

Green Chemistry

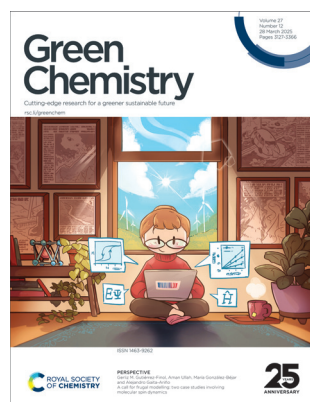
Cutting-edge research for a greener sustainable future

rsc.li/greenchem

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

IN THIS ISSUE

ISSN 1463-9262 CODEN GRCHFJ 27(12) 3127–3366 (2025)



Cover

See Gerliz M. Gutiérrez-Finol, Aman Ullah, María González-Béjar and Alejandro Gaita-Ariño, pp. 3167–3177.

Image reproduced by permission of Alicia Güemes Fraga from *Green Chem.*, 2025, **27**, 3167.

Image created by Artist: Laurielle.



Inside cover

See Alexander M. Kirillov *et al.*, pp. 3178–3185.

Image reproduced by permission of Chris H.J. Franco and Alexander Kirillov from *Green Chem.*, 2025, **27**, 3178.

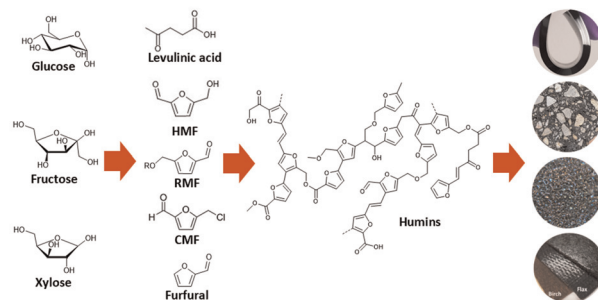
Image created by Dr. Chris H. J. Franco.

TUTORIAL REVIEW

3136

The origin, composition, and applications of industrial humins – a review

Ed de Jong*, Mark Mascal, Sandra Constant, Tom Claessen, Pierluigi Tosi and Alice Mija*



PERSPECTIVE

3167

A call for frugal modelling: two case studies involving molecular spin dynamics

Gerliz M. Gutiérrez-Finol, Aman Ullah, María González-Béjar and Alejandro Gaita-Ariño*



GOLD
OPEN
ACCESS

RSC Applied Polymers

**The application of polymers,
both natural and synthetic**

Interdisciplinary and open access

rsc.li/RSCApplPolym

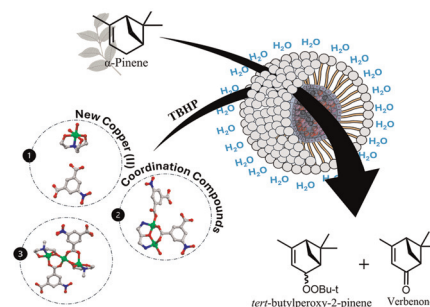
**Fundamental questions
Elemental answers**

PAPERS

3178

Adding value to terpenes: copper-catalyzed oxidation of α -pinene in water under micellar conditions

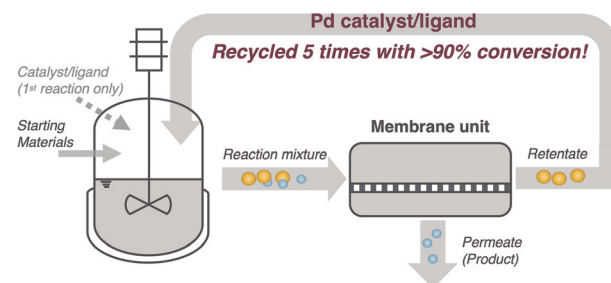
Gilvan A. Correia, Chris H. J. Franco, Marina V. Kirillova, Fabrice Gallou and Alexander M. Kirillov*



3186

Recovery and reuse of homogeneous palladium catalysts via organic solvent nanofiltration: application in the synthesis of AZD4625

