

## IN THIS ISSUE

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**Cover**  
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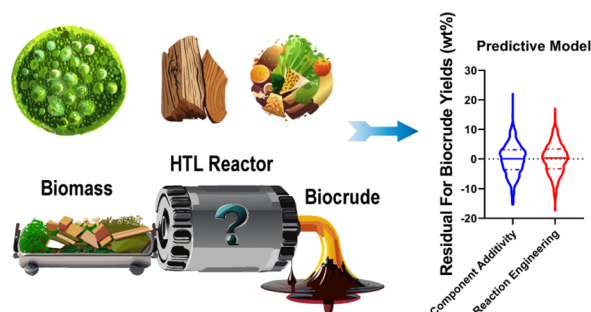
**Inside cover**  
See Jason Y. C. Lim, Vinicius Rosa *et al.*, pp. 881–902. Image reproduced by permission of Vinicius Rosa from RSC. *Sustainability*, 2024, 2, 881.

## CRITICAL REVIEWS

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### Review and assessment of models for predicting biocrude yields from hydrothermal liquefaction of biomass

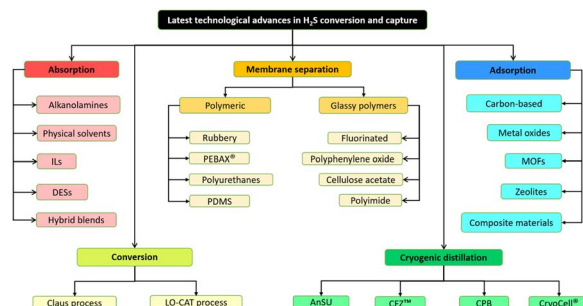
Peter M. Guirguis, Mahadevan Subramanya Seshasayee, Bitu Motavaf and Phillip E. Savage\*



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### Latest technological advances and insights into capture and removal of hydrogen sulfide: a critical review

Muhammad Syahir Aminuddin,\* Mohamad Azmi Bustam and Khairiraihanna Johari\*



# RSC Advances

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# Valorization of lignin for advanced material applications: a review

[illegible]

## TUTORIAL REVIEWS

## Nanomaterial-based electrochemical chemo(bio)sensors for the detection of nanoplastic residues: trends and future prospects

## The power of pores: review on porous thermoelectric materials

The figure illustrates a waste heat recovery system and the properties of a porous structure. The top left shows a primary source (car, factory, power plant) feeding into a waste heat recovery system. The system consists of a thermoelectric generator (TEG) with N and P legs, a hot side, and a cold side. The TEG is connected to a load resistor. The bottom right shows a porous structure with pores and phonon scattering, leading to a porous structure with a large ZT. The bottom right also shows a bar chart of thermal conductivity (W/mK) for various materials, comparing bulk and porous states.

**Primary source**

**Waste heat recovery**

**Thermoelectric generator**

**Hot side**

**Cold side**

**N**

**P**

**Thermal conductivity (W/mK)**

**Electronic thermal conductivity**

**Lattice thermal conductivity**

**Insulators**

**Semiconductors**

**Metals**

**Pores**

**Phonon scattering**

**Porous Structure**

**ZT**

**Materials**

**Thermal conductivity (W/mK)**

**Bulk**

**Porous**

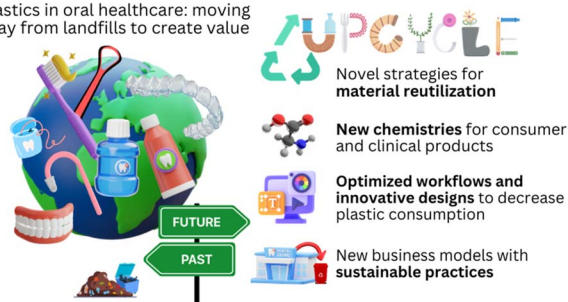
## PERSPECTIVES

## The 12 principles of green membrane materials and processes for realizing the United Nations' sustainable development goals

## PERSPECTIVES

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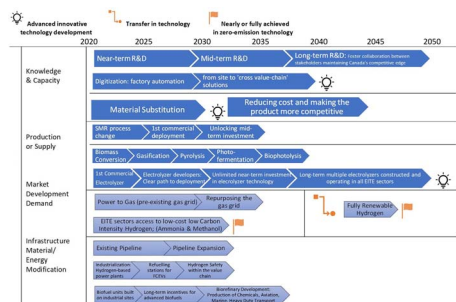
Plastics in oral healthcare: moving away from landfills to create value



## The global burden of plastics in oral health: prospects for circularity, sustainable materials development and practice

Albert Ong, Jerald Y. Q. Teo, David C. Watts, Nikolaos Silikas, Jason Y. C. Lim\* and Vinicius Rosa\*

