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ISSN 1463-9262 CODEN GRCHFJ 25(16) 6079–6500 (2023)

Cover
See Regina Palkovits *et al.*, pp. 6231–6237.

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Inside cover
See Ludwig A. Kibler, Timo Jacob *et al.*, pp. 6238–6252.

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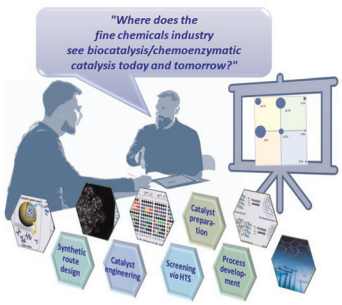
Status check: biocatalysis; its use with and without chemocatalysis. How does the fine chemicals industry view this area?

Fabrice Gallou,* Harald Gröger* and Bruce H. Lipshutz*



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Limonene as a natural product extraction solvent

Mario Pagliaro, Anne-Sylvie Fabiano-Tixier and Rosaria Ciriminna*

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CRITICAL REVIEW

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Catalyst-free mechanochemistry as a versatile tool in synthetic chemistry: a review

Bandameeda Ramesh Naidu, Thondooru Sruthi, Raghavender Mitty and Katta Venkateswarlu*

TUTORIAL REVIEWS

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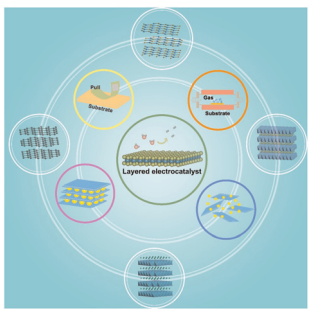
2D layered materials: structures, synthesis, and electrocatalytic applications

Lijia Liu, Wei An, Fengyun Gu, Lili Cui, Xingquan He* and Meihong Fan*



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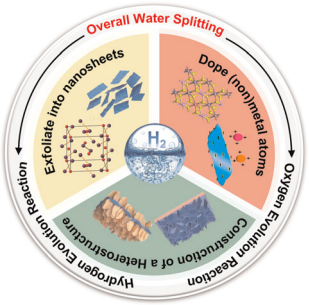
Shining light on layered metal phosphosulphide catalysts for efficient water electrolysis: preparation, promotion strategies, and perspectives

Sijia Zhao, Ya Chen,* Yaoda Liu, Jun Cheng and Zhengfei Dai*



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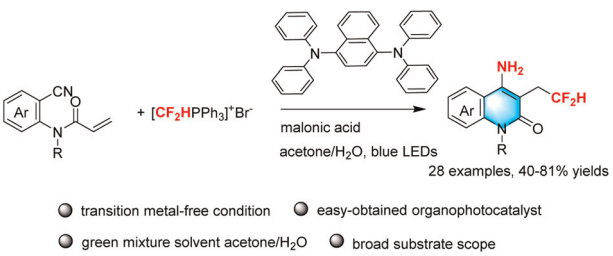
Transition metal-free photocatalytic radical annulation of 2-cyanoaryl acrylamides with difluoromethyl radicals to assemble 4-amino-quinolinone derivatives

Qiaoyan Wu, Niuniu Zhang, Xirui Gong, Meilin Ren, Yanli Xu* and Yanyan Chen*



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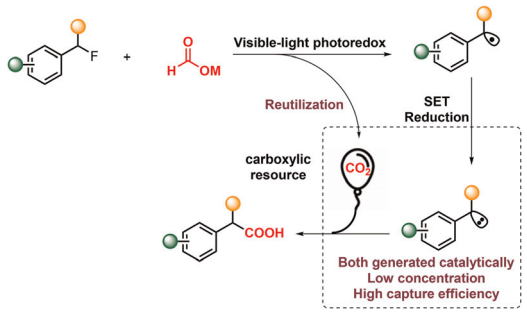

Photocatalytic defluorocarboxylation using formate salts as both a reductant and a carbon dioxide source

