

Green Chemistry

Cutting-edge research for a greener sustainable future

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

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

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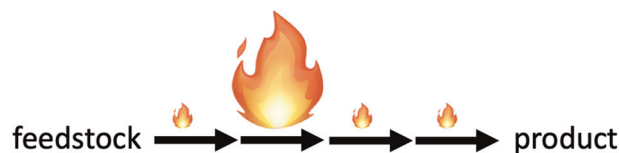
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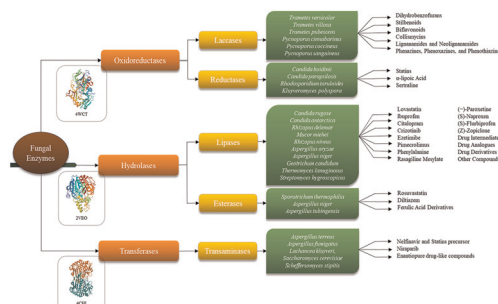


TUTORIAL REVIEWS

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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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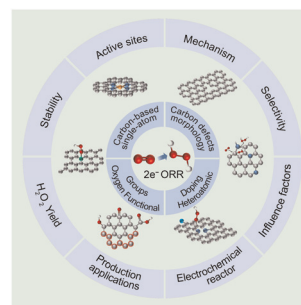


TUTORIAL REVIEWS

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

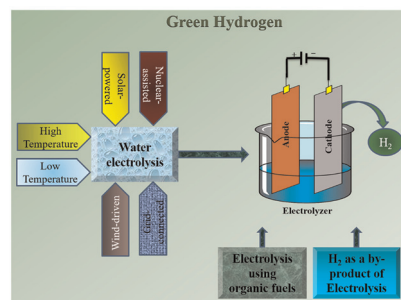
Hongjing He, Shuling Liu, Yanyan Liu,* Limin Zhou, Hao Wen, Ruofan Shen, Huanhuan Zhang, Xianji Guo, Jianchun Jiang and Baojun Li



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Electrochemical hydrogen production: sustainable hydrogen economy

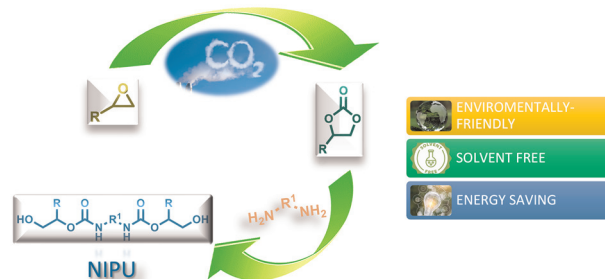
Samina Aslam, Sadia Rani, Kiran Lal, Miraj Fatima, Tomas Hardwick, Bahareh Shirinfar and Nisar Ahmed*



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

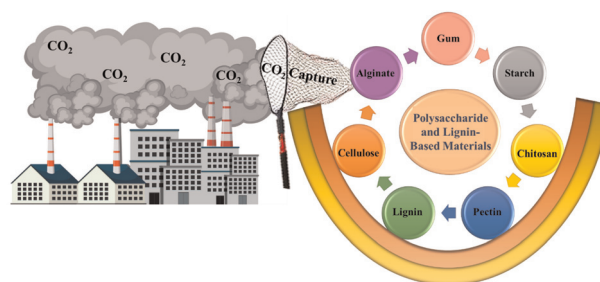


CRITICAL REVIEWS

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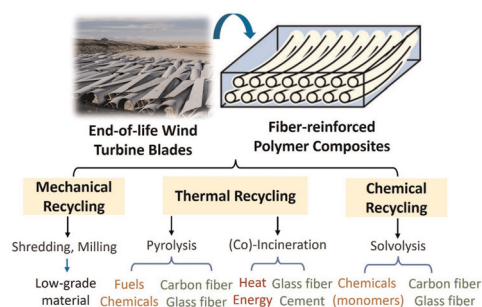
Recent developments in polysaccharide and lignin-based (nano)materials for CO_2 capture

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



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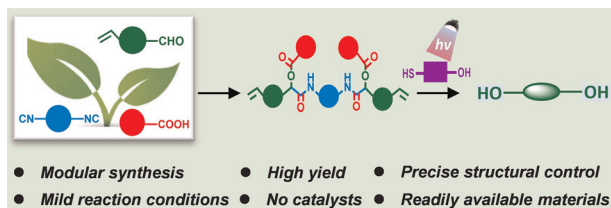


