

Green Chemistry

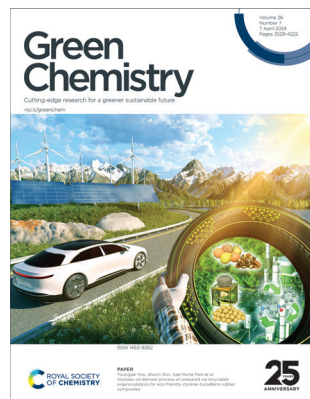
Cutting-edge research for a greener sustainable future

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See Jihoon Shin,
Sae Hume Park *et al.*,
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Inside cover

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

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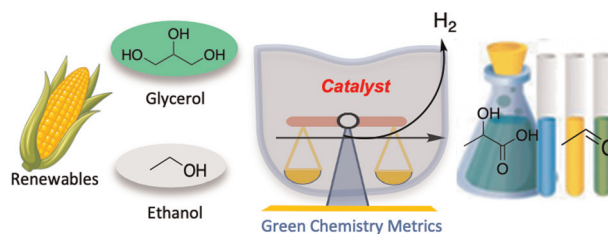
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CRITICAL REVIEWS

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

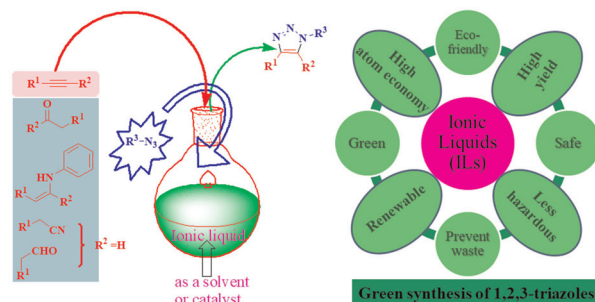
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Ionic liquids for the green synthesis of 1,2,3-triazoles: a systematic review

Aman Kumar, Vijay Kumar, Prashant Singh,
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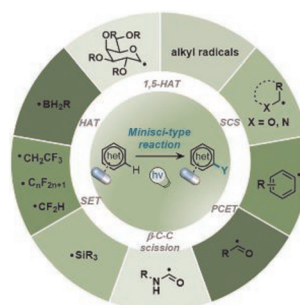
**Fundamental questions
Elemental answers**

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

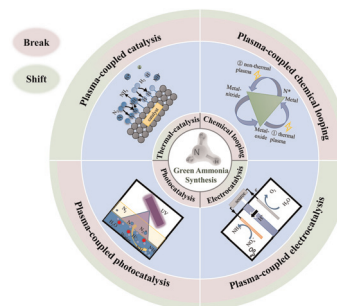
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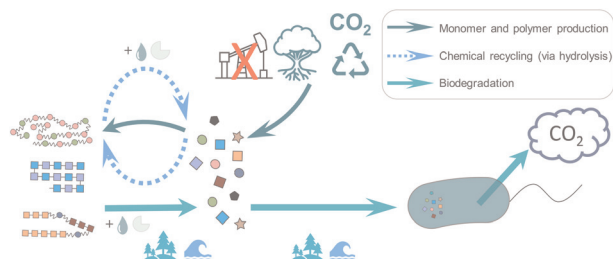
Advancing sustainable end-of-life strategies for photovoltaic modules with silicon reclamation for lithium-ion battery anodes

Owen Wang, Zhuowen Chen and Xiaotu Ma*



PERSPECTIVES

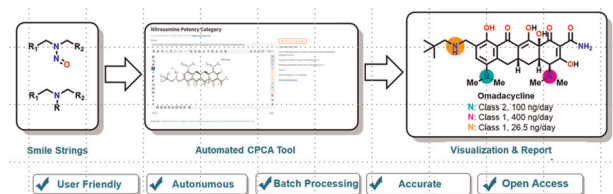
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**Polyester biodegradability: importance and potential for optimisation**