Shi-Yun Min, He-Xin Song, Si-Shun Yan,* Rong Yuan, Jian-Heng Ye, Bi-Qin Wang, Yong-Yuan Gui* and Da-Gang Yu*

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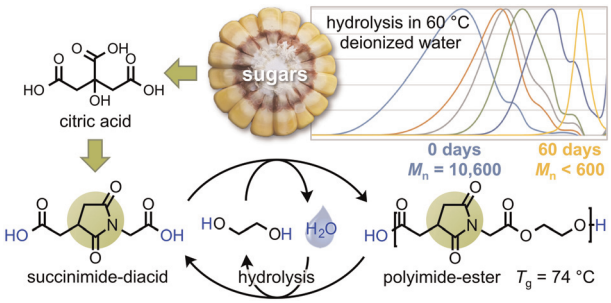

Renewable and water-degradable polyimide-esters from citric acid

Yu-Kai Su, Gabriel N. Short and Stephen A. Miller*

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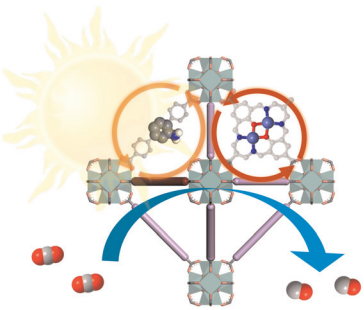

Designing dual-atom cobalt catalysts anchored on amino-functionalized MOFs for efficient CO_2 photoreduction

Meng-Ting Ming, Yu-Chen Wang, Wei-Xue Tao, Wen-Jie Shi,* Di-Chang Zhong* and Tong-Bu Lu*

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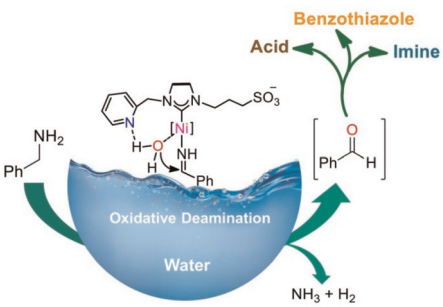

Ni(II)-catalyzed oxidative deamination of benzyl amines with water

Nilay Kumar Pal, Kuldeep Singh, Moumita Patra, Suman Yadav, Prabhakar K. Pandey and Jitendra K. Bera*

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COMMUNICATIONS

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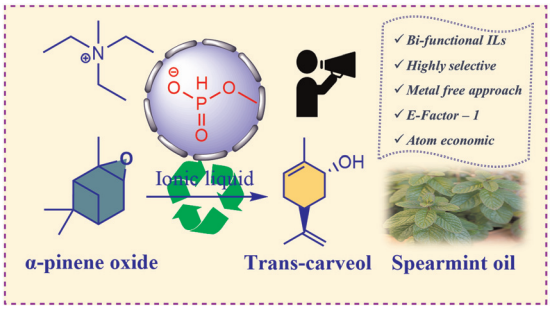
Selective isomerization of α-pinene oxide to *trans*-carveol by task-specific ionic liquids: mechanistic insights *via* physicochemical studies

Sanjay Mehra, Dhanaji R. Naikwadi, Kuldeep Singh, Ankush V. Biradar* and Arvind Kumar*



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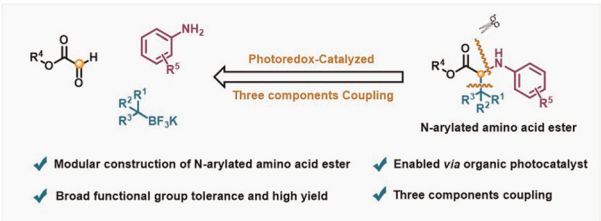
Modular construction of *N*-arylated amino acid esters enabled by a photoredox-catalyzed multicomponent reaction

Qing Li, Hanhan Sun, Fengying Yan, Yuanyuan Zhao, Yicheng Zhang, Chao Zhou, Man-yi Han, Hongji Li and Xianwei Sui*



