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Cover

See Oliver Y. Gutiérrez *et al.*,
pp. 4222–4233.

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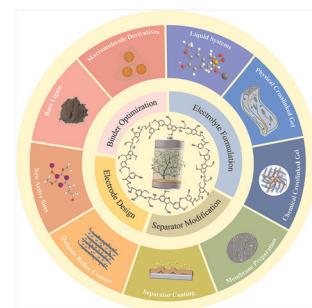
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CRITICAL REVIEW

4154

Renewable lignin and its macromolecule derivatives: an emerging platform toward sustainable electrochemical energy storage

Xueru Yang, Yufei Zhang, Minghui Ye, Yongchao Tang, Zhipeng Wen, Xiaoqing Liu* and Cheng Chao Li*

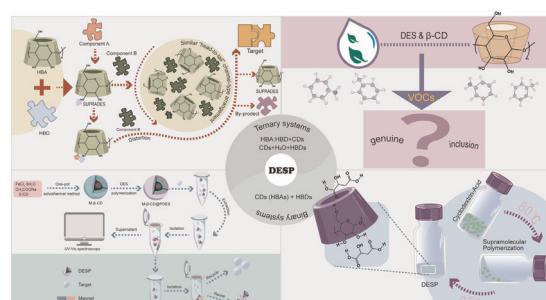


TUTORIAL REVIEWS

4180

Green materials with promising applications: cyclodextrin-based deep eutectic supramolecular polymers

Jingyu Zhang, Liping Yao, Shang Li, Shiqi Li,
Yongsong Wu, Zuquang Li* and Hongdeng Qiu*



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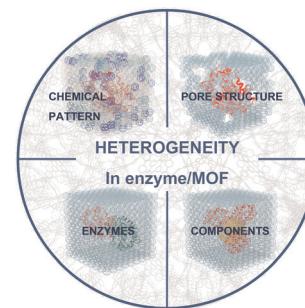


TUTORIAL REVIEWS

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Heterogeneity in enzyme/metal–organic framework composites for CO₂ transformation reactions

Ying Shu, Weibin Liang* and Jun Huang*

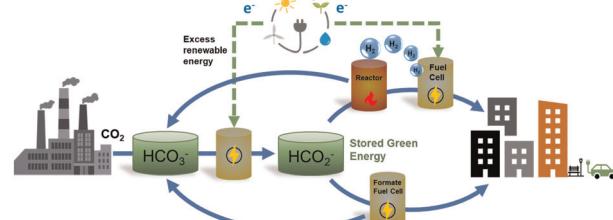


PERSPECTIVE

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Using earth abundant materials for long duration energy storage: electro-chemical and thermo-chemical cycling of bicarbonate/formate

Oliver Y. Gutiérrez,* Katarzyna Grubel, Jotheeswari Kothandaraman, Juan A. Lopez-Ruiz, Kriston P. Brooks, Mark E. Bowden and Tom Autrey

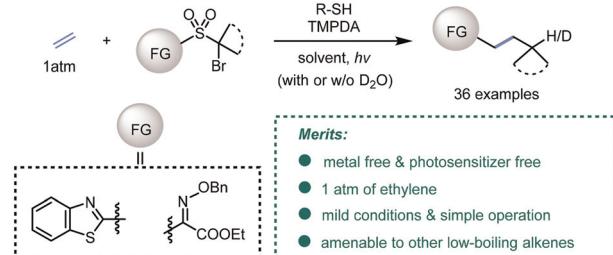


COMMUNICATIONS

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Metal-free radical-mediated alkylfunctionalization of ethylene and low-boiling-point alkenes

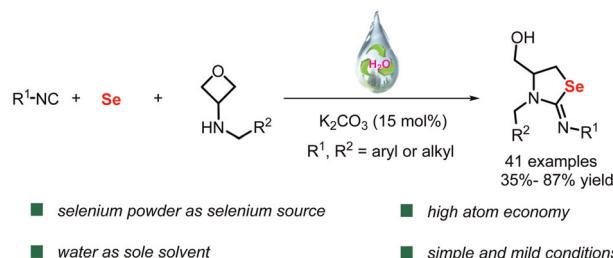
Xu Zhang, Xinxin Wu, Yasu Chen and Chen Zhu*



