

Green Chemistry

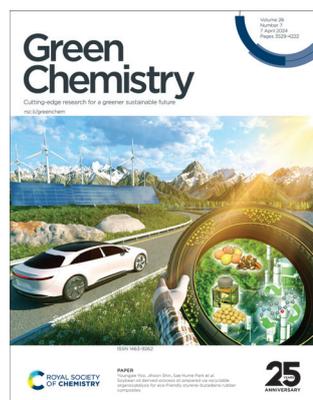
Cutting-edge research for a greener sustainable future

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Inside cover

See Andrew J. Hunt *et al.*, pp. 3747–3757.

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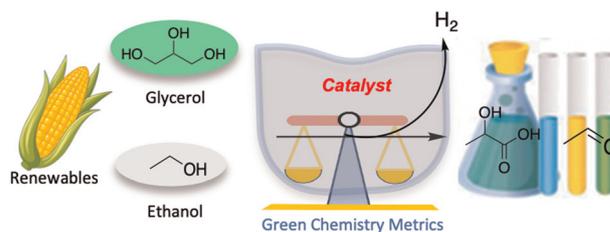
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CRITICAL REVIEWS

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Homogeneous vs. heterogeneous catalysts for acceptorless dehydrogenation of biomass-derived glycerol and ethanol towards circular chemistry

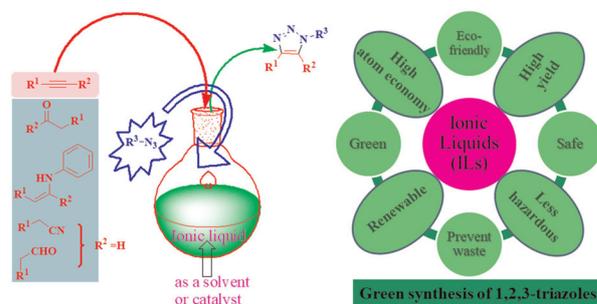
Kai Wang, Jonathan Horlyck, Nan An and Adelina Voutchkova-Kostal*



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Ionic liquids for the green synthesis of 1,2,3-triazoles: a systematic review

Aman Kumar, Vijay Kumar, Prashant Singh, Ram Kumar Tittal* and Kashmiri Lal*



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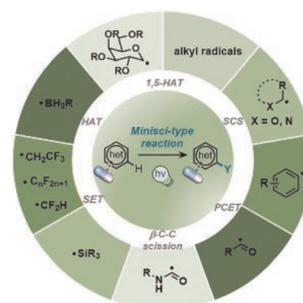
Fundamental questions
Elemental answers

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Photocatalyzed Minisci-type reactions for late-stage functionalization of pharmaceutically relevant compounds

Xiaotong Zhang, Shuqi Li, Feng Qiu, Hwee Ting Ang,*
Jie Wu* and Penghao Jia*



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Deep eutectic solvents as an emerging green platform for the synthesis of functional materials

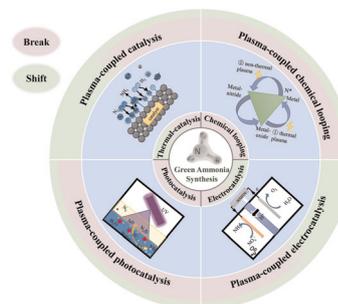
Yunping Ma, Yu Yang, Tie Li, Shahid Hussain and
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Jia Wang, Yuhui Chen, Gang Chen, Kenji Kamiya,
Nobusuke Kobayashi and Bo Wu*



PERSPECTIVES

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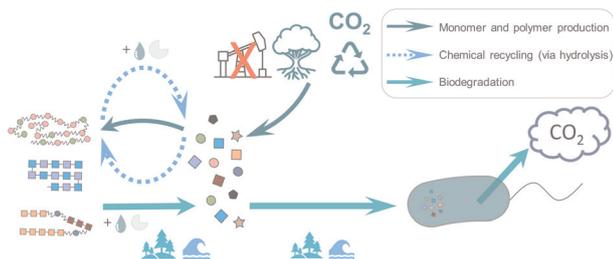
Advancing sustainable end-of-life strategies for photovoltaic modules with silicon reclamation for lithium-ion battery anodes