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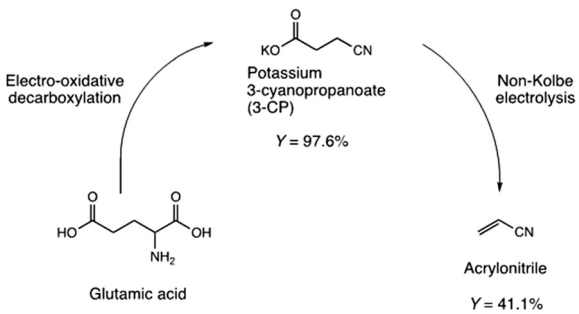
Electrochemical transformation of D,L-glutamic acid into acrylonitrile

Justus Kümper, Jérôme Meyers, Rebecca Sebers, Nils Kurig and Regina Palkovits*



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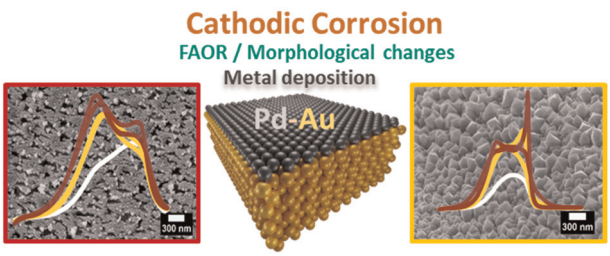
Metal deposition and electrocatalysis for elucidating structural changes of gold electrodes during cathodic corrosion

Mohamed M. Elnagar, Ludwig A. Kibler* and Timo Jacob*



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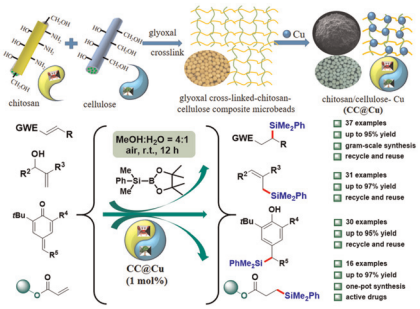

Preparation of chitosan/cellulose composite copper catalyst for green synthesis in the construction of C–Si bonds in aqueous phase

Yaoyao Zhang, Biao Han, Zelang Zhang, Xue Zhao, Weishuang Li, Bojie Li and Lei Zhu*

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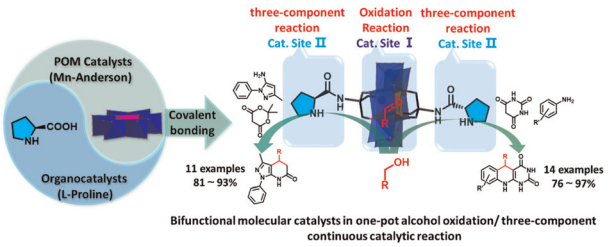

A bifunctional molecular catalyst built up of L-proline grafted polyoxometalate for one-pot three-component green synthesis of heterocycles

Guoyong Dai, Qi Li, Dejin Zang* and Yongge Wei*

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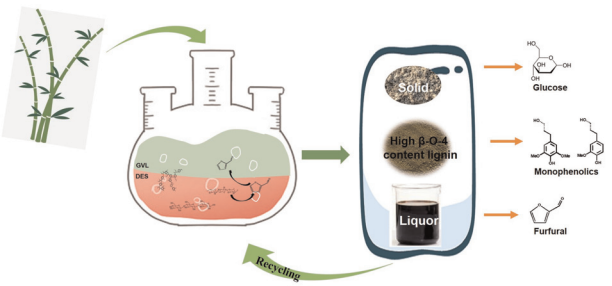

Novel biphasic DES/GVL solvent for effective biomass fractionation and valorization

Jinyuan Cheng, Xuze Liu, Chen Huang,* Yunni Zhan, Caoxing Huang, Tingjun Chen, Xianzhi Meng, Chang Geun Yoo, Guigan Fang and Arthur J. Ragauskas*