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

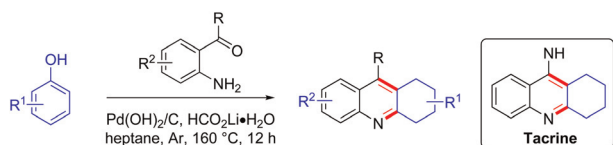
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**An automated carcinogenic potency categorization approach for nitrosamine drug substance-related impurities**

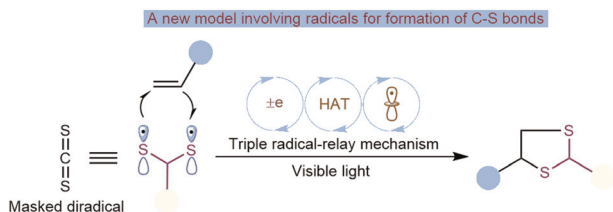
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Jianjin Yu, Renqin Zhan, Chao-Jun Li and Huiying Zeng*

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Na Yang, Gefei Duan and Yunbo Zhu*

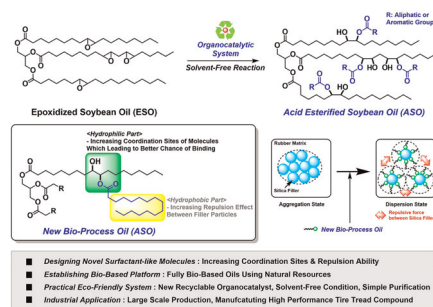


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Soybean oil derived-process oil prepared via recyclable organocatalysis for eco-friendly styrene–butadiene rubber composites

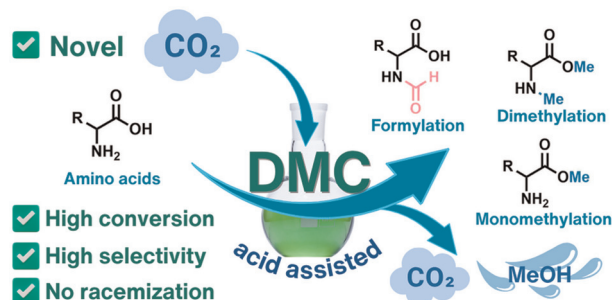
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A novel approach to amino acid synthesis: acid-assisted reactions with dimethyl carbonate for efficient *O*-methylated, *N,O*-methylated and *N*-formylated derivatives

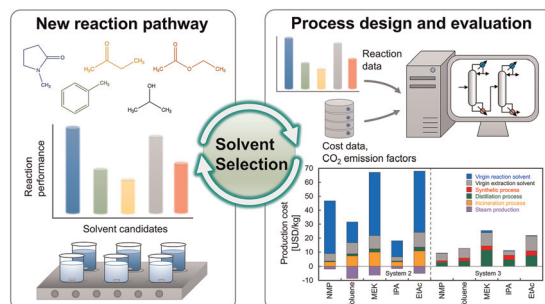
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Solvent selection based on a conceptual process design by combining cost evaluation and life cycle assessments for developing new reaction pathways

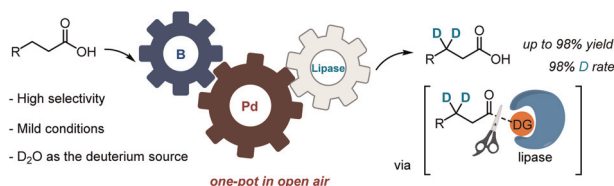
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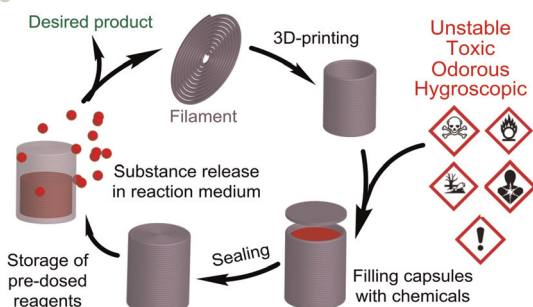
Chemoenzymatic β -specific methylene C(sp³)–H deuteration of carboxylic acids