Recycling and recovery of fiber-reinforced polymer composites for end-of-life wind turbine blade management

Yafei Shen,* Sarkodie Emmanuel Apraku and
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Le Jiang, Li Wang, Qiang Yan, Haojun Fan and
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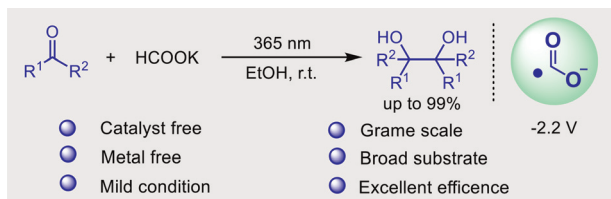
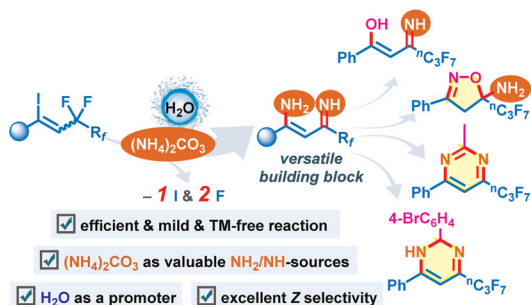


Photo-catalyst-free photomediated pinacol coupling of ketones/aldehydes by formate at room temperature

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

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Water-promoted defluorinative synthesis of fluoroalkylated 1,5-diazapentadienes by using (NH₄)₂CO₃ as an NH₂ and NH source

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

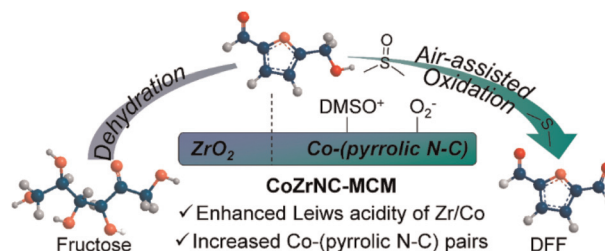


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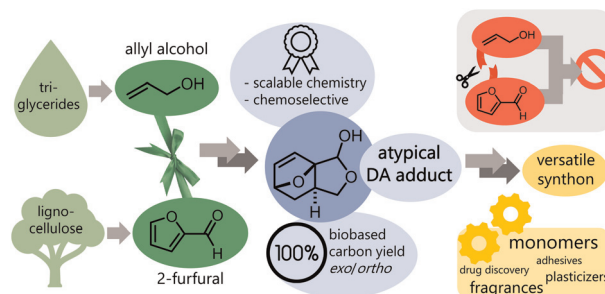
Yujia Pang, Ning Chen, Zhizhou Zhao, Lei Zhang, J. O. P. Broekman, Junnan Wei,* Xiujuan Li, Lu Lin and He Huang*



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

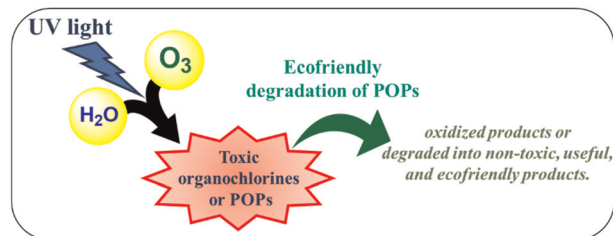
Răzvan C. Cioc,* Eva Harsevoort, Martin Lutz and Pieter C. A. Bruijninx*



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

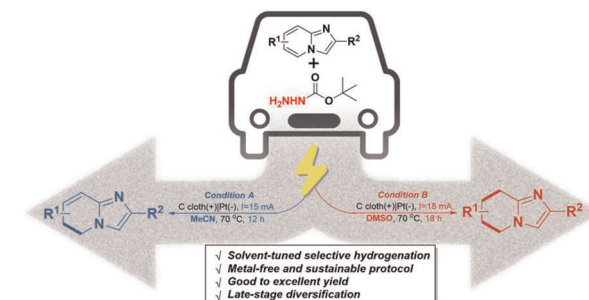
Ayyakkannu Ragupathi, Vaibhav Pramod Charpe, Jih Ru Hwu and Kuo Chu Hwang*