Owen Wang, Zhuowen Chen and Xiaotu Ma*



PERSPECTIVES

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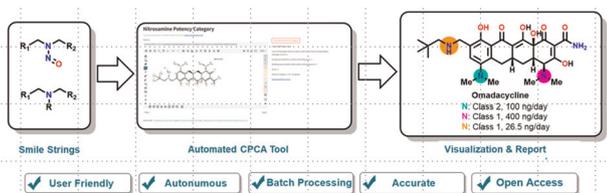


Polyester biodegradability: importance and potential for optimisation

Yue Wang, Robert-Jan van Putten, Albert Tietema, John R. Parsons and Gert-Jan M. Gruter*

COMMUNICATIONS

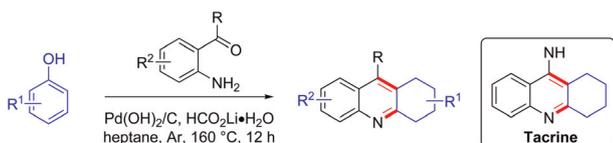
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An automated carcinogenic potency categorization approach for nitrosamine drug substance-related impurities

Jiazhou Zhu,* Yang Qu* and Ning Ye*

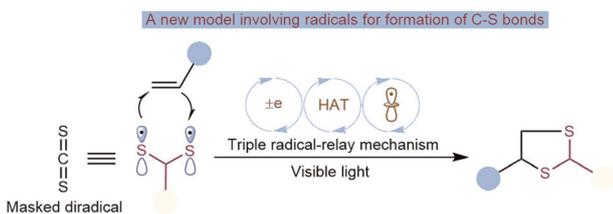
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Palladium-catalyzed conversion of phenols into tetrahydroacridines

Jianjin Yu, Renqin Zhan, Chao-Jun Li and Huiying Zeng*

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[3 + 2] radical sulfuration of alkenes by organic photocatalysis

Na Yang, Gefei Duan and Yunbo Zhu*

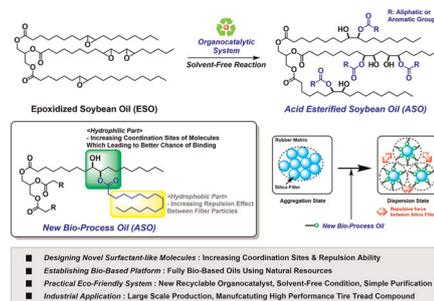


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Soybean oil derived-process oil prepared via recyclable organocatalysis for eco-friendly styrene–butadiene rubber composites

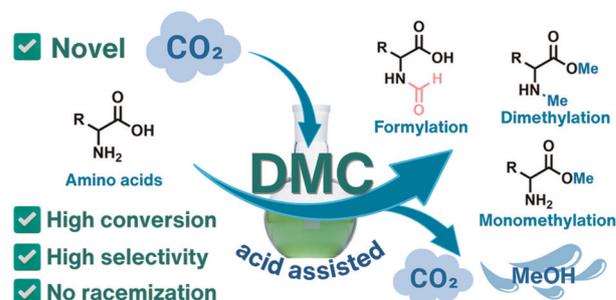
Geunho Kim, Woong Kim, Jeong Suk Yuk, Haemin Jeong, Hee Geom Jeon, Youngjae Yoo,* Jihoon Shin* and Sae Hume Park*



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A novel approach to amino acid synthesis: acid-assisted reactions with dimethyl carbonate for efficient *O*-methylated, *N,O*-methylated and *N*-formylated derivatives

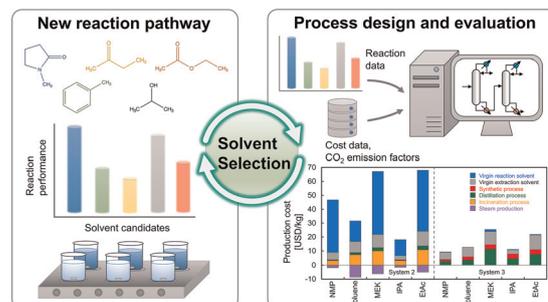
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Solvent selection based on a conceptual process design by combining cost evaluation and life cycle assessments for developing new reaction pathways

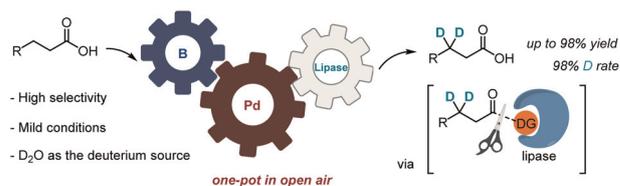
Takehiro Yamaki,* Thuy T. H. Nguyen, Nobuo Hara, Satoshi Taniguchi and Sho Kataoka*