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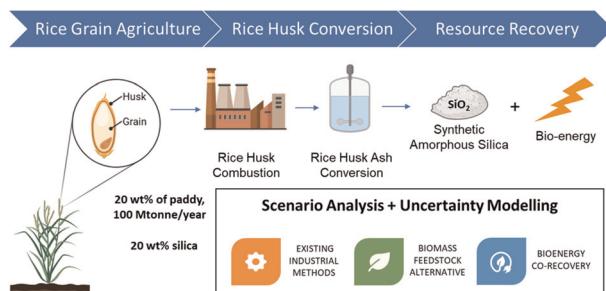
A multicomponent reaction of isocyanides, selenium powder and 3-aminooxetanes in pure water: green and efficient synthesis of 1,3-selenazolines

Huan Liu, Zi-Lin Ye, Zhong-Jian Cai* and Shun-Jun Ji*



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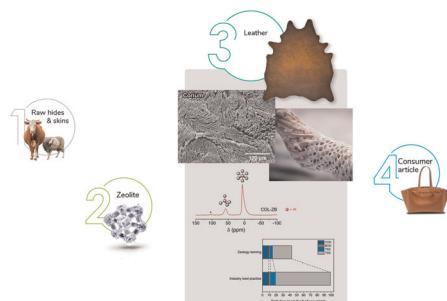
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Synthetic amorphous silica: environmental impacts of current industry and the benefit of biomass-derived silica

Ethan Errington, Miao Guo* and Jerry Y. Y. Heng*

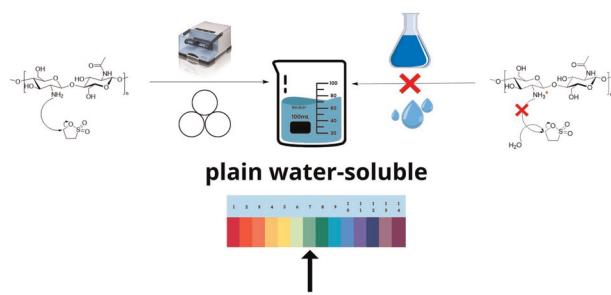
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Zeolites as sustainable alternatives to traditional tanning chemistries

William R. Wise, Stefan J. Davis,* Wouter E. Hendriksen, Dirick J. A. von Behr, Sujay Prabakar and Yi Zhang

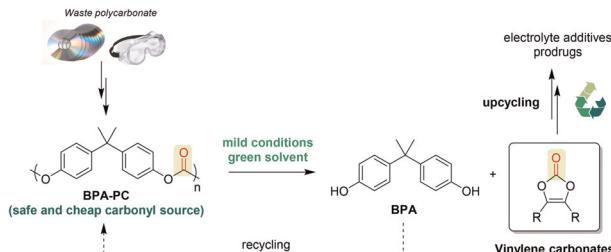
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Green mechanochemical synthesis of water-soluble *N*-sulfonated chitosan

Casper Van Poucke,* Aurèle Vandepitte, Sven Mangelinckx and Christian V. Stevens

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Chemical upcycling of poly(bisphenol A carbonate) to vinylene carbonates through organocatalysis

Killian Onida, Mohamad Fayad, Sébastien Norsic, Olivier Boyron and Nicolas Duguet*

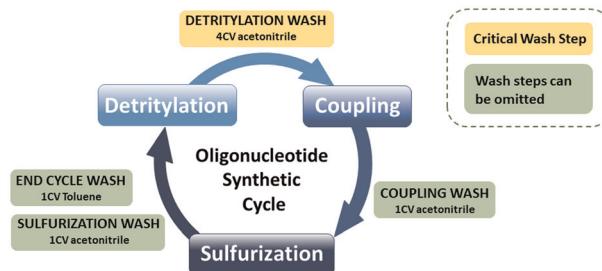


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Omission of column washing operations in the solid phase synthesis of oligonucleotides

