

RSC Sustainability

rsc.li/rscsus

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 2753-8125 CODEN RSSUAN 3(8) 3217–3616 (2025)



Cover

See Alexander M. Kirillov *et al.*, pp. 3396–3406. Image reproduced by permission of Alexander M. Kirillov and Chris Franco from *RSC Sustainability*, 2025, 3, 3396.



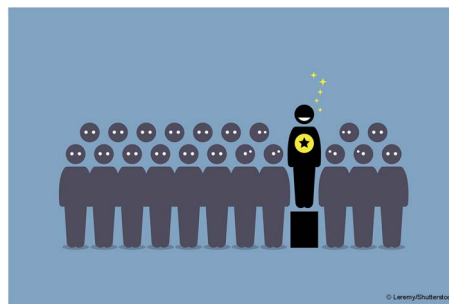
Inside cover

See Rodrigo O. M. A. de Souza *et al.*, pp. 3407–3417. Image reproduced by permission of Rodrigo O. M. A. de Souza from *RSC Sustainability*, 2025, 3, 3407.

EDITORIAL

3227

Outstanding Reviewers for *RSC Sustainability* in 2024

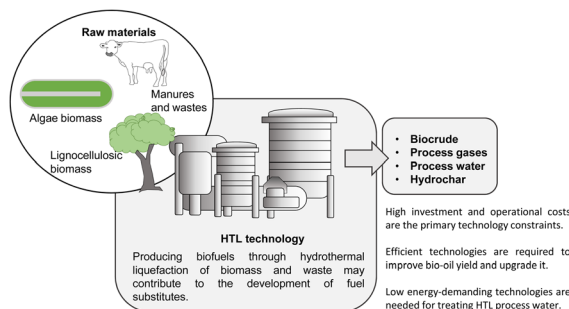


CRITICAL REVIEWS

3228

Reducing fossil fuel demand by using biofuels as an alternative hydrothermal liquefaction is a promising process for transforming biomass into drop-in fuels

Ivan Mazariegos,* Ebtihal Abdelfath-Aldayyat, Silvia González-Rojo and Xiomar Gómez



Environmental Science: Atmospheres

GOLD
OPEN
ACCESS

Connecting communities
and inspiring new ideas

rsc.li/submittoEA

Fundamental questions
Elemental answers



Peeyush Phogat,* Subhadeepa Dey and Meher Wan

[illegible]

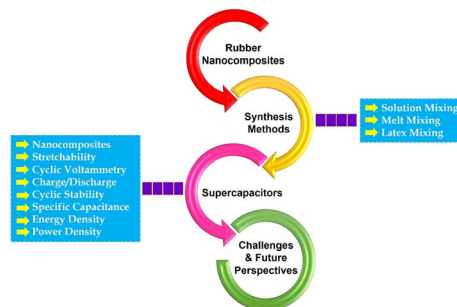
3307

Nilanjan Dey, Shakshi Bhardwaj and Pradip K. Maji*

The diagram illustrates the life cycle of a bio-based building material, centered around a circular flow of four main stages: EXTRACTION, EXTRACTED, APPLICATIONS, and RECYCLING AND REUSE. The central hub features a circular image of a field with a building and a recycling symbol.

- EXTRACTION:** The initial stage where raw materials are sourced from a tree. The materials listed are Cellulose, Lignin, and Silica. Chemical structures for Cellulose and Lignin are shown.
- EXTRACTED:** The stage where the materials are processed into Cellulose Hemicellulose, Lignin, and Silica. Chemical structures for Hemicellulose and Silica are shown.
- APPLICATIONS:** The stage where the extracted materials are used in various building applications, including Construction (represented by a building icon), Insulation (represented by a cross-section of insulation), and Coating (represented by a paintbrush icon).
- RECYCLING AND REUSE:** The final stage, which includes Building Simulation (represented by a house icon), LCA (Life Cycle Assessment, represented by a recycling symbol), and a final recycling symbol.

Susmi Anna Thomas, Jayesh Cherusseri* and Deepthi N. Rajendran



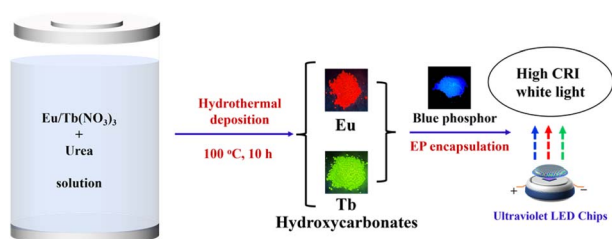
3384

Andrea-Lorena Garduño-Jiménez,* Rachel L. Gomes,
Yolanda López-Maldonado and Laura J. Carter