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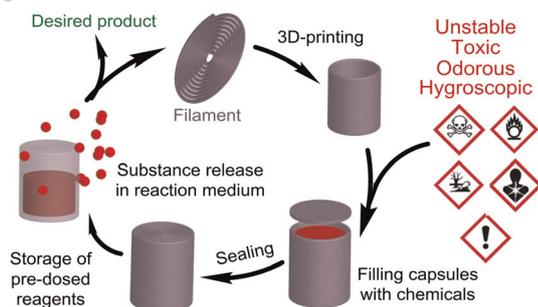
Chemoenzymatic β -specific methylene $\text{C}(\text{sp}^3)\text{-H}$ deuteration of carboxylic acids

Xicheng Wang, Zhaohui Sun, Tao Li, Saima Perveen and Pengfei Li*



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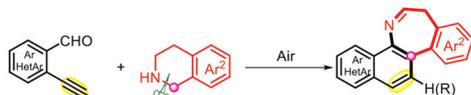
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A 60-times faster digital-discovery-compatible reaction setup with enhanced safety for chemical applications

Andrey N. Lebedev, Konstantin S. Rodygin, Svetlana A. Vakhrusheva and Valentine P. Ananikov*

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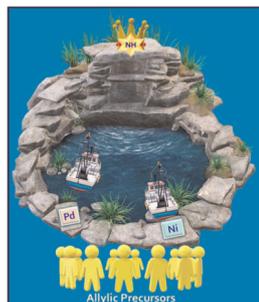


- ◆ Transition metal and additive free
- ◆ Readily accessible starting materials
- ◆ Broad substrate scope with good functionality
- ◆ Air as the oxidant

Synthesis of the dibenzo[b,d]azepine skeleton via a catalyst-free ring expansion domino reaction

Tao Guo, Penghua Hu, Jiabin Li, Yujia Zhou, Panke Zhang,* Yunhui Zhao* and Congjun Zhu*

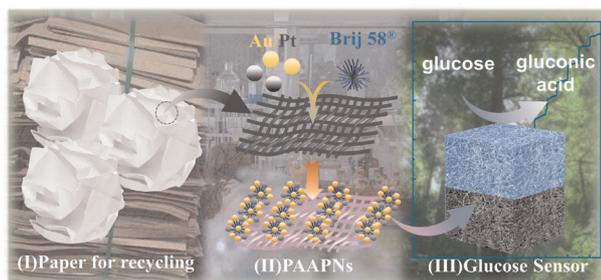
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An integrative sustainability assessment of the Tsuji–Trost reaction simulating allylic amination under non-conventional (vs. conventional) conditions

Sangita Dattatray Shinde, Gargi Nikhil Vaidya, Shyam Kumar Lokhande, Anil Shaha, Ramesh Hiralal Choudhary and Dinesh Kumar*

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Used tissue paper as a 3D substrate for non-enzyme glucose sensors

Zhiyu Chen, Lei Li, Xuanyu Xiao, Yuxin Zhang, Jieyu Zhang, Qing Jiang,* Xuefeng Hu* and Yunbing Wang*



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Solvent-free chemical upcycling of poly(bisphenol A carbonate) and poly(lactic acid) plastic waste using SBA-15-functionalized basic ionic liquids

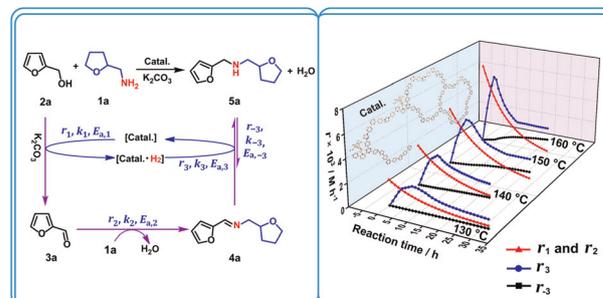
Arjun K. Manal, Garima Saini and Rajendra Srivastava*



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Construction of biomass-based amines via Ir-mediated *N*-alkylation: kinetic analysis