Li Xiao,* Thomas Pickel, Zifan Li, Dominic Luciano, Jing Yang, David Cho, Sophia Mac, Xianglin Shi, George Bou-Assaf, Firoz Antia and Yannick Fillon



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Electrochemical single-step *N*-acylation and *S*-cyclization synthesis of thiazolimide via radical process

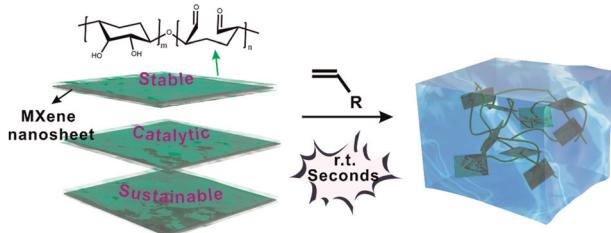
Yao Li, Jun Zhang, Mengyao She, Lang Liu, Zheng Yang, Ping Liu,* Shengyong Zhang and Jianli Li*



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Long-term stable and catalytic 2D MXene nanosheets wrapped with dialdehyde xylan for ultrafast gelation

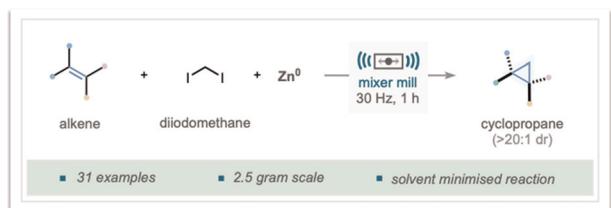
Nan Li, Lupeng Shao, Qiang Xia, Shujun Tan, Shuwen Zhao, XuPeng Li, Zhenhua Su, Xiang Hao* and Feng Peng*



4319

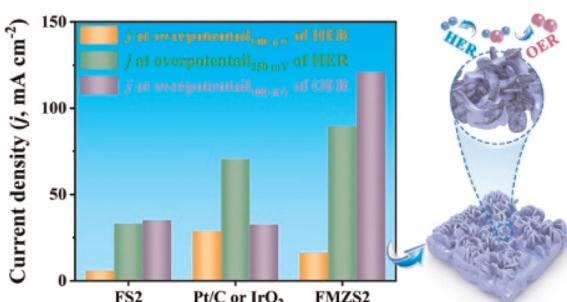
Mechanochemical Simmons–Smith cyclopropanation via ball-milling-enabled activation of zinc(0)

Lorenzo Pontini, Jamie A. Leitch* and Duncan L. Browne*



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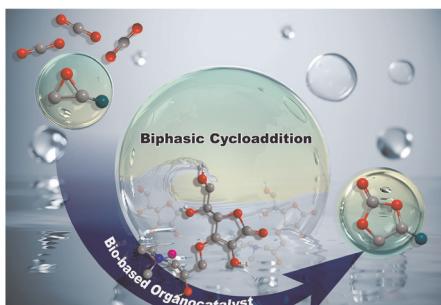
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Compositionally modulated FeMn bimetallic skeletons for highly efficient overall water splitting

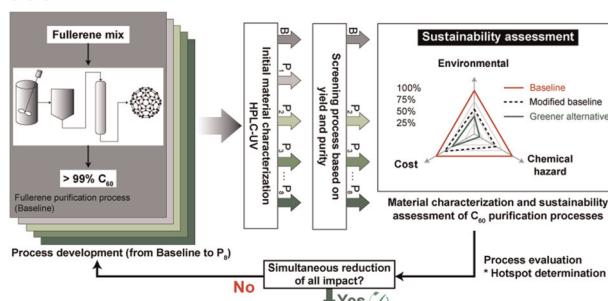
Licheng Huang, Ruiqi Yao, Zili Li, Jiaxin He, Yingqi Li*, Hongxiang Zong*, Shuang Han*, Jianshe Lian, Yang-Guang Li and Xiangdong Ding