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



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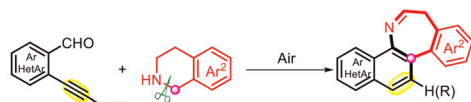
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A 60-times faster digital-discovery-compatible reaction setup with enhanced safety for chemical applications

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, Jiaxin Li, Yujia Zhou, Panke Zhang,* Yunhui Zhao* and Congjun Zhu*

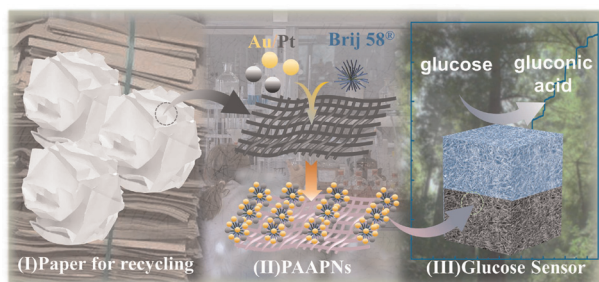
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Sangita Dattatray Shinde, Gargi Nikhil Vaidya, Shyam Kumar Lokhande, Anil Shaha, Ramesh Hiralal Choudhary and Dinesh Kumar*

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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*

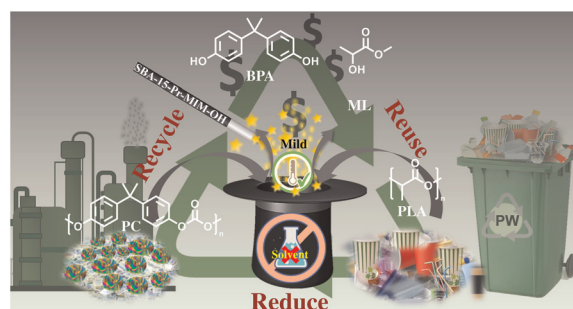


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Solvent-free chemical upcycling of poly(bisphenol A carbonate) and poly(lactic acid) plastic waste using SBA-15-functionalized basic ionic liquids

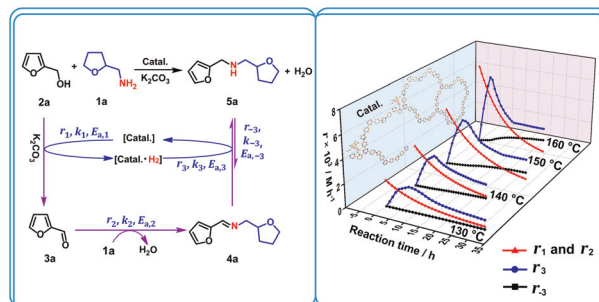
Arjun K. Manal, Garima Saini and Rajendra Srivastava*



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

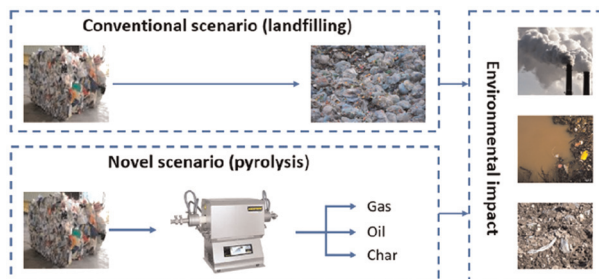
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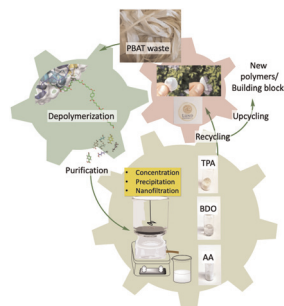
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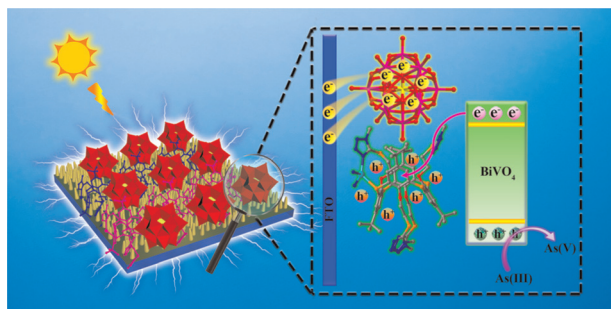
Closing the loop for poly(butylene-adipate-co-terephthalate) recycling: depolymerization, monomers separation, and upcycling