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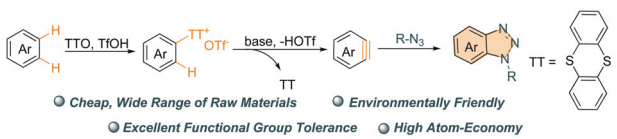

[3 + 2] Cycloaddition of azides with arynes formed *via* C–H deprotonation of aryl sulfonium salts

Xing-Wei Gu, Yan-Hua Zhao and Xiao-Feng Wu*

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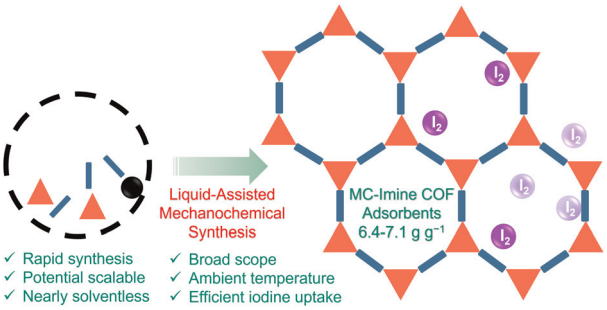
Green mechanochemical synthesis of imine-linked covalent organic frameworks for high iodine capture

Normanda Brown, Ziad Alsudairy, Ranjan Behera, Fazli Akram, Kuangcai Chen, Kayla Smith-Petty, Bria Motley, Spirit Williams, Wenyu Huang, Conrad Ingram and Xinle Li*



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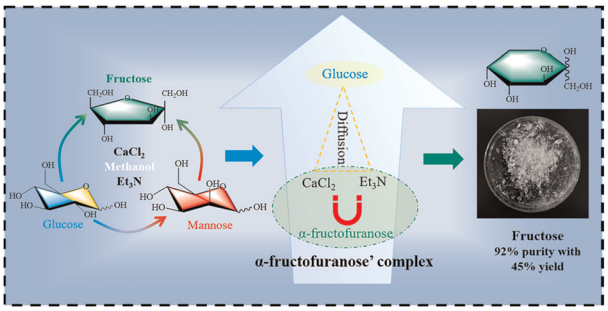
Highly efficient production and purification of fructose *via* glucose isomerization by calcium chloride and triethylamine

Zhaohui Guo, Christian Marcus Pedersen, Honghong Chang, Yingxiong Wang* and Yan Qiao*



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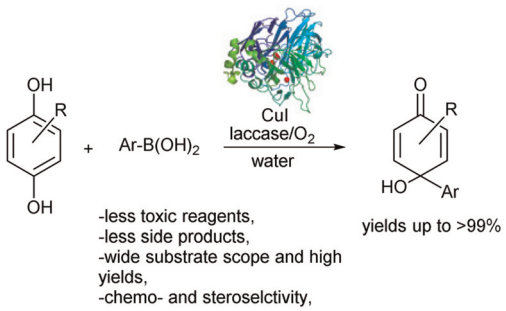
Chemoenzymatic cascade reaction as a sustainable and scalable access to *para*-quinols

Jan Samsonowicz-Górski, Anastasiia Hrunyk, Anna Brodzka, Ryszard Ostaszewski* and Dominik Koszelewski*



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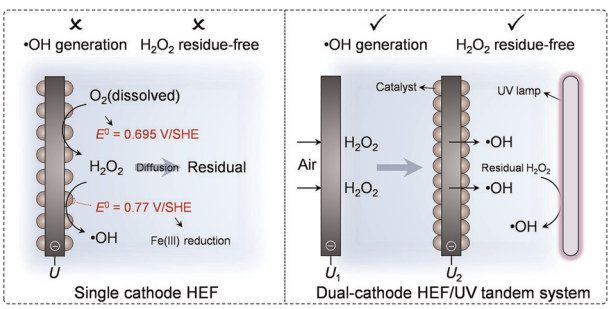
An efficient, green, and residual oxidant-free wastewater treatment technique enabled by coupling a dual-cathode heterogeneous electro-Fenton process and UV radiation in tandem