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Cycloaddition of CO₂ to epoxides "around water": a strategy to apply and recycle efficient water-soluble bio-based organocatalysts in biphasic media

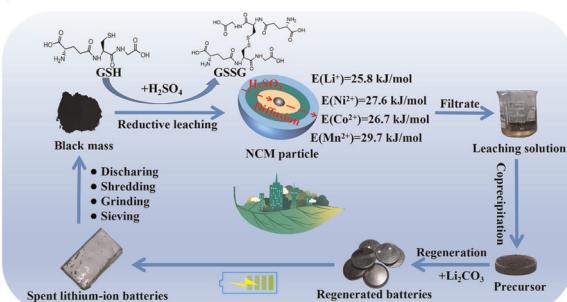
Tharinee Theerathanagorn, Anna Vidal-López, Aleix Comas-Vives, Albert Poater* and Valerio D' Elia*

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Environmental, cost, and chemical hazards of using alternative green solvents for fullerene (C₆₀) purification

Seyed M. Heidari, Eunsang Lee, Ben Cecil and Annick Anctil*

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A green strategy for recycling cathode materials from spent lithium-ion batteries using glutathione

Kunhong Gu, Xingyuan Gu, Yongwei Wang, Wenqing Qin and Junwei Han*

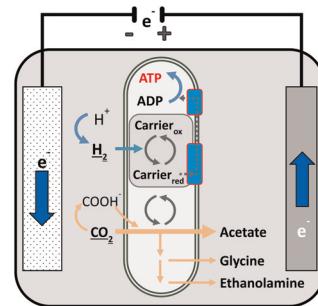


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Microbial electrosynthesis with *Clostridium ljungdahlii* benefits from hydrogen electron mediation and permits a greater variety of products

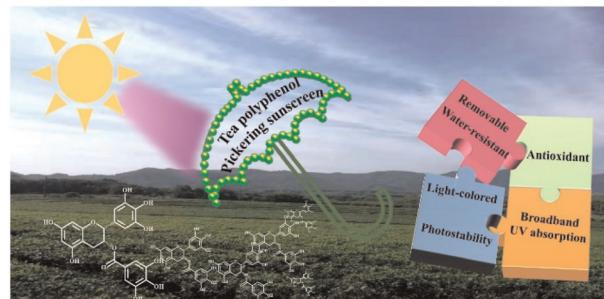
Santiago T. Boto, Bettina Bardl, Falk Harnisch and Miriam A. Rosenbaum*



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Polyphenolic condensation assembly enabled biocompatible, antioxidative, and light-colored tea sunscreen formulations with broadband UV protection

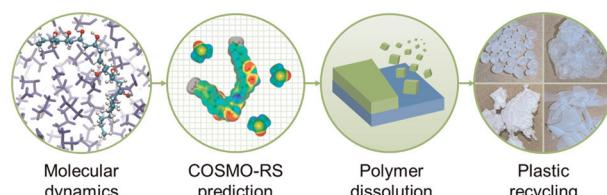
Qulan Tong, Yue Xiao, Zeng Yi, Xiangyu Chen, Xian Jiang* and Xudong Li*



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Large-scale computational polymer solubility predictions and applications to dissolution-based plastic recycling

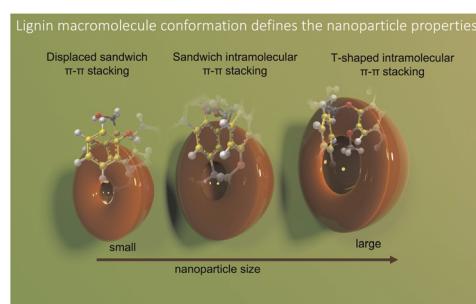
Panzheng Zhou, Jiuling Yu, Kevin L. Sánchez-Rivera, George W. Huber and Reid C. Van Lehn*