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



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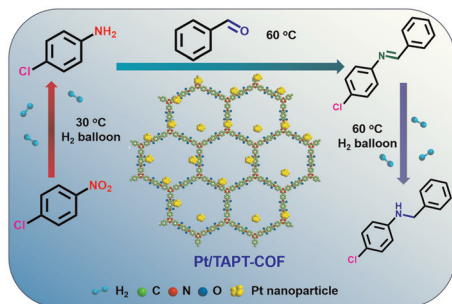
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Highly efficient photoelectrocatalytic oxidation of arsenic(III) with a polyoxometalate-thiacalix[4]arene-based metal-organic complex-modified bismuth vanadate photoanode

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

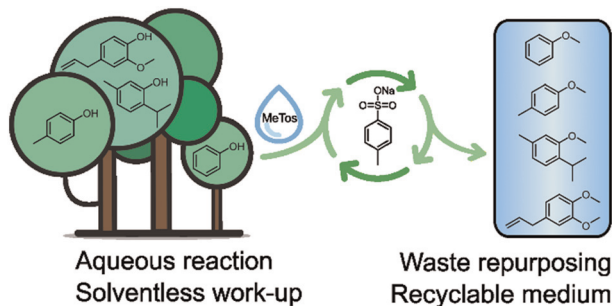
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Electron-rich Pt anchored on covalent triazine frameworks for the selective hydrogenation of halogenated nitrobenzenes

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

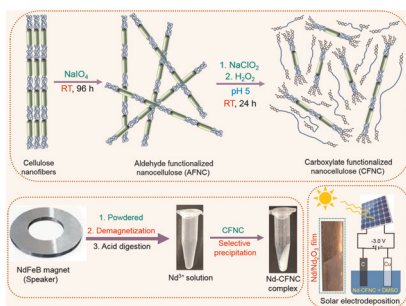
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Aqueous sodium tosylate: a sustainable medium for alkylations

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

Sandeep Bose, Benilde Mizero and Parisa A. Ariya*

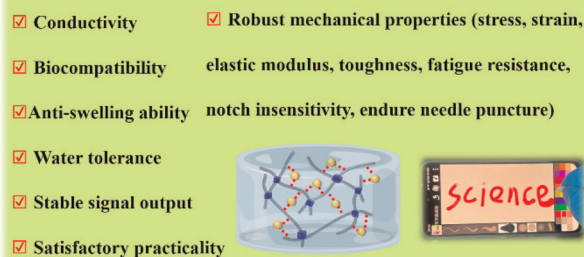


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Robust hydrogel sensor with good mechanical properties, conductivity, anti-swelling ability, water tolerance and biocompatibility

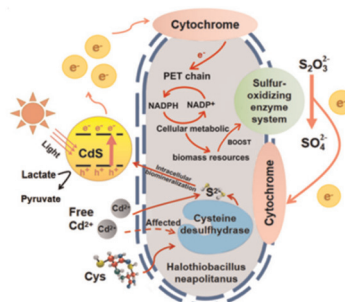
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Semiconductor biohybrids for enhanced bifunctional wastewater sulfur and heavy metal removal