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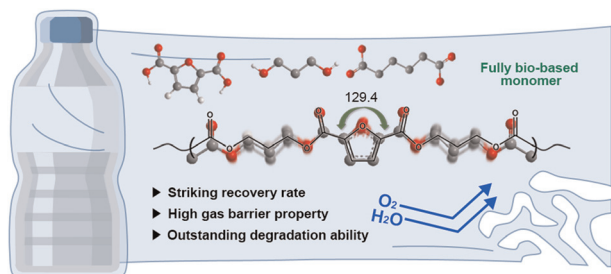
Electrochemical-induced solvent-tuned selective transfer hydrogenation of imidazopyridines with carbazates as hydrogen donors

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



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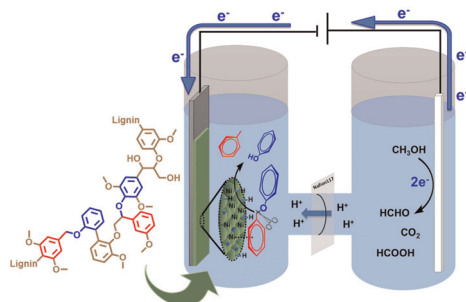
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Extending the high-performing boundaries of a fully bio-based thermal shrinkage film targeted for food packaging applications

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

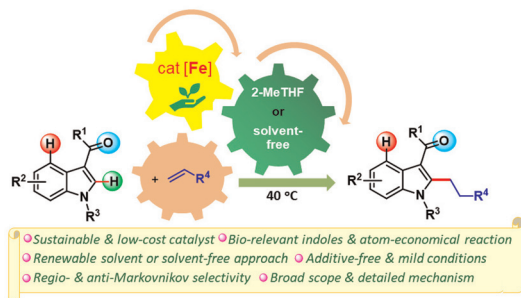
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Mechanistic investigation of a Ni-catalyzed electrochemical reductive cleavage of the α -O-4 bond in the lignin model compound benzyl phenyl ether

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

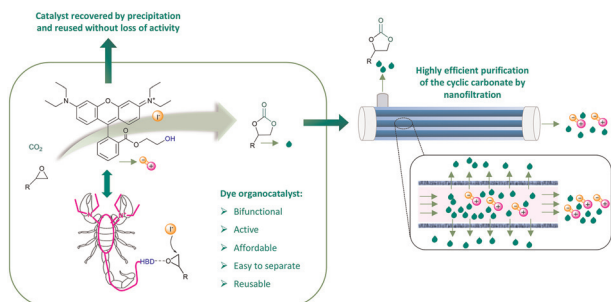
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Iron-catalyzed regioselective C–H alkylation of indoles: an additive-free approach in renewable solvent

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

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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*

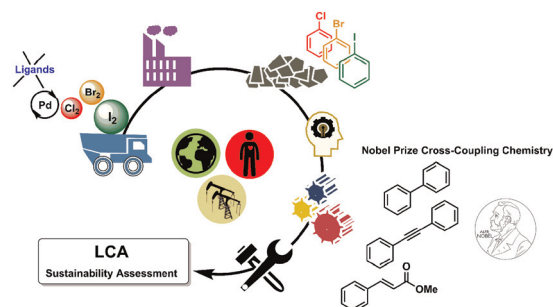


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The sustainability impact of Nobel Prize Chemistry: life cycle assessment of C–C cross-coupling reactions

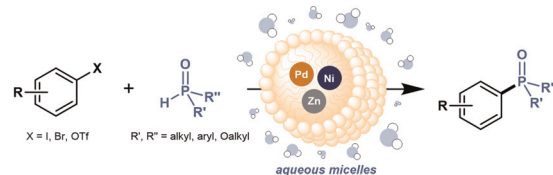
Jose Luis Osorio-Tejada, Francesco Ferlin, Luigi Vaccaro and Volker Hessel*



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Multimetallic Pd- and Ni-catalyzed C(sp²)–P cross-coupling under aqueous micellar conditions