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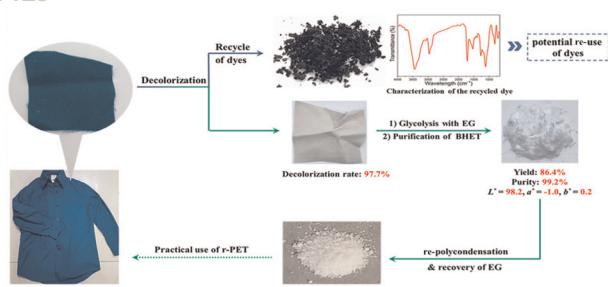
Molecular understanding of the morphology and properties of lignin nanoparticles: unravelling the potential for tailored applications

Ievgen V. Pylypchuk, Maria Karlsson, Pär A. Lindén, Mikael E. Lindström, Thomas Elder, Olena Sevastyanova* and Martin Lawoko*



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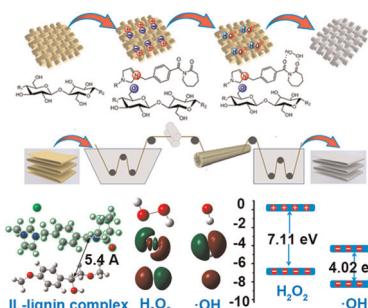
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Closed-loop utilization of polyester in the textile industry

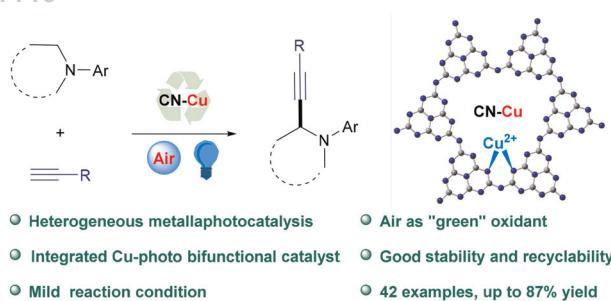
Zhuo Chen, Haiyu Sun, Weiqing Kong, Long Chen* and Weiwei Zuo*

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Efficient catalysis of H_2O_2 with ionic liquid molecules to generate hydroxyl radicals and application in green chemistry cotton processes

Kongliang Xie, Xiang Zhuang, Xiang Luo, Zeye Jing, Xiyu Song,* Aiqin Hou and Aiqin Gao*

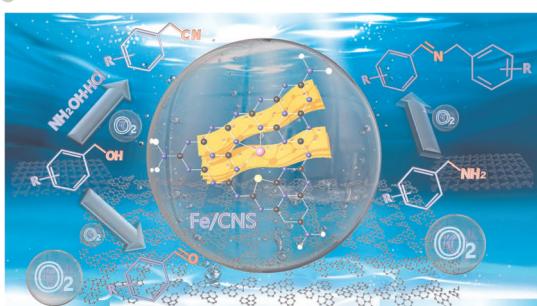
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Copper-doped carbon nitride as a practical heterogeneous metallaphotocatalyst for aerobic oxidative cross-coupling of tertiary amines with terminal alkynes

Yilian Bai, Qian Yang, Yurong Tang,* Xiao Dan, Wentao Wang* and Yunfei Cai*

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Enzyme-mimicking single atoms enable selectivity control in visible-light-driven oxidation/ammonoxidation to afford bio-based nitriles

Ye Meng, Jinshu Huang, Jie Li, Yumei Jian, Song Yang* and Hu Li*

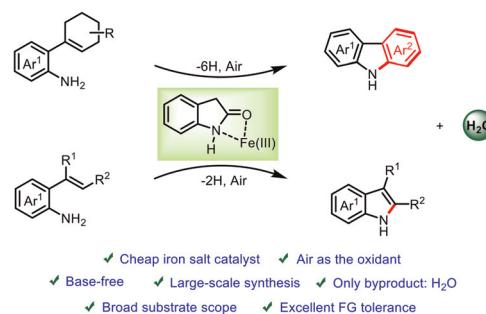


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Iron-catalyzed intramolecular C–H amination for the synthesis of N–H carbazoles and indoles