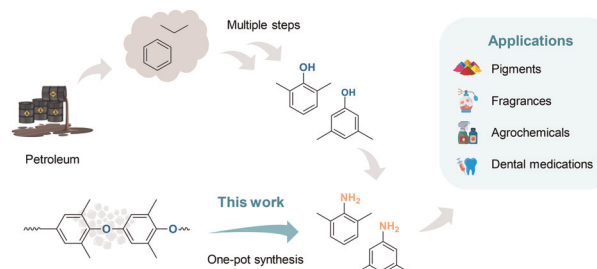
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Direct amination of poly(*p*-phenylene oxide) to substituted anilines over bimetallic Pd–Ru catalysts

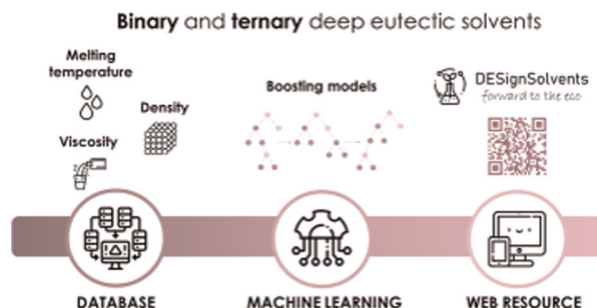
Phuc T. T. Nguyen, Gökalep Gözaydın, Jieran Ma, Bingqing Yao, Qian He and Ning Yan*



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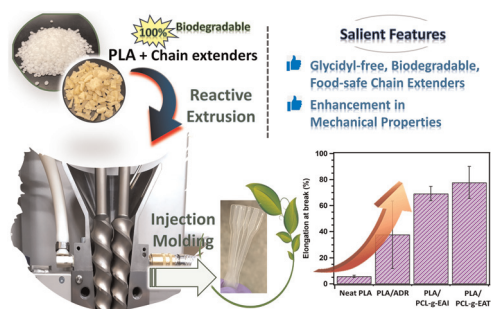
DESIGNsolvents: an open platform for the search and prediction of the physicochemical properties of deep eutectic solvents

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



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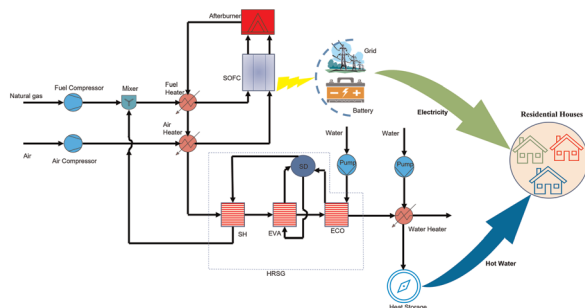
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Food-safe glycidyl-free chain extenders for polylactides

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

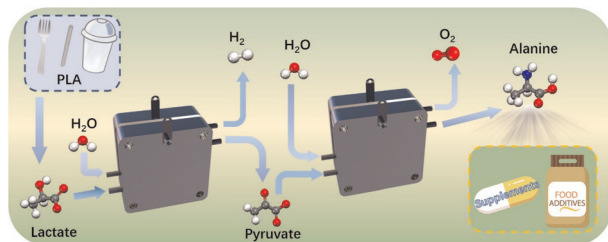
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Techno-economic analysis of solid oxide fuel cell-based energy systems for decarbonising residential power and heat in the United Kingdom

Dibyendu Roy, Samiran Samanta, Sumit Roy,* Andrew Smallbone and Anthony Paul Roskilly

