirler, M. Doga Tekbas and Hsi-Wu Wong*

10020



A green and efficient process for the stepwise extraction of Cu, Ni, Co, Mn, and Li from hazardous waste with a novel solvent extraction system of D2EHPA-NNPA

Qiyuan Zheng, Li Zeng, Zuoying Cao,* Shengxi Wu, Qinggang Li, Mingyu Wang, Wenjuan Guan and Guiqing Zhang*

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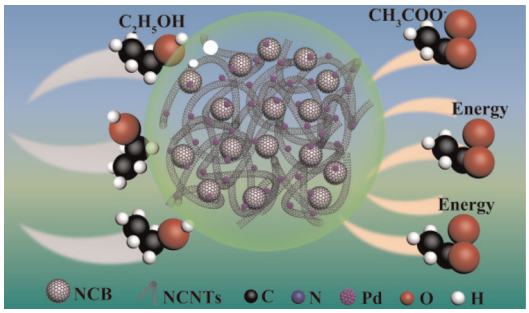
10033

Nitrogen-doped carbon nanotubes embedded with nitrogen-doped carbon black anchoring Pd nanocrystals to boost ethanol electrooxidation

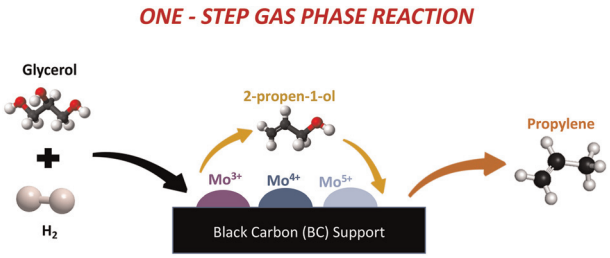
Shuwen Li,* Li Wu, Jinjuan Zhao, Ruxia Li, Honglei Yang, Limin Zhao and Ruifa Jin*



10043

Bio-glycerol hydrodeoxygenation to propylene: advancing knowledge on Mo-based catalyst characteristics and reaction pathways under flow conditions

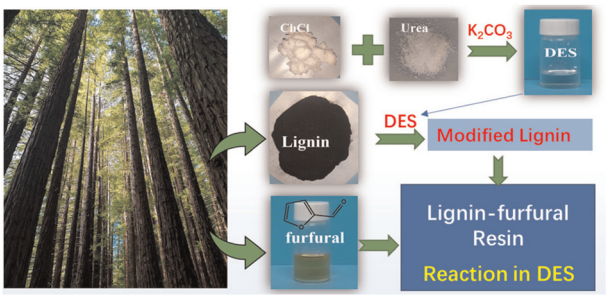
Georgia Ioannidou and Angeliki A. Lemonidou*



10061

A multifunctional lignin-based composite ultra-adhesive for wood processing

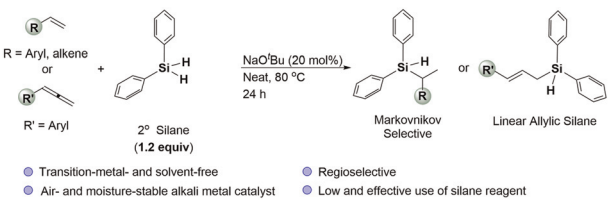
Boxiang Zhan, Long Zhang, Yongqi Deng and Lifeng Yan*



10072

Transition-metal- and solvent-free regioselective hydrosilylation of alkenes and allenes enabled by catalytic sodium *tert*-butoxide

Suresh Saini, Dharmendra Kumar Gupta, Ramesh Bhawar, Sheema Siddiqui, Manoj V. Mane and Shubhankar Kumar Bose*



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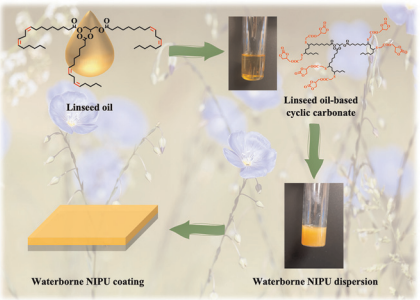
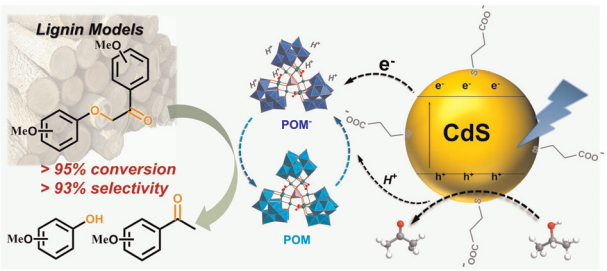
10082



Synthesis and properties of linseed oil-based waterborne non-isocyanate polyurethane coating

Zichen Ling and Qixin Zhou*

10091



Highly selective hydrogenolysis of lignin β-O-4 models by a coupled polyoxometalate/CdS photocatalytic system

Mo Zhang, Zheng Li, Yeqin Feng, Xing Xin, Guo-Yu Yang* and Hongjin Lv*

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