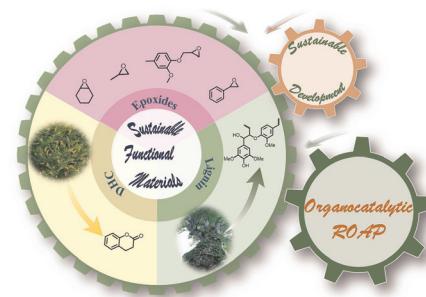
Zheng-Lin Wang, Yun-Hao Zhang, Jun-Yu Huang, Jian Zhou, Ya-Qin Yu, Dexin Feng* and Da-Zhen Xu*



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Lignin-grafting alternative copolymer of 3,4-dihydrocoumarin and epoxides as an active and flexible ingredient in sunscreen

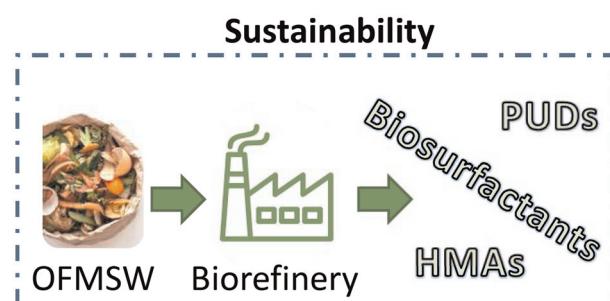
Pengcheng Liu, Yuanlong Guo, Gu Guo, Lei Dai, Gang Hu and Haibo Xie*



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Techno-economic evaluation and life cycle assessment for sustainable alternative biorefinery concepts using the organic fraction of municipal solid waste

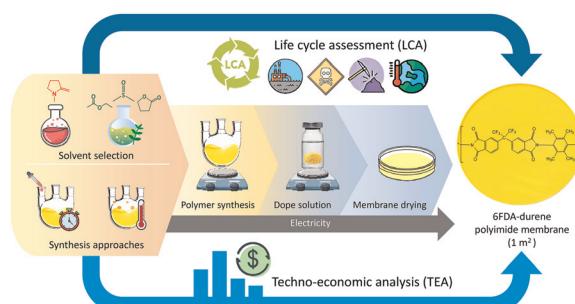
Sofia-Maria Ioannidou, José Pablo López-Gómez, Joachim Venus, Miguel Angel Valera, Vera Eßmann, Irantzu Alegria-Dallo, Ioannis K. Kookos, Apostolis Koutinas* and Dimitrios Ladakis*



4501

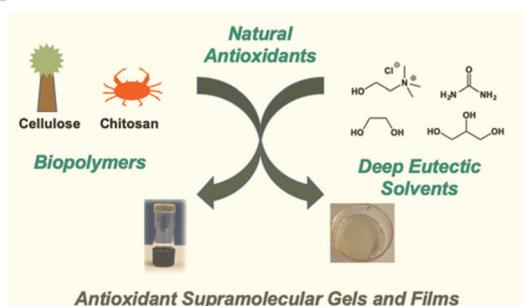
Are green solvents truly green? Integrating life cycle assessment and techno-economic analysis for sustainable membrane fabrication

Seang Uyin Hong, Yida Wang, Leong Sing Soh and Wai Fen Yong*



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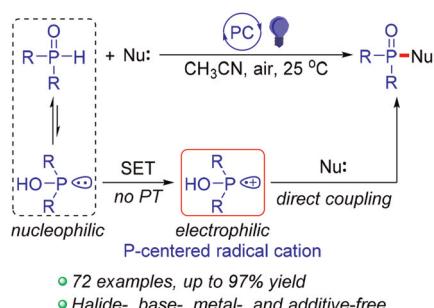
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Polysaccharide-based supramolecular bicomponent eutectogels as sustainable antioxidant materials