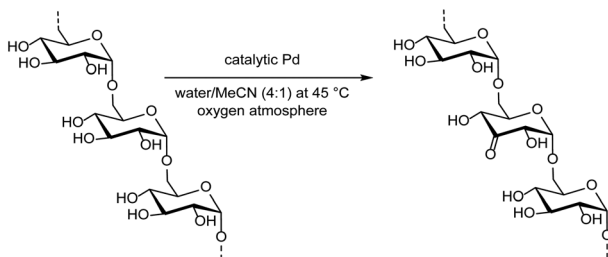
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Beyond biodegradation: upcycling of polylactic acid plastic waste into amino acids via cascade catalysis under mild conditions

Yingxin Ma, Xuyun Guo, Mengmeng Du, Sailei Kang, Weiliang Dong, Valeria Nicolosi, Zhongli Cui, Yu Zhang* and Bocheng Qiu*

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Regioselective palladium-catalysed aerobic oxidation of dextran and its use as a bio-based binder in paperboard coatings

Sarina C. Maßmann, Gerald A. Metselaar, Derk Jan van Dijken, Keimpe J. van den Berg, Martin D. Witte* and Adriaan J. Minnaard*



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

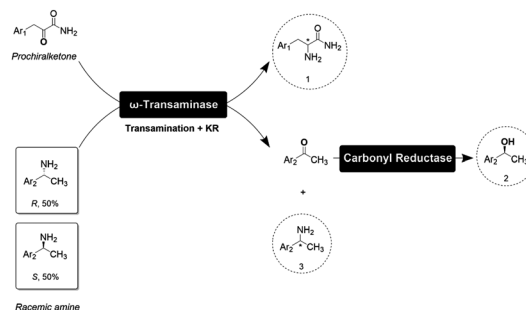
Yanhui Hu, Hua Yue, Shiqi Huang, Bingxi Song,
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Biotransamination with racemic amines as amine donors: kill three birds with one stone through a dual-enzyme cascade

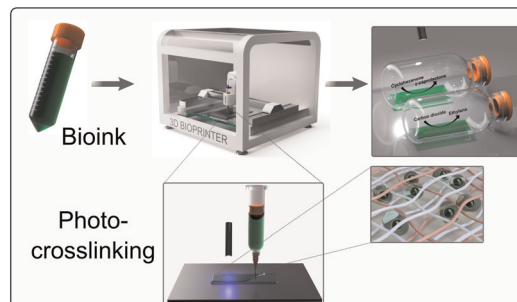
Kai Li, Mengjie Sun, Haoyu Jing, Jing Liu, Jun Gao and
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Employing photocurable biopolymers to engineer photosynthetic 3D-printed living materials for production of chemicals

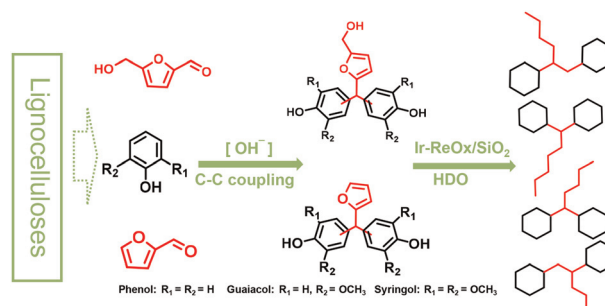
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Wenyang Xu, Sergey Kosourov, Vilja Siitonen,
Chunlin Xu and Yagut Allahverdiyeva*



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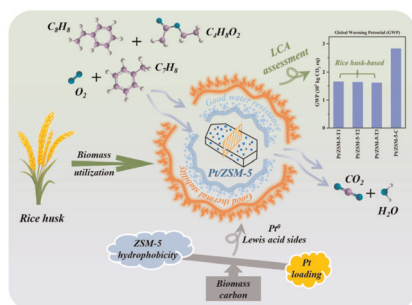
Selective production of bicyclic alkanes as high-density fuel additives by coupling lignocellulose-derived furanics and phenolics