Lele Cui, Mingming Sun and Zhenghua Zhang*



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Self-healing and reprocessing of reclaimed rubber prepared by re-crosslinking waste natural rubber powders

Juan Ye, Shujun Tan, Haoyu Deng, Weibin Huang, Hao Jin, Lanyue Zhang, Hongping Xiang* and Mingqiu Zhang*

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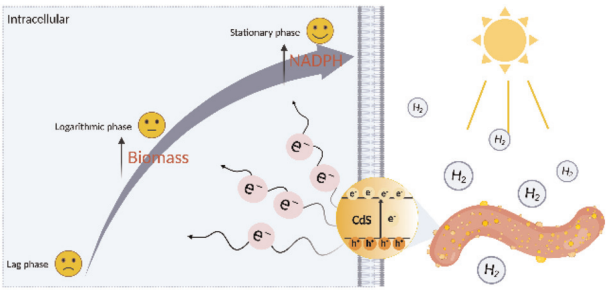

Semiconductor augmented hydrogen and polyhydroxybutyrate photosynthesis from *Rhodospirillum rubrum* and a mechanism study

Lin Wang, Shulan Shi, Jun Liang,* Bo Wang, Xiwen Xing* and Cuiping Zeng*

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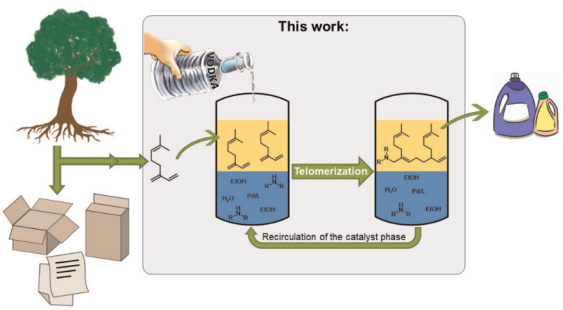

Synthesis of biobased amines *via* Pd-catalysed telomerisation of the renewable β-myrcene in a water/ethanol multiphase system: catalyst recycling enabled by a self-separating product phase

Anna Kampwerth, Michael Terhorst, Nils Kampling, Dieter Vogt and Thomas Seidensticker*

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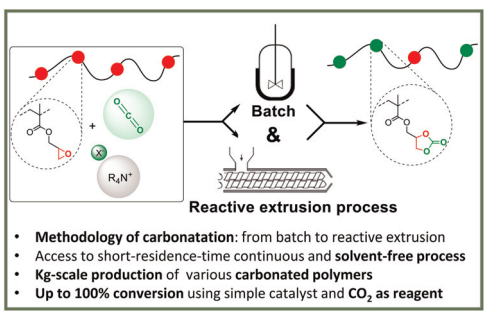

Carbonatation of [ethylene–glycidyl methacrylate]-based copolymers with carbon dioxide as a reagent: from batch to solvent-free reactive extrusion

Bruno Guerdener, Virgile Ayzac, Sébastien Norsic, Paul Besognet, Véronique Bounor-Legaré,* Vincent Monteil,* Véronique Dufaud,* Jean Raynaud* and Yvan Chalamet*

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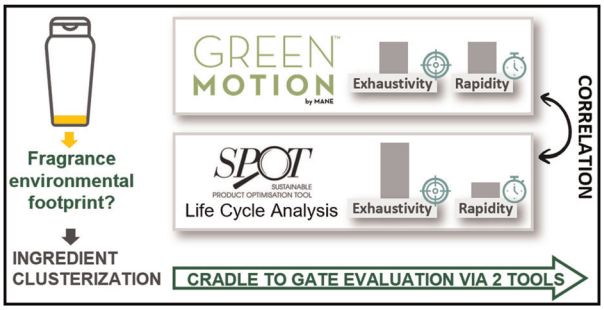
Environmental profile of the production of fragrance ingredients used in cosmetic products: comparative analysis of results obtained by life cycle assessment and the green chemistry-based eco-design tool GREEN MOTION™