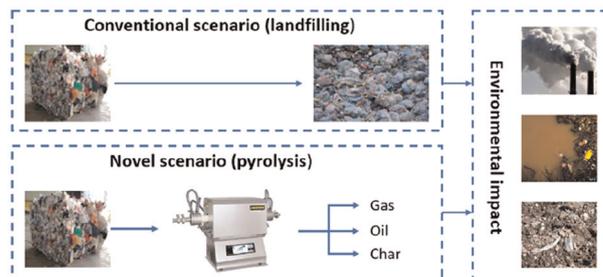
Meixiang Liang, Zhongmou Xu, Tianhao Zhou, Limin Chen* and Jinzhu Chen*



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Environmental impact of different scenarios for the pyrolysis of contaminated mixed plastic waste

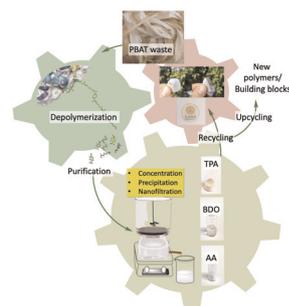
Guillermo Garcia-Garcia,* María Ángeles Martín-Lara,* Mónica Calero and Gabriel Blázquez



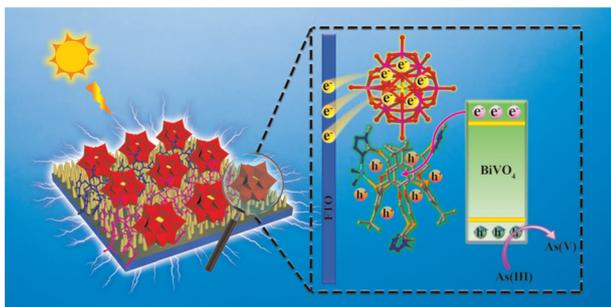
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Closing the loop for poly(butylene-adipate-co-terephthalate) recycling: depolymerization, monomers separation, and upcycling

Mohamed Ismail,* Adel Abouhmad, Niklas Warlin, Sang-Hyun Pyo, Oliver Englund Örn, Basel Al-Rudainy, Cecilia Tullberg, Baozhong Zhang and Rajni Hatti-Kaut*



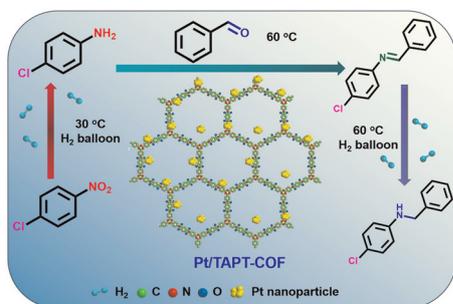
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Highly efficient photoelectrocatalytic oxidation of arsenic(III) with a polyoxometalate-thiacalix[4] arene-based metal–organic complex-modified bismuth vanadate photoanode

Yuting Song, Jia-Yi Zhang, Jin Yang,* Tao Bo* and Jian-Fang Ma*

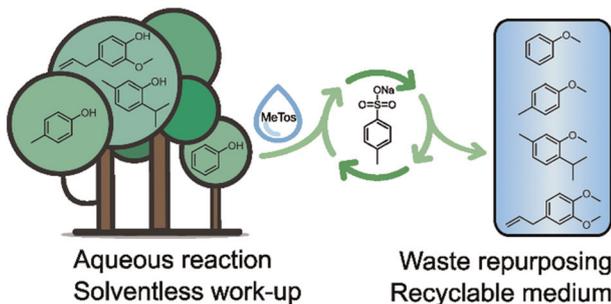
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Electron-rich Pt anchored on covalent triazine frameworks for the selective hydrogenation of halogenated nitrobenzenes

Mengmeng Gao, Jinfang Kou, Manhua Xu, Kun Yuan,* Mengyang Li* and Zhengping Dong*

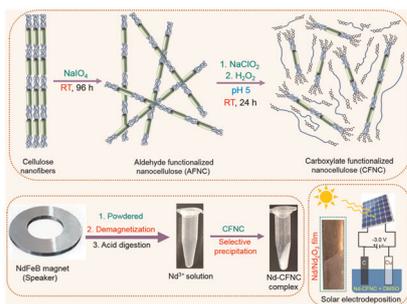
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Aqueous sodium tosylate: a sustainable medium for alkylations

Sem Bleus, Jeltzlin Semerel and Wim Dehaen*

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Neodymium recovery from NdFeB magnets: a sustainable, instantaneous, and cost-effective method

Sandeep Bose, Benilde Mizero and Parisa A. Ariya*



PAPERS

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Robust hydrogel sensor with good mechanical properties, conductivity, anti-swelling ability, water tolerance and biocompatibility