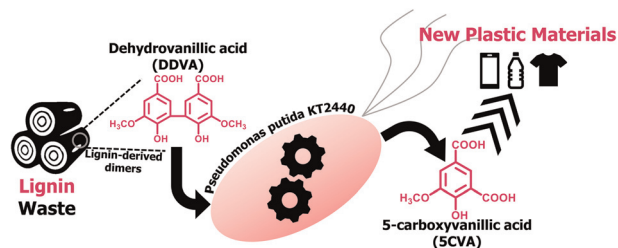
Hui Xiao,* William R. F. Goundry, Rhys Griffiths, Yanyue Feng and Staffan Karlsson



3197

Bioconversion of a lignin-derived biphenyl dimer into the strategic building block 5-carboxyvanillic acid in *Pseudomonas putida* KT2440

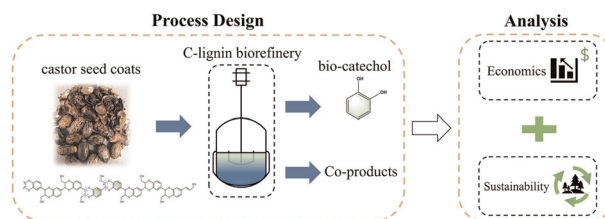
Helena Gómez-Álvarez,* Carlos del Cerro-Sánchez, Pablo Iturbe, Virginia Rivero-Buceta, Juan Nogales, Timothy D. H. Bugg and Eduardo Díaz*



3207

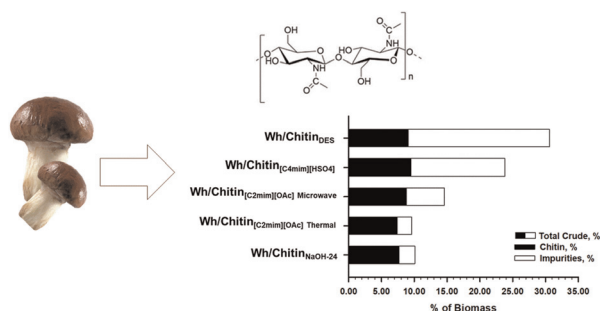
A techno-economically feasible and sustainable C-lignin biorefinery

Pu Wang, Shuizhong Wang, Shihao Su, Dexin Zhang, Yuhe Liao, Guoyong Song* and Lei Wang*



PAPERS

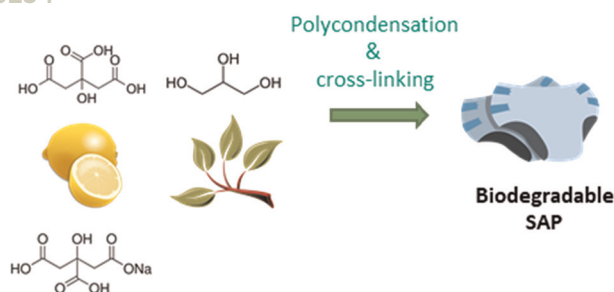
3217



Comparative analysis of chitin isolation techniques from mushrooms: toward sustainable production of high-purity biopolymer

Akhiri Zannat, Isaac Eason, Benjamin Wylie, Robin D. Rogers, Paula Berton* and Julia L. Shamshina*

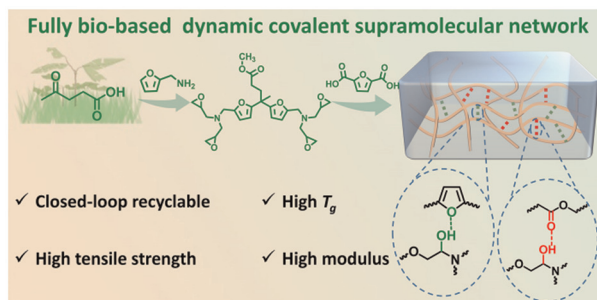
3234



Bio-degradable, fully bio-based, thermally cross-linked superabsorbent polymers from citric acid and glycerol

Jingying Chen, Deelan Yen Chan, TaoTao Yang, Daniele Parisi, Bart Reuvers, Theo Veldhuis, Francesco Picchioni, Jing Wu,* Patrizio Raffa* and Cor Koning