Rafael Navrátil,* Kristýna Kellovská and Ondřej Baszczyński*

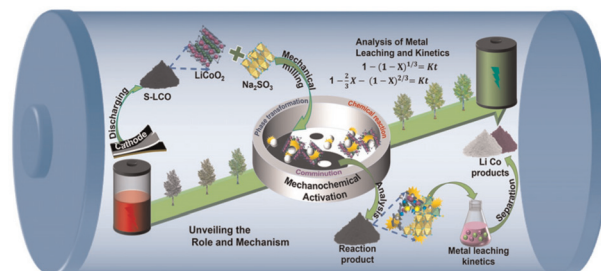


- mild micellar multimetallic and dual-ligand C(sp²)–P cross-coupling
- over 100 examples
- avoids toxic organic solvents
- commercial reagents and catalysts
- medchem scaffolds

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

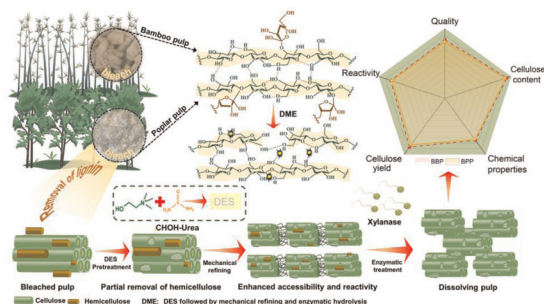
Jie Ren, Zhewen Zhang, Zikang Chen, Li Wan, Kaixiang Shi, Xiaoyuan Zeng, Junhao Li* and Quanbing Liu*



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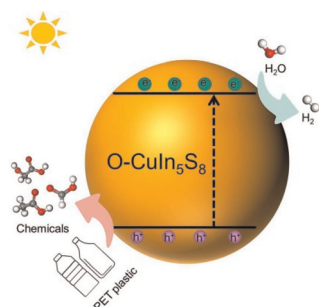
The complete conversion of bleached kraft pulp into dissolving pulp and two xylo-oligosaccharides through a deep eutectic solvent-assisted biorefinery

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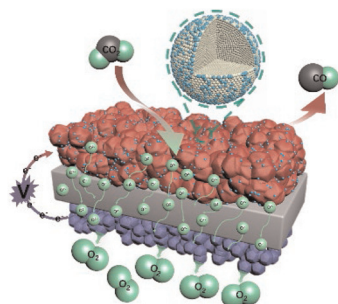
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Upgrading polyethylene terephthalate plastic into commodity chemicals paired with hydrogen evolution over a partially oxidized CuIn_5S_8 nanosheet photocatalyst

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

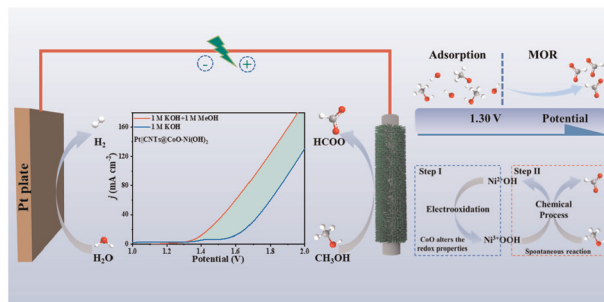
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In situ passivation of Fe nanoparticles exsolved from perovskite cathodes through zinc doping for CO_2 electrolysis

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

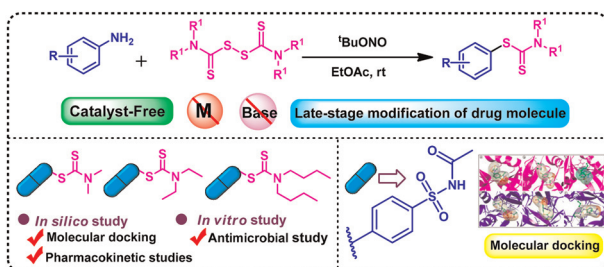
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Synergism of CoO-Ni(OH)_2 nanosheets and MOF-derived CNTs array for methanol electrolysis

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

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Metal-free, *tert*-butyl nitrite promoted $\text{C(sp}^2\text{)}-\text{S}$ 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*



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

Synergistic effect of Fenton oxidation and hydrothermal carbonization

- Herbel lignin or de-alkalised lignin
- Hydroxyl functional groups or hydroxyl radicals
- Carbon structured solids
- Phenolic compounds
- Furan compounds