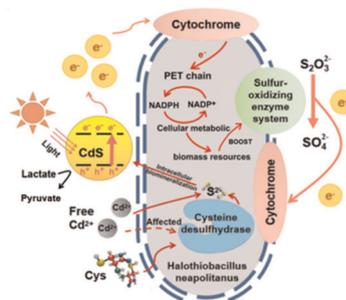
Airong Xu,* Tiantian Sun, Rukuan Liu,* Liuzemu Li, Yiming Gong and Zhihong Xiao



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Semiconductor biohybrids for enhanced bifunctional wastewater sulfur and heavy metal removal

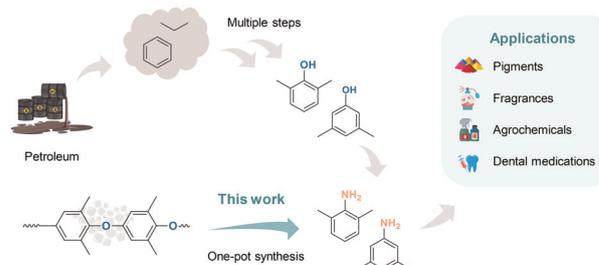
Yanju Zhang, Furui Fang, Xiaoxiao Qian, Liangchen Li, Zongli Huo, Jingjing Zhang, Dandan Dong, Chaofeng Huang,* JiaYuan Li, Yonghong Hu* and Li Mi*



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Direct amination of poly(*p*-phenylene oxide) to substituted anilines over bimetallic Pd–Ru catalysts

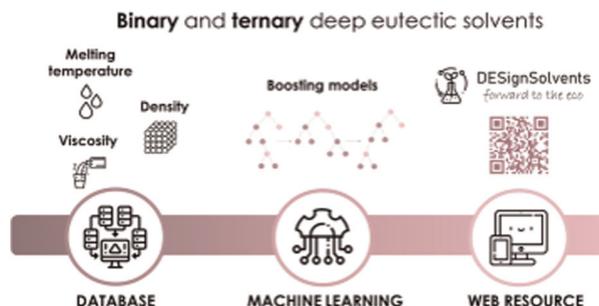
Phuc T. T. Nguyen, Gökalp Gözaydın, Jieran Ma, Bingqing Yao, Qian He and Ning Yan*



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DESIGNsolvents: an open platform for the search and prediction of the physicochemical properties of deep eutectic solvents

Valeria Odegova, Anastasia Lavrinenko, Timur Rakhmanov, George Sysuev, Andrei Dmitrenko* and Vladimir Vinogradov*



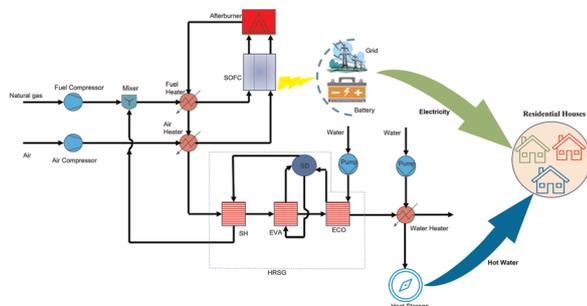
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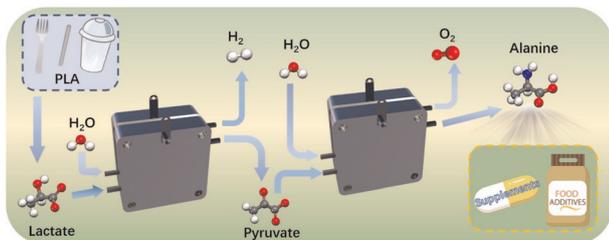
Food-safe glycidyl-free chain extenders for polylactides

Hazem M. Elkholy, Mohamed A. Abdelwahab, Muhammad Naveed, Khaled Abdelaziz and Muhammad Rabnawaz*

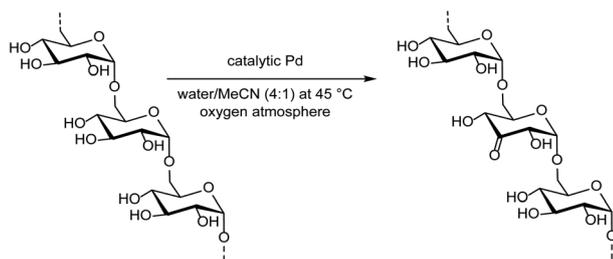
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Biocompatible diimidazolium based ionic liquid systems for enhancing the solubility of paclitaxel