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



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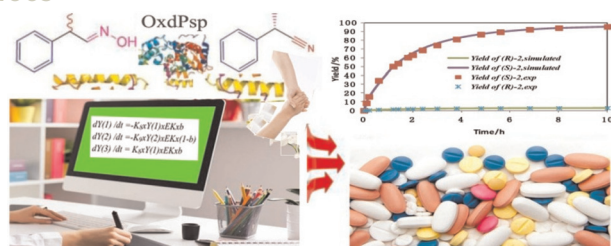
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Pt anchored in the skeleton of rice husk-based ZSM-5 for excellent catalytic VOC oxidation: structure–activity relationship and environmental impact assessment

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

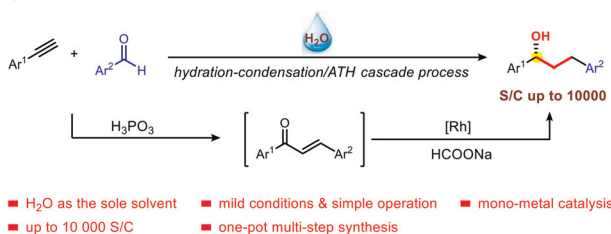
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Kinetic model of asymmetric dehydration of aldoxime catalyzed by immobilized OxdPsp in an organic solvent

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

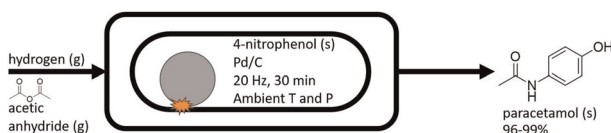
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Water-mediated one-pot multi-step synthesis of chiral 1,3-diarylpropan-1-ols by the asymmetric hydrofunctionalisation of simple alkynes

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*

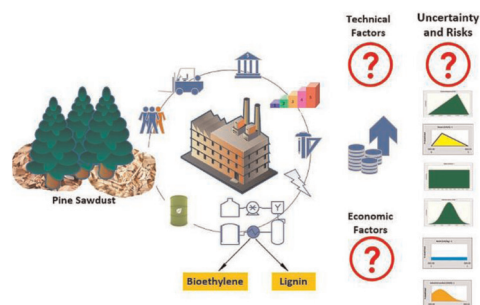


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Design of an integrated biorefinery for bioethylene production from industrial forest byproducts

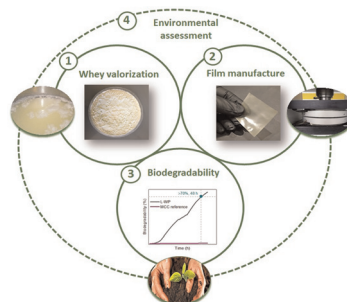
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Valorization of cheese whey: closing the loop from protein extraction to whey protein film composting

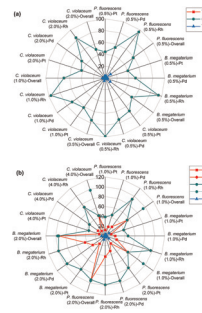
Maialen Uribarrena, Eric Rovira-Cal, Leire Urbina, Maria Jose Suárez, Enrique Aymerich, Pedro Guerrero, Koro de la Caba* and Alaitz Etxabide*



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

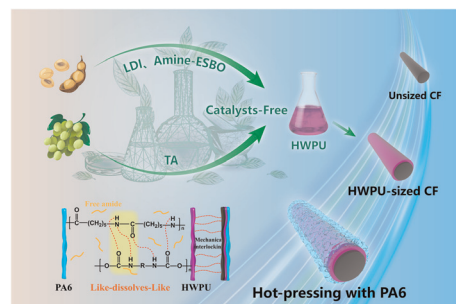
Salman Karim, Han Mei Saw and Yen-Peng Ting*