Transformation pattern of lignin structure under synergistic effect

Initial lignin chemical structure → Chemical structure of lignin on Fenton pretreatment → Initial hydrothermal process of pretreated lignin → Formation of hydrocarbon structure

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

The diagram illustrates the synthesis of lignin-derived carbon nanotubes. It begins with **Lignin**, shown as a tree and a brown sphere. This is converted into a chemical structure of a lignin polymer. This polymer undergoes **Hot-pressing** to form a more ordered structure. Finally, **Carbonization** leads to the formation of carbon nanotubes, depicted as a cylindrical structure. An inset shows the TGA curves for Lignin (red line) and Lignin-derived carbon (blue line), with peaks at 25.312°, 26.188°, and 53.839°.

Fluorescent carbon dots from birch leaves for sustainable electroluminescent devices

Fresh birch leaves Red-emission carbon dots Light-emitting electrochemical cell

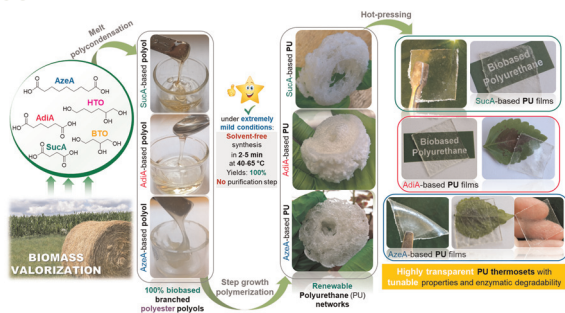
One-pot chemo-enzymatic synthesis and one-step recovery of length-variable long-chain polyphosphates from microalgal biomass

Sustainable P-bioeconomy

The diagram illustrates a sustainable phosphorus (P) bioeconomy cycle. It begins with **Microalgae biomass** and **Biotech** (represented by a cluster of colorful icons). These feed into **polydisperse polyP** (blue wavy lines) and **Insoluble long-chain polyP** (blue wavy lines). The cycle then proceeds through **ATP** (orange arrow) and **creatine phosphate** (green arrow) to **creatine-P** (green arrow), which then leads to **ATP** (pink arrow) and finally back to the starting biomass.

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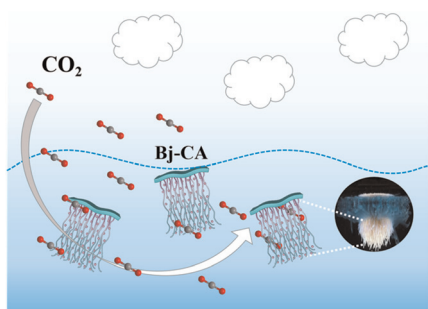
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Highly transparent polyurethane thermosets with tunable properties and enzymatic degradability derived from polyols originating from hemicellulosic sugars

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

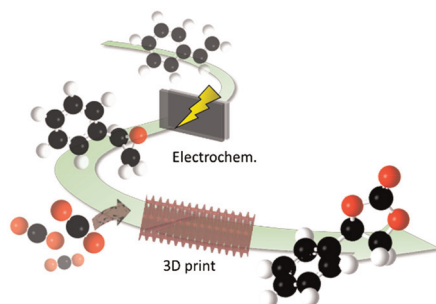
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Enhancing carbon capture efficiency with a large-sized bionic jellyfish-carbonic anhydrase complex

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

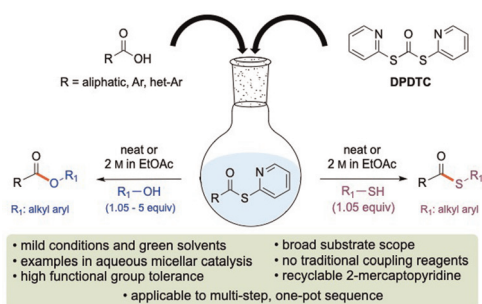
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Multi-step oxidative carboxylation of olefins with carbon dioxide by combining electrochemical and 3D-printed flow reactors

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

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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*