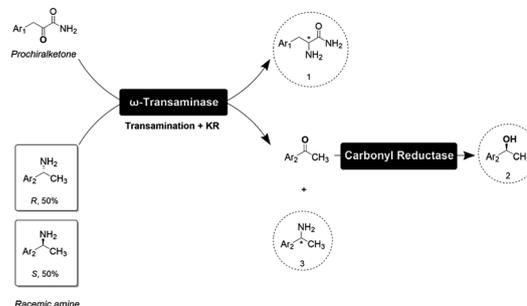
Yanhui Hu, Hua Yue, Shiqi Huang, Bingxi Song, Yuyuan Xing, Minmin Liu, Gongying Wang,* Yanyan Diao* and Suojiang Zhang*



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Biotransamination with racemic amines as amine donors: kill three birds with one stone through a dual-enzyme cascade

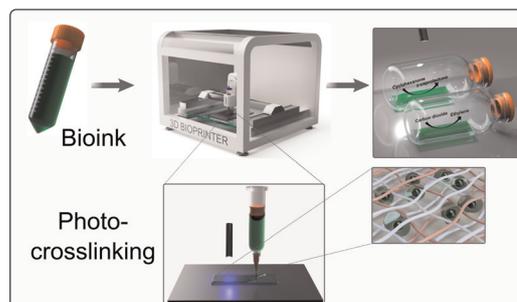
Kai Li, Mengjie Sun, Haoyu Jing, Jing Liu, Jun Gao and Bo Wang*



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Employing photocurable biopolymers to engineer photosynthetic 3D-printed living materials for production of chemicals

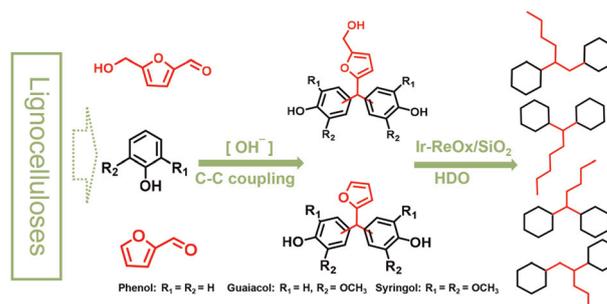
Gábor Szilveszter Tóth, Oskar Backman, Tiia Siivola, Wenyang Xu, Sergey Kosourov, Vilja Siitonen, Chunlin Xu and Yagut Allahverdiyeva*



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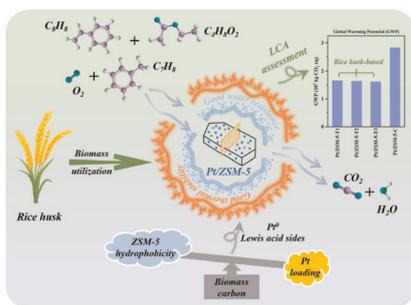
Selective production of bicyclic alkanes as high-density fuel additives by coupling lignocellulose-derived furanics and phenolics

Shumin Huang, Xiaolin Luo, Ji Li, Sibao Liu and Li Shuai*



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Pt anchored in the skeleton of rice husk-based ZSM-5 for excellent catalytic VOC oxidation: structure–activity relationship and environmental impact assessment

Wenxin Lan, Muping Shen, Yinye Chen, Kui Niu, Weiming Zhou,* Jing Xu, Baoquan Huang,* Hongjie Cai, Jiachang Zuo, Daifeng Lin, Yongjin Luo,* Qingrong Qian and Qinghua Chen

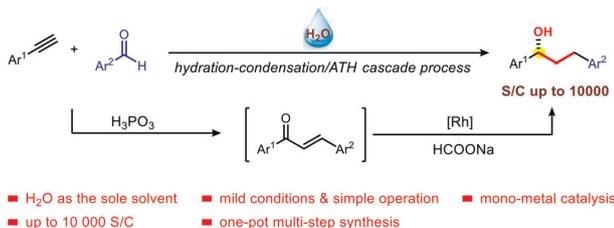
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Kinetic model of asymmetric dehydration of aldoxime catalyzed by immobilized OxdPsp in an organic solvent

Jiarui Chen, Yunlong Zhang, Xiaoying Zhang, Shiyang Wen, Min Qiao, Junhong Liu and Yuanyuan Zhang*