COMMUNICATION

3392

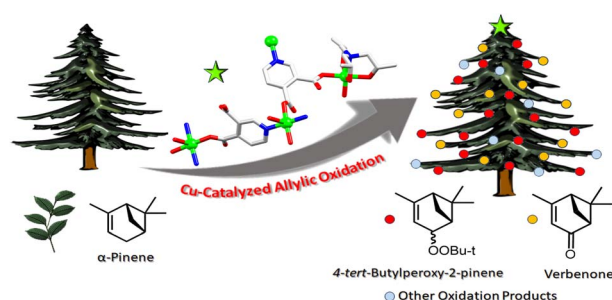


Facile hydrothermal synthesis of rare earth hydroxycarbonate phosphors for high-performance warm white LEDs

Haoxuan Zeng, Qiao Liang, Lu He, Ziyuan Li, Taihui Chen and Xiaoli Wu*

PAPERS

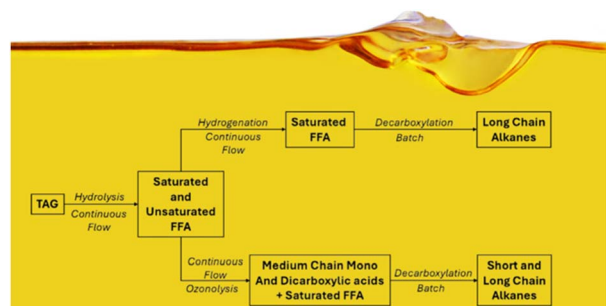
3396



From α -pinene feedstock to value-added products: scalable and recyclable copper(II) catalysts for allylic oxidation

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

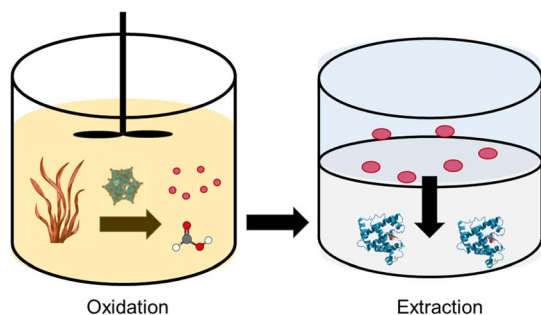
3407



Chemo-enzymatic cascades for the sustainable transformation of canola oil into hydrocarbon fuels

Lucas B. Barbosa, Caio M. Pacheco, Isabela G. da Silva, Mauro R. B. P. Gomez, Alexandre S. França, Gabriela C. Breda, Matheus C. Silva, Patrícia S. de Alencar, Fernanda A. Lima, Raquel A. C. Leão, Rodrigo V. Almeida and Rodrigo O. M. A. de Souza*

3418



ProFA – valorization of macroalgae biomass as a source of proteins and formic acid

Stefanie Wesinger, Keerthana Erattemparambil, Andreas Liese, Maximilian J. Poller, Ana Malvis Romero and Jakob Albert*

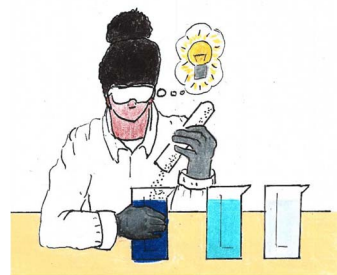


PAPERS

3437

Green beginnings: creating an affordable advanced enquiry-based experimental nanochemistry learning module with catalytically active 'green' iron oxide nanoparticles (IONPs)

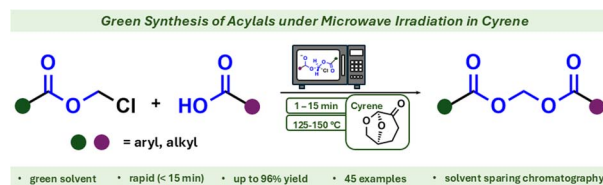
Timothy Schwantes, Dylan Medina, Brittney Morgan and Abhinandan Banerjee*



3448

Biobased dihydrolevoglucosenone (Cyrene) enables rapid and efficient synthesis of acylals under microwave irradiation

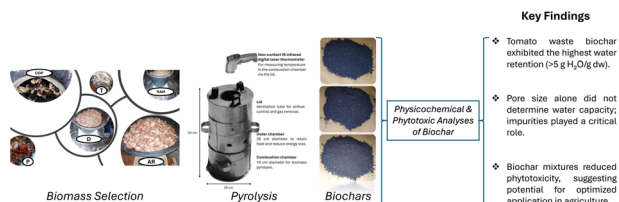
Tobias Keydel and Andreas Link*



3459

Comprehensive assessment of phytotoxic effects, morphology, chemical compositions, and water retention capacities of biochars