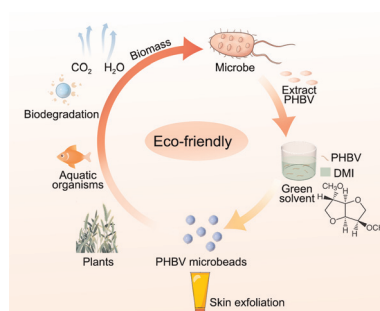


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Green fabrication of PHBV microbeads using a dimethyl isosorbide solvent for skin exfoliators

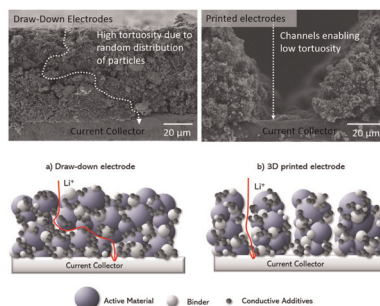
Xianzhu You, Yating Zhou, Xuru Jin,* Sheng Xiang, Xiaopeng Pei, Hua Zhou, Zhiyong Liao* and Ying Tan*



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Design principles for LiFePO₄ electrodes with improved recyclability

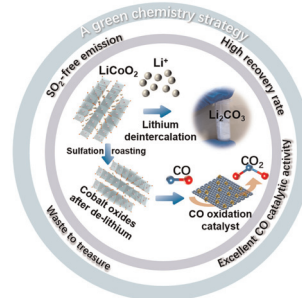
Lechen Yang, Dominika Gastol and Emma Kendrick*



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A green strategy for the selective recovery of lithium and the synthesis of CoFe₂O₄ catalyst for CO oxidation from spent lithium-ion batteries

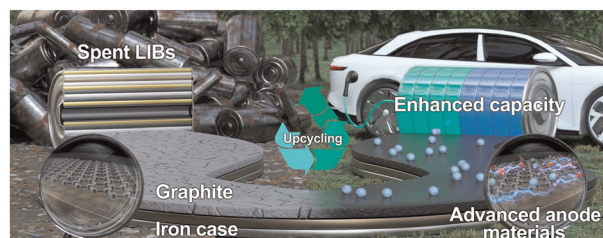
Minyu He, Weizao Liu,* Meijie Gao, Pengyang Zhang, Xi Jin, Hongli Wu* and Qingcai Liu



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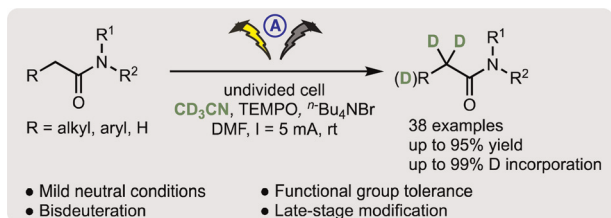
Upcycling of spent graphite and iron housing from waste lithium-ion batteries for fabricating cost-effective high-capacity anodes

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



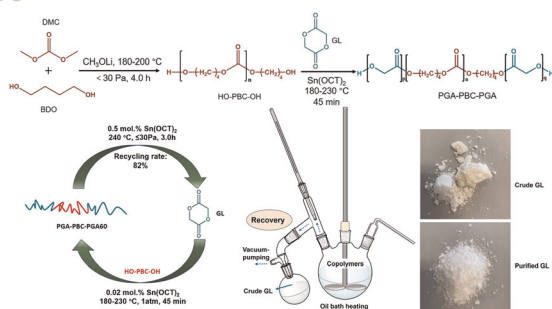
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Electrochemical α -deuteration of amides

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

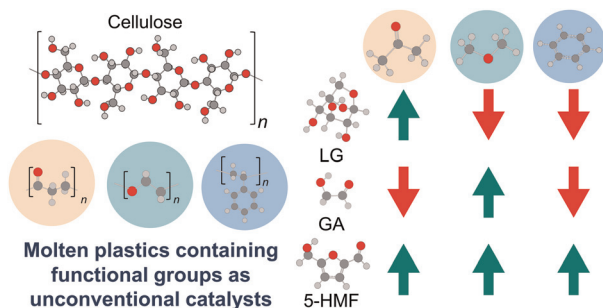
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Synthesis of biodegradable PGA-PBC-PGA triblock copolymers and closed-loop recycling via a thermal depolymerization strategy