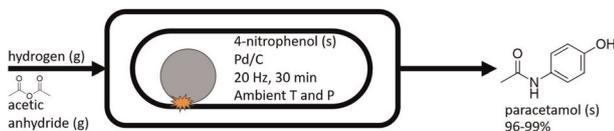
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Water-mediated one-pot multi-step synthesis of chiral 1,3-diarylpropan-1-ols by the asymmetric hydrofunctionalisation of simple alkynes

Pinke Yu, Qixing Liu, Linhong Zuo, Xumu Zhang,* Congcong Yin* and Haifeng Zhou*

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One-pot mechanochemical hydrogenation and acetylation of 4-nitrophenol to 4-aminophenol and paracetamol

Jimin Park, Jacob S. Maier, Caria Evans, Marta Hatzell, Stefan France, Carsten Sievers* and Andreas S. Bommarius*

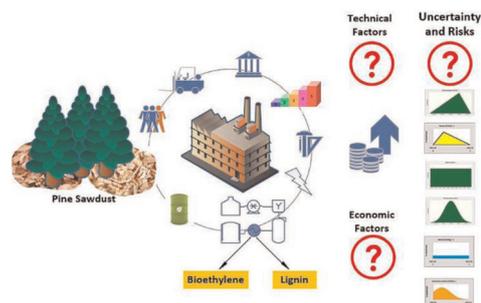


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Design of an integrated biorefinery for bioethylene production from industrial forest byproducts

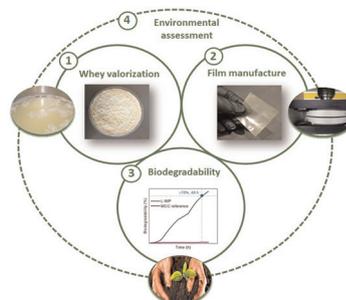
Rocio Elizabet Cardozo,* Nicolás Martín Clouser, Fernando Esteban Felissia, María Cristina Area and María Evangelina Vallejos



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Valorization of cheese whey: closing the loop from protein extraction to whey protein film composting

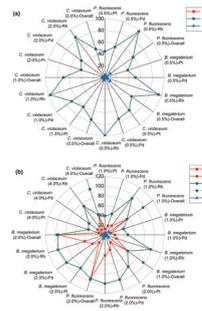
Maialen Uribarrena, Eric Rovira-Cal, Leire Urbina, Maria Jose Suárez, Enrique Aymerich, Pedro Guerrero, Koro de la Caba* and Alaitz Etxabide*



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Evaluation of green chemistry metrics for sustainable recycling of platinum group metals from spent automotive catalysts via bioleaching

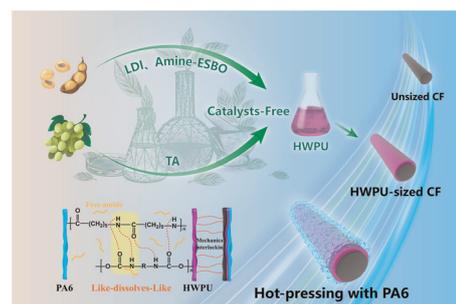
Salman Karim, Han Mei Saw and Yen-Peng Ting*



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Synthesis of a fully bio-based self-catalyzed hyperbranched waterborne polyurethane as a sizing agent for enhancing the interfacial properties of CF/PA6 composites

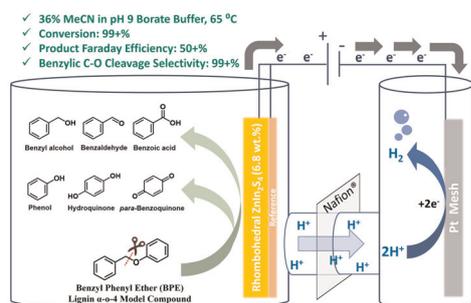
Shengtao Dai, Fei Yan, Siyu Zhang, Jiaming Guo, Lin Zhang, Yu Liu, Liu Liu* and Yuhui Ao*



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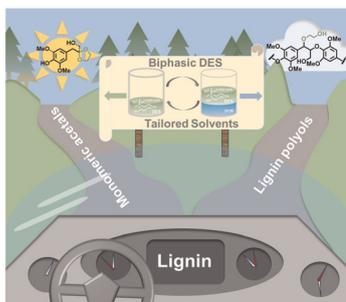
- ✓ 36% MeCN in pH 9 Borate Buffer, 65 °C
- ✓ Conversion: 99+%
- ✓ Product Faraday Efficiency: 50+%
- ✓ Benzylic C-O Cleavage Selectivity: 99+%