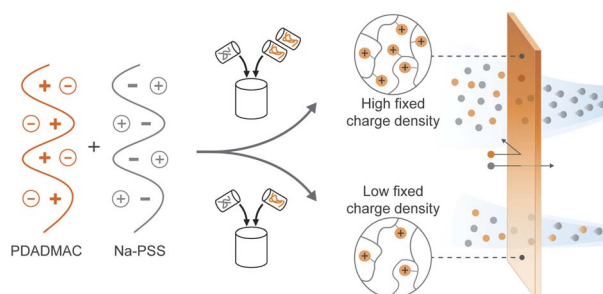
Hassan El Moussaoui,* Zaina Idardare and Laila Bouqbis*



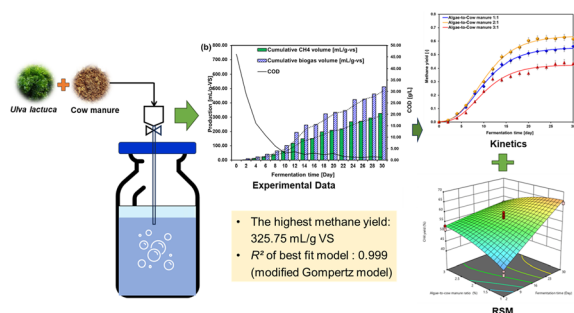
3473

Improving the fixed charge density of sustainably produced saloplastic anion exchange membranes

Hestie A. Brink, Ricardo P. Martinho, Wiebe M. de Vos and Saskia Lindhoud*



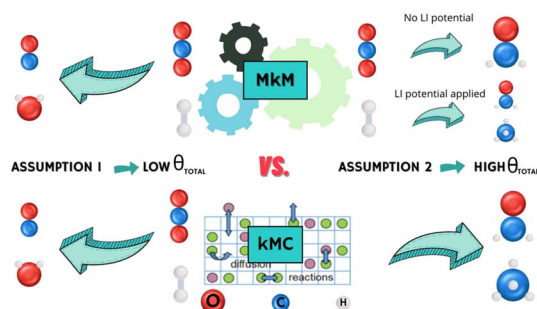
3483



Sustainable biogas production through anaerobic co-digestion of *Ulva lactuca* (Chlorophyta) and cow manure: a kinetic and process optimization study

Obie Farobie,* Veni Anggita Sari, Edy Hartulistiwa, Widya Fatriasari, Asep Bayu Dani Nandiyanto, Apip Amrullah, Lusi Ernawati and Misbahuddin

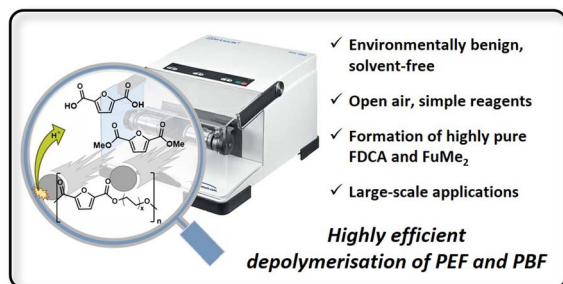
3499



CO₂ hydrogenation on Ni(111): microkinetic modelling vs. kinetic Monte Carlo simulations – choosing the right approach for unravelling reaction kinetics

Alejandro Gracia, Pablo Lozano-Reis, Fermín Huarte-Larrañaga, Pablo Gamallo* and Ramón Sayós

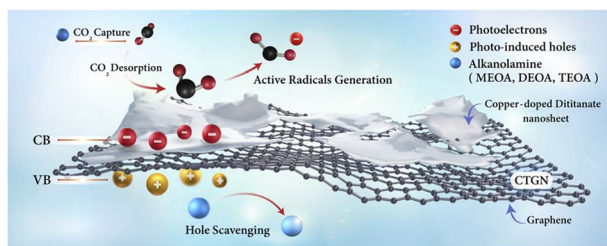
3513



Highly efficient mechanochemical depolymerisation of bio-based polyethylene furanoate and polybutylene furanoate

Divya Jain, Florian Cramer, Pauline Shamraienko, Hans-Joachim Drexler, Brigitte Voit* and Torsten Beweries*

3520



Effects of alkanolamines on photocatalytic reduction of carbon dioxide to liquid fuels using a copper-doped dititanate/graphene photocatalyst

Wannisa Neamsung, Nutkamol Kitjanukit, Apisit Karawek, Napatr Chongkol, Napat Lertthanaphol, Poomipat Chotngamkhum, Kongphoom Khumsupa, Poomiwat Phadungbut, Woranart Jonglertjunya, Pattaraporn Kim-Lohsoontorn and Sira Srinives*