Patricia Martz,* T. V. Tony Phan,* Jacques L'Haridon, Marie-Hélène Beausoleil, Kévin Lafaye, Yves Gérand and Cyril Gallardo



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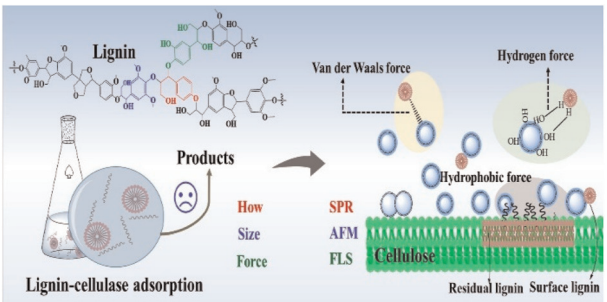
Elucidating the nonproductive adsorption mechanism of cellulase with lignin fractions from hydrothermally pretreated poplar using multi-dimensional spectroscopic technologies

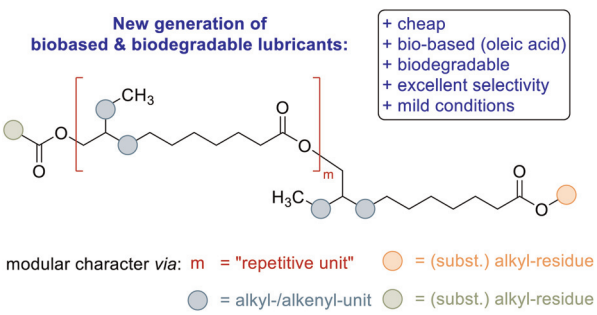
Xiaoxue Zhao, Bin Bian, Caoxing Huang,* Chenhuan Lai, Junlong Song, Yongcan Jin, Xianzhi Meng, Arthur Ragauskas and Qiang Yong*



6398

Sustainable tailor-made and bio-based high-performance lubricants that combine biorenewability, biodegradability and economic efficiency

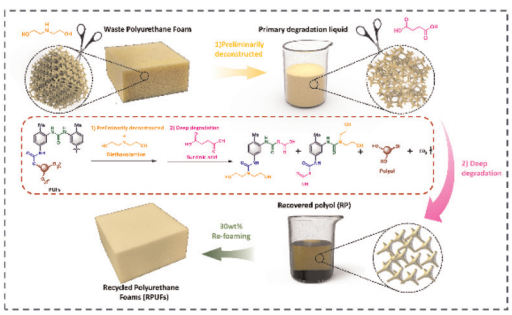
Luisa Koch, Alina Guntermann, Katharina Hirschbichler, Carmen Plass, Tobias Betke, Ling Ma, Thomas Kilthau and Harald Gröger*



6405

A new strategy for efficient chemical degradation and recycling of polyurethane materials: a multi-stage degradation method

Hui-Wen He, Kai-Ming Du, Han-Jing Yu, Yi-Feng Zhu, Hang Su, Fan Yang, Meng Ma, Yan-Qin Shi, Xiao-Jun Zhang, Si Chen* and Xu Wang*



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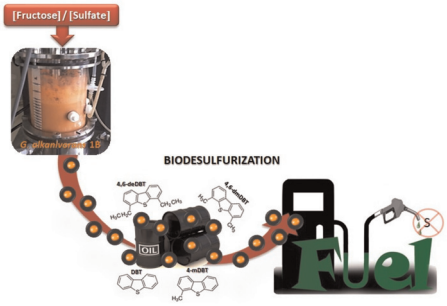
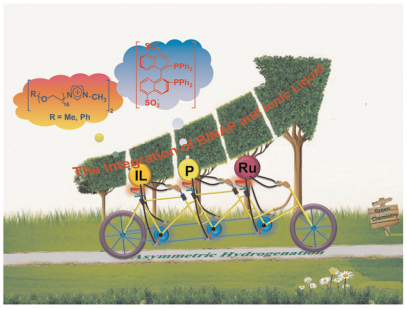