Rhombohedral ZnIn₂S₄-catalysed anodic direct electrochemical oxidative cleavage of C–O bond in α-O-4 linkages in ambient conditions

Qi Zhu, Bo Gong, Shuquan Huang, Yangxin Jin, Shengqin Liu, Shan Shao, Yuwei Yang, Taren Cataldo, Nicholas M. Bedford and Jason Chun-Ho Lam*

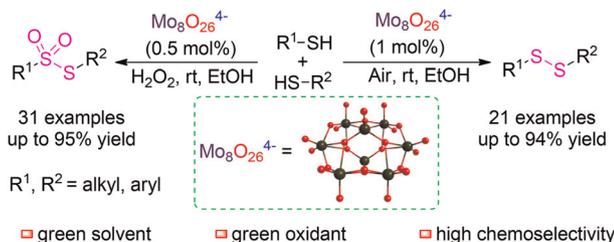
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Solvent-triggered directional lignin valorization towards monomeric acetals or lignin polyols

Xinyue Sun, Junjie Ni, Yuhan Lou, Peng Zhao, Yanyan Yu, Yilin Li, Qi Tang, Haipeng Yu* and Yongzhuang Liu*

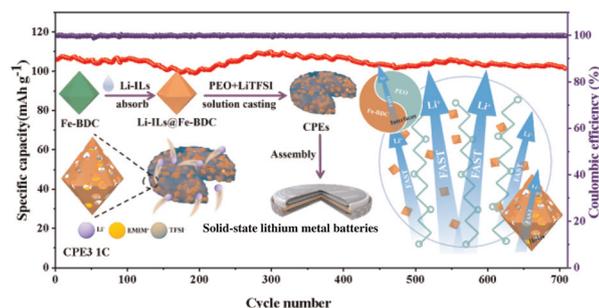
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Sustainable synthesis of thiosulfonates and disulfides by molybdenum-catalyzed selective oxidation of thiols

Zhibin Zhou, Hao Xu, Jiamin Ma, Xianghua Zeng* and Yongge Wei*

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Enhanced lithium-ion conductivity and interfacial stability of Li-IL@Fe-BDC composite polymer electrolytes for solid-state lithium metal batteries

Liequan Liu, Zikang Gong, Chen Liu, Aiping Peng, Ze Zhang,* Ji Yu, Jianxin Cai and Zhenyu Yang*

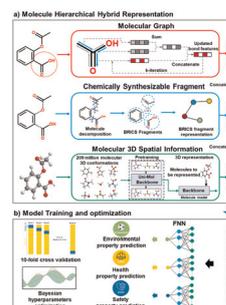


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An interpretable 3D multi-hierarchical representation-based deep neural network for environmental, health and safety properties prediction of organic solvents

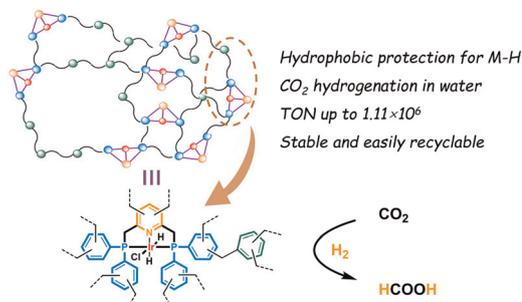
Jun Zhang, Qin Wang,* Yang Lei and Weifeng Shen*



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Highly efficient catalysts for CO₂ hydrogenation to formic acid in water catalyzed by hydrophobic porous polymers containing stable metal–hydride

Wentao Ma, Wenjie Xiong,* Jinling Hu, Jiao Geng* and Xingbang Hu*



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Photoredox streamlines electrocatalysis: photoelectrosynthesis of polycyclic pyrimidin-4-ones through carbocyclization of unactivated alkenes with malonates

Minglin Tao, Qin Feng, Kaixing Gong, Xuege Yang, Lou Shi,* Qiaowen Chang* and Deqiang Liang*



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In situ electronic redistribution of NiCoZnP/NF heterostructure via Fe-doping for boosting hydrazine oxidation and hydrogen evolution

Tongtong Shi, Bo Gao, Haoyu Meng, Yumo Fu, Delong Kong, Penghui Ren, Haiyang Fu and Zhongbao Feng*