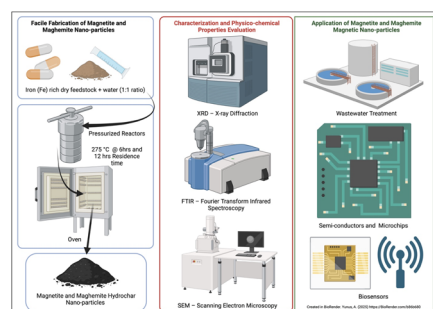


PAPERS

3530

Facile fabrication of magnetite (Fe_3O_4) nanoparticles by hydrothermal carbonization of waste iron supplements

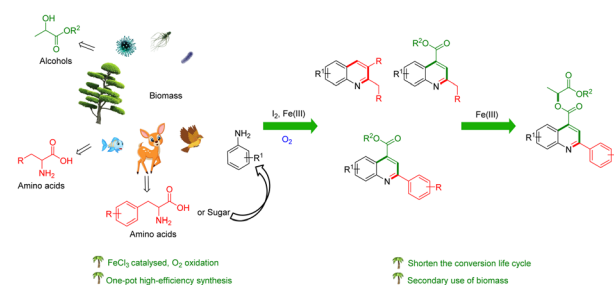
Ahmed I. Yunus, Samuel A. Darko,* Yongsheng Chen and Joe F. Bozeman III*



3548

One-pot iron chloride-catalyzed sustainable syntheses of quinolines from amino acids, alkyl lactate and arylamine

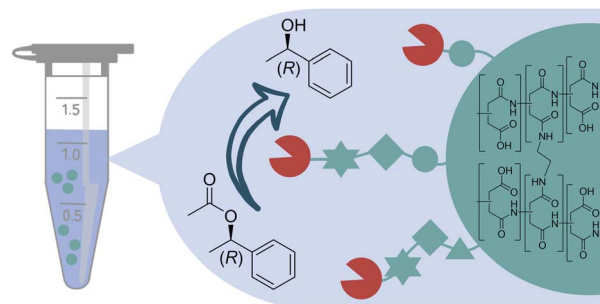
Meitian Fu, Lu Yin, Junjie Li, Sihan Zhao, Fujun Wang, Minglong Yuan* and Chao Huang*



3554

Functionalized poly(aspartic acid) hydrogel particles as carriers for covalent enzyme immobilization

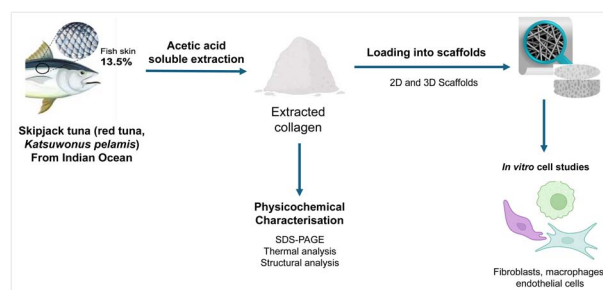
Johanna Meyer, Lars-Erik Meyer, Hadir Borg, Dirk Dorfs and Selin Kara*



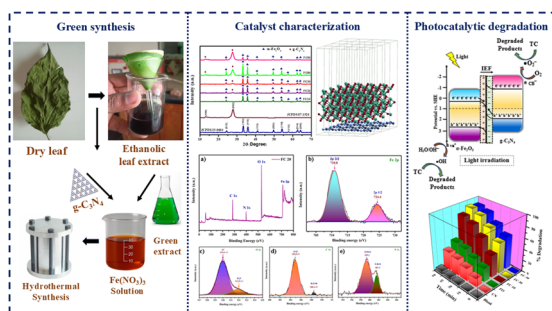
3567

Collagen from skipjack tuna skin waste enhances cellular proliferative activity, vascularization potential and anti-inflammatory properties of nanofibrous and hydrogel scaffolds

Tejaswini Petkar, Marie Andrea Laetitia Huët, Devesh Bekah, Itisha Chummun Phul, Nowsheen Goonoo and Archana Bhaw-Luximon*



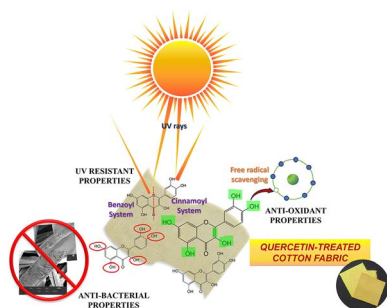
3582



***Nyctanthes arbor-tristis* L. mediated sustainable synthesis of α -Fe₂O₃/g-C₃N₄ S-scheme heterojunctions for enhanced photocatalytic degradation of tetracycline hydrochloride: a mechanistic insight and DFT study**

Mano Ranjan Barik, Jagadish Kumar and Sushanta Kumar Badamali*

3601



A facile and sustainable method for integrating bio-based quercetin into cotton structures to impart multifunctionality: a thorough study on the effects of treatment conditions

Mandira Mondal and S. Wazed Ali*