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

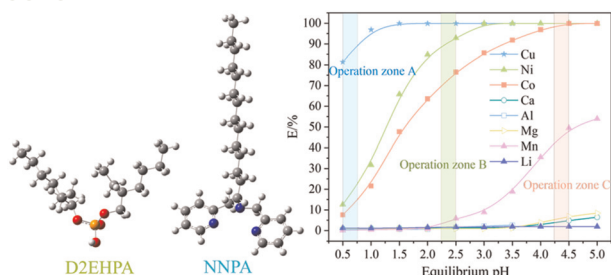
10010



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*

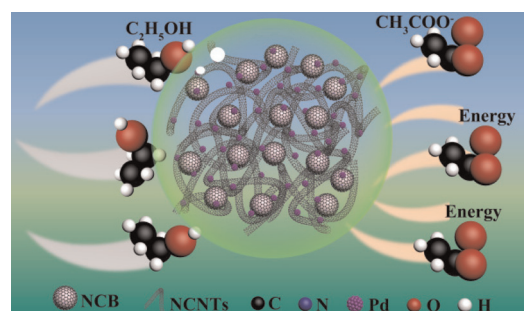


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10033

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

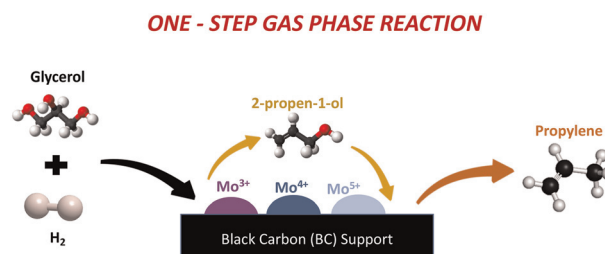
Shuwen Li,* Li Wu, Jinjuan Zhao, Ruxia Li, Honglei Yang, Limin Zhao and Ruifa Jin*



10043

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

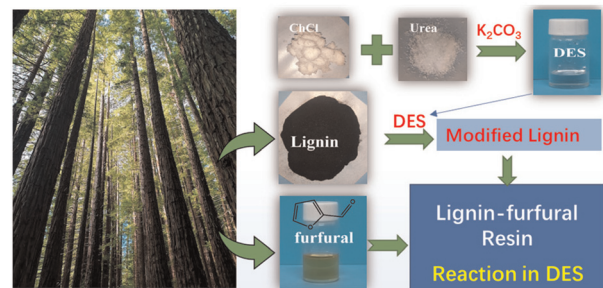
Georgia Ioannidou and Angeliki A. Lemonidou*



10061

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

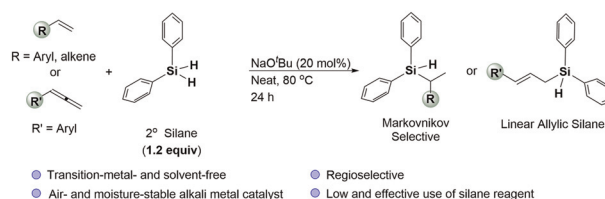
Boxiang Zhan, Long Zhang, Yongqi Deng and Lifeng Yan*



10072

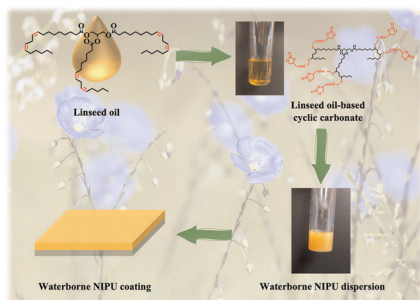
Transition-metal- and solvent-free regioselective hydrosilylation of alkenes and allenes enabled by catalytic sodium *tert*-butoxide

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



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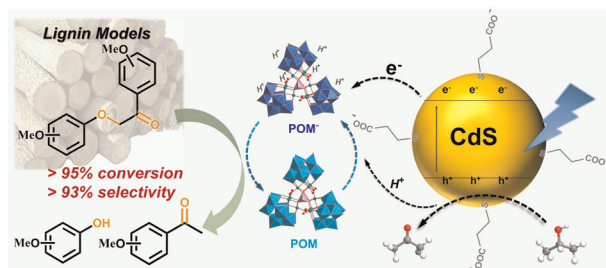
10082



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*