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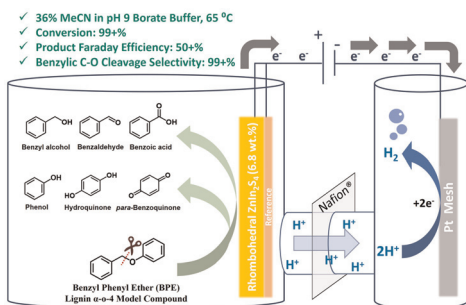
Synthesis of a fully bio-based self-catalyzed hyperbranched waterborne polyurethane as a sizing agent for enhancing the interfacial properties of CF/PA6 composites

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



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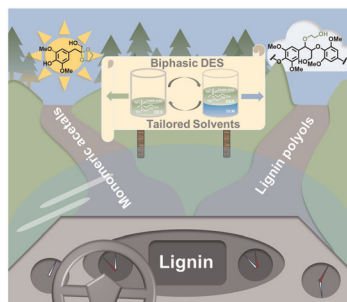
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Rhombohedral ZnIn₂S₄-catalysed anodic direct electrochemical oxidative cleavage of C–O bond in α-O-4 linkages in ambient conditions

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

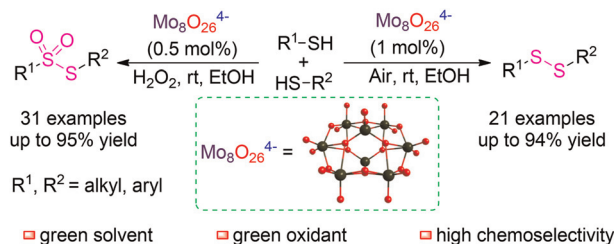
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Solvent-triggered directional lignin valorization towards monomeric acetals or lignin polyols

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

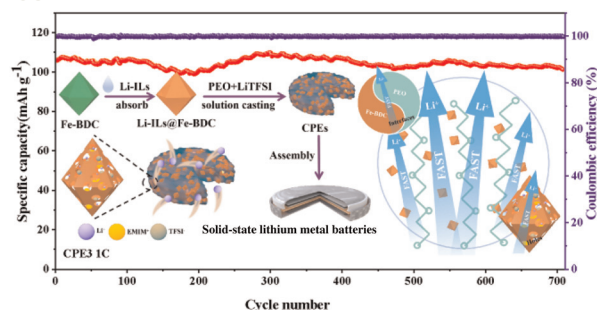
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Sustainable synthesis of thiosulfonates and disulfides by molybdenum-catalyzed selective oxidation of thiols

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*

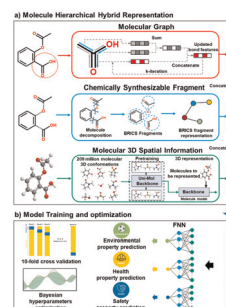


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An interpretable 3D multi-hierarchical representation-based deep neural network for environmental, health and safety properties prediction of organic solvents

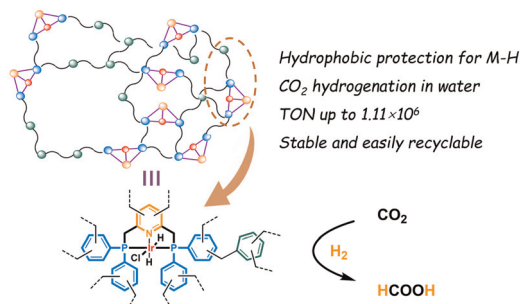
Jun Zhang, Qin Wang,* Yang Lei and Weifeng Shen*



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

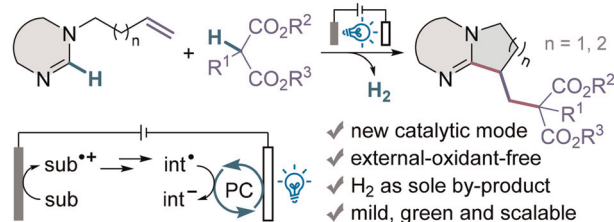
Wentao Ma, Wenjie Xiong,* Jinling Hu, Jiao Geng* and Xingbang Hu*



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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*