A new impetus for biodesulfurization: bypassing sulfate inhibition in biocatalyst production

Tiago P. Silva, Susana M. Paixão* and Luís Alves*

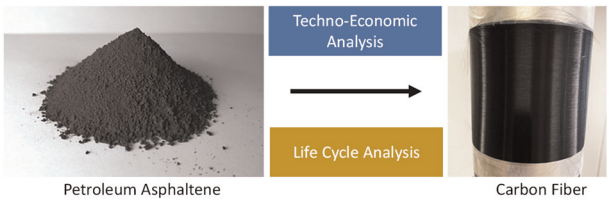
6432



Integration of a chiral phosphine ligand and ionic liquids: sustainable and functionally enhanced BINAP-based chiral Ru(II) catalysts for enantioselective hydrogenation of β-keto esters

Fan Wang, Shuai Zhang, Sen Huang, Lin Zhu, Hongbing Song, Congxia Xie and Xin Jin*

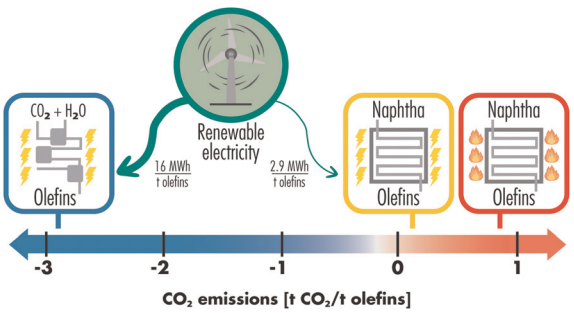
6446



Economic and environmental assessment of asphaltene-derived carbon fiber production

Md Abdullah Al Bari, Shariful Kibria Nabil, Shabab Saad, Rahul Sarkar, Sabrina Sabiha, Muhammad M. Rahman and Md Golam Kibria*

6459



Quantitative analysis of CO_2 emissions reduction potential of alternative light olefins production processes

Marian Flores-Granobles and Mark Saeys*

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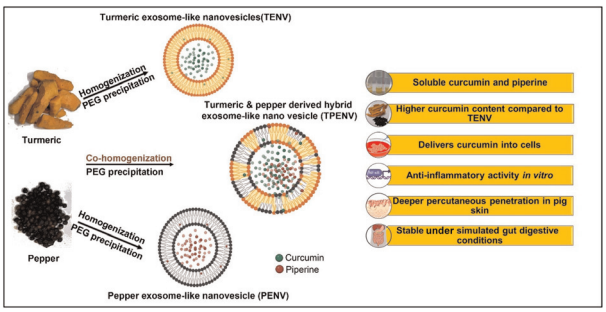
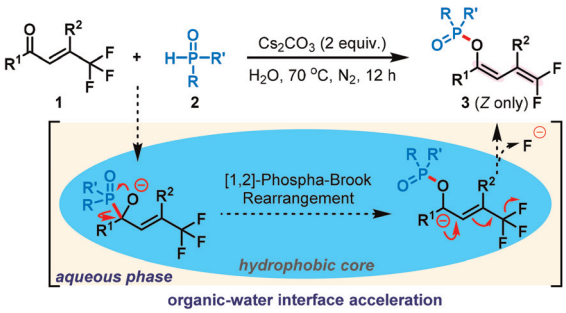
An eco-friendly one-pot extraction process for curcumin and its bioenhancer, piperine, from edible plants in exosome-like nanovesicles

Meghana N. Kumar, Sreeram Peringattu Kalarikkal, Cathrine M. S. Bethi, Sukriti Narendra Singh, Janakiraman Narayanan and Gopinath M. Sundaram*



6489

"On-water" defluorophosphorylation of trifluoromethylated enones with phosphine oxides

Xue-Qiang Chu,* Li-Wen Sun, Cheng Ma, Jia-Wei Chen, Yu-Lan Chen, Shao-Fei Ni,* Ming-Quan Zhu, Jie Zhou,* Mengtao Ma and Zhi-Liang Shen*