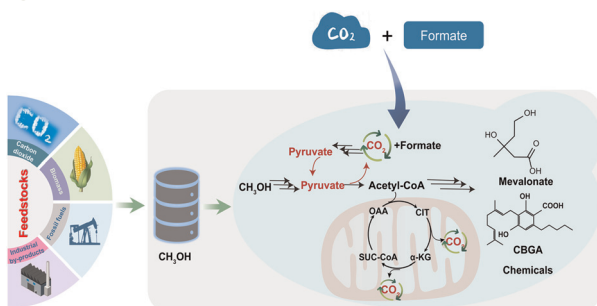
3248



High-performance fully bio-based dynamic covalent supramolecular epoxy resin: synthesis and properties

Xiangyu Zhou, Zhen Yu, Yajin Fang, Hongyun Hu, Songyue Cheng, Zhaobin Tang and Yanlin Liu*

3261



Rewiring methanol assimilation and reductive glycine pathways in *Saccharomyces cerevisiae* to increase one-carbon recovery

Mingming Qi, Chao Zhu, Chi Cheng,* Wei Kang* and Chuang Xue*

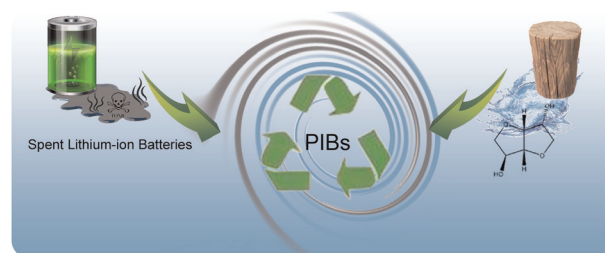


PAPERS

3272

Synthesis and characterisation of polycarbonates from spent lithium battery electrolytes

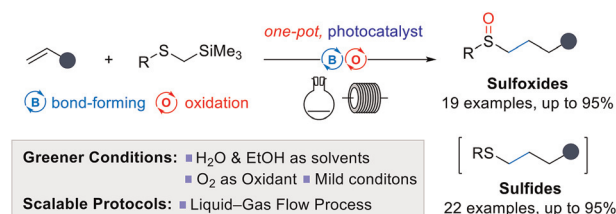
Haiyue Wang, Lili Deng, Bing Fang, Xiaolong Li, Liying Guo* and Rongrong Zheng



3284

Batch and flow synthesis of sulfides and sulfoxides using green solvents and oxidant through visible-light photocatalysis

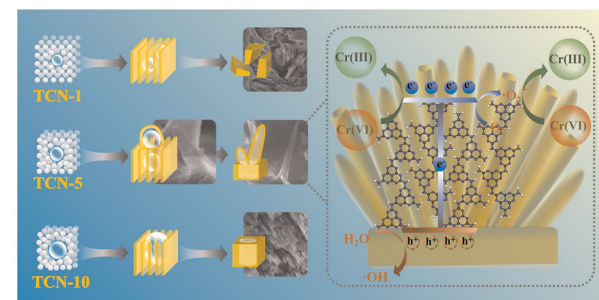
Jin Park, Su Hyeon Kim, Jun-Young Cho, Shafrizal Rasyid Atriardi, Jae-Young Kim, Hanifah Mardhiyah, Boyoung Y. Park* and Sang Kook Woo*



3293

Gas-induced modulation of carbon nitride morphology through a green one-step calcination strategy

Jie Wu, Zheng Liu, Mengjie Li, Jinjuan Zhao, Shuwen Li* and Honglei Yang*



3303

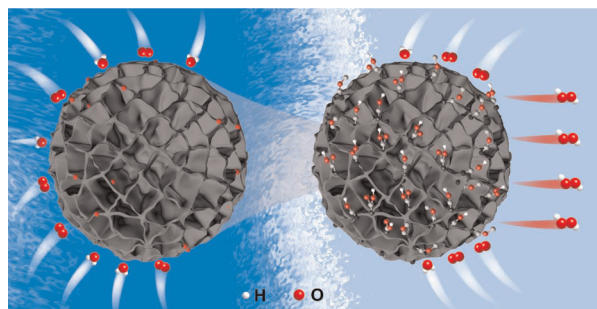
One material for many uses: facile construction of hydrogel sensors with strong anti-damage, anti-freezing, and anti-drying properties, cancer-killing ability and biocompatibility