Salvatore Marullo, Floriana Petta, Giulia Infurna, Nadka T. Dintcheva and Francesca D'Anna*

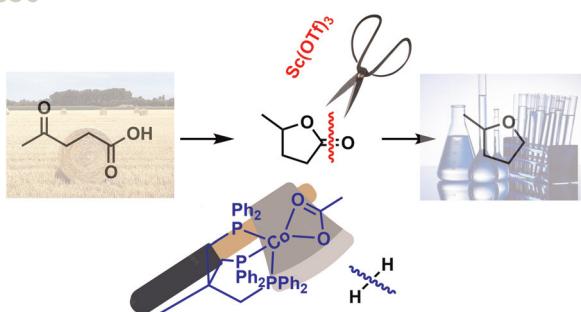
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Visible light photocatalytic phosphorylation of heteroatom nucleophiles triggered by phosphorus-centered radical cations

Yuanting Huang, Jinyu Tang, Xi Zhao, Yanping Huo, Yang Gao, Xianwei Li and Qian Chen*

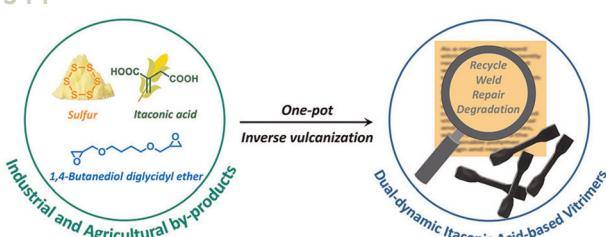
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Catalytic hydrodeoxygenation of neat levulinic acid into 2-methyltetrahydrofuran using a cobalt phosphine complex and Sc(OTf)₃ co-catalytic system

Lijin Gan and Jin Deng*

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Comprehensive itaconic acid-based vitrimers *via* one-pot inverse vulcanization

Zhongkai Guo, Xuewei Jiao, Kailun Wei, Jianqiao Wu* and Jun Hu*

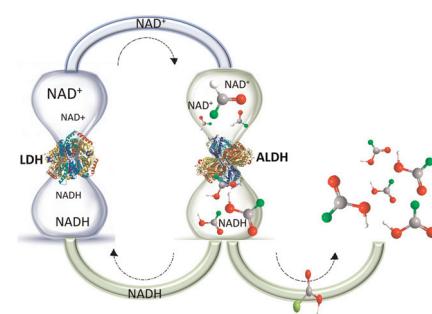


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Coupled immobilized bi-enzymatic flow reactor employing cofactor regeneration of NAD⁺ using a thermophilic aldehyde dehydrogenase and lactate dehydrogenase

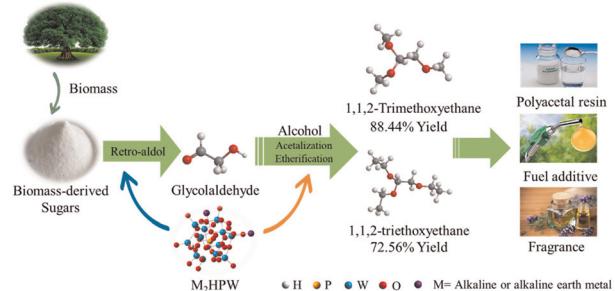
Kim Shortall, Simin Arshi, Simon Bendl, Xinxin Xiao, Serguei Belochapchine, Denise Demurtas, Tewfik Soulimane and Edmond Magner*



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Conversion of biomass-derived sugars to 1,1,2-trialkoxyethane via a [2 + 4] retro-aldol reaction over alkaline and alkaline earth metal salts of phosphotungstic acid

Tihang Liu, Jiangang Wang, Hongyou Cui* and Jinghua Wang*



CORRECTION

4577

Correction: Continuous flow solvent free organic synthesis involving solids (reactants/products) using a screw reactor

Brijesh M. Sharma, Ranjit S. Atapalkar and Amol A. Kulkarni*