Jingwen Lan, Rukuan Liu,* Yiming Gong, Sisi Liu, Zhihong Xiao and Airong Xu*



PAPERS

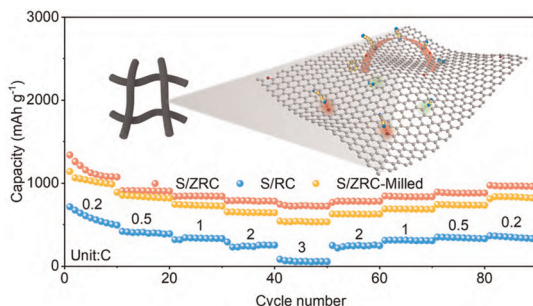
3315



Regulating the bubble-water/catalyst interface microenvironment for accelerated electrosynthesis of H_2O_2 via optimizing oxygen functional groups on carbon black

Yuanyuan Zhang, Xuan Zheng, Hui Su, Yun Ling,*
Rong Guo, Maosheng Zhang, Qingxiang Wang* and
Li Niu*

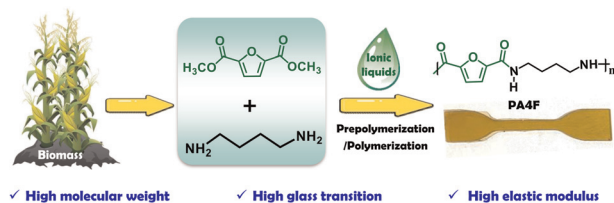
3326



Monolithic carbon derived from biomass via zinc-assisted pyrolysis for lithium–sulfur batteries

Jiahao Huang, Zongle Huang, Chen Zhang,
Tianliang Hao, Tao Wang, Dingfei Deng, Zhipeng Sun,
Yue Wang, Chenyang Xu, Jinjue Zeng,* Shaochun Tang,*
Chaobo Huang, Lijun Yang and Xuebin Wang*

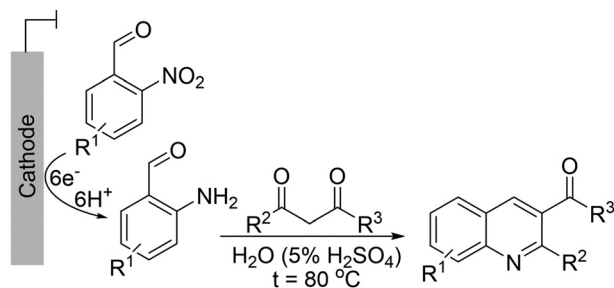
3335



Efficient synthesis of high molecular weight semi-aromatic polyamides with biobased furans over metal-free ionic liquids

Jian Feng, Dongxia Yan,* Chunrui Rong, Lingzhi Yu,
Jiabao Li, Jiayu Xin, Xingmei Lu, Qing Zhou,
Ziqing Wang* and Zhong Wei*

3346



Electrochemically assisted Friedlander reaction: a highly efficient and sustainable method for quinoline synthesis

Hamid Salehzadeh,* Zahra Rostami Bigdeli and
Kevin Lam

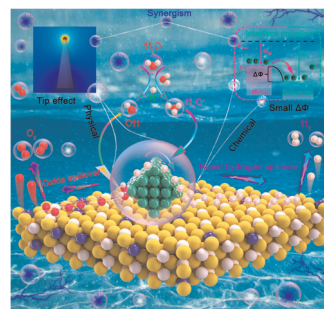


PAPERS

3355

Synergism between the gradient dilution work function and the Janus electronic state of Pt-CoP_xBr_{1-x} for boosting alkaline seawater electrolysis

Lei Jin, Hui Xu,* Kun Wang, Yang Liu, Jie Chen, Xingyue Qian, Haiqun Chen* and Guangyu He*



CORRECTION

3363

Correction: Environmentally friendly process design for furan-based long-chain diester production aiming for bio-based lubricants

Hye Jin Lee, Yoonjae Lee, Eun-hyeok Yang, Jiyun Yoo, Seungjun Choi, Soonho Hwangbo, Young-Woong Suh, Jayeon Baek,* Jeehoon Han* and Yong Jin Kim*