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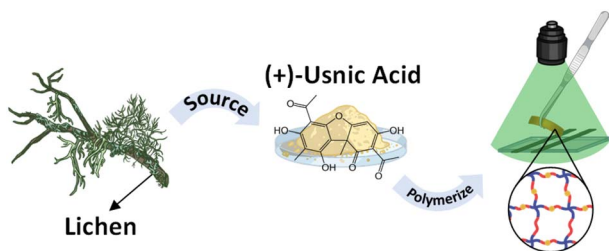


## Emissions-intensive and trade-exposed industries: technological innovation and climate policy solutions to achieve net-zero emissions by 2050

Anahita Mani, Thomas Budd and Elicia Maine

## COMMUNICATION

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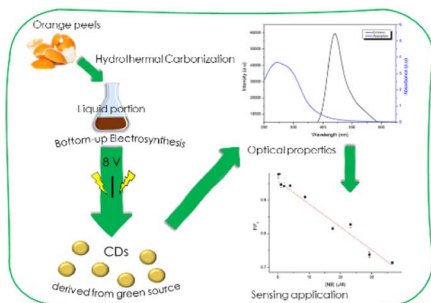


## Photopolymerization of lichen derived usnic acid

Ruby R. Zhou, Jack L. Vargo, Bella G. Andjelkovic, Maya G. Vermeer, Spencer J. Goyette and Bassil M. El-Zaatari\*

## PAPERS

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## Carbon nanodots from orange peel waste as fluorescent probes for detecting nitrobenzene

Cinzia Michenzi,\* Anacleto Proietti, Marco Rossi, Claudia Espro, Viviana Bressi, Fabrizio Vetica, Beatrice Simonis and Isabella Chiarotto\*

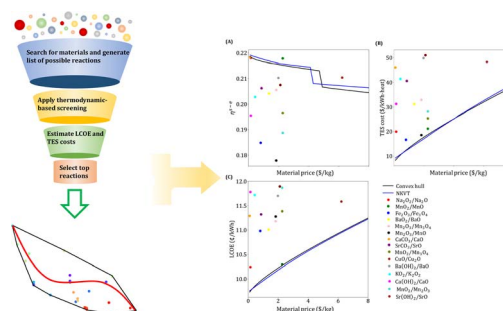




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## Screening and property targeting of thermochemical energy storage materials in concentrated solar power using thermodynamics-based insights and mathematical optimization

Ishan Bajaj, Xinyue Peng and Christos T. Maravelias\*



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## Recycling hazardous and energy-demanding piezoelectric ceramics using an oxide–halide perovskite upside-down composite method

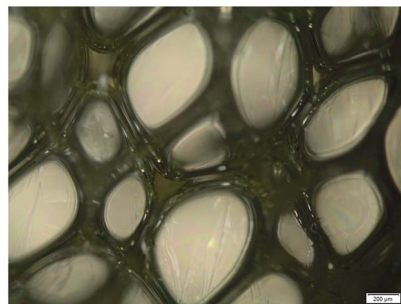
Sivagnana Sundaram Anandakrishnan, Mohadeseh Tabeshfar, Mikko Nelo, Jani Peräntie, Heli Jantunen, Jari Juuti and Yang Bai\*



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## Castor-oil biobased foam: the effect of the composition on the physical and mechanical properties via a statistical mixture design

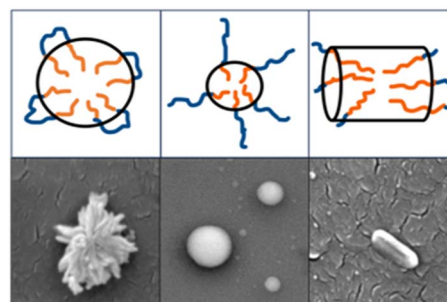
Luiza Fernandes Soares, Júlio César dos Santos, Victor Augusto Araújo de Freitas, Robson Bruno Dutra Pereira, Tulio Hallak Panzera\* and Fabrizio Scarpa\*



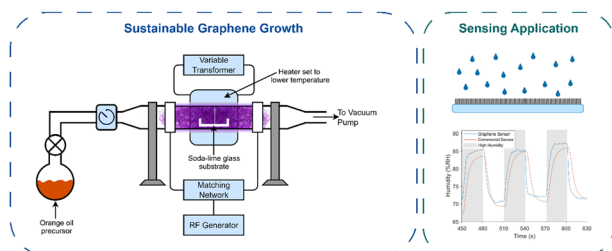
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## Tailoring lignin nanoparticle properties: the effects of pH and salt on shape and antioxidant capacity

Natalia Obrzut, Rob Hickmott and Kimberly Gray\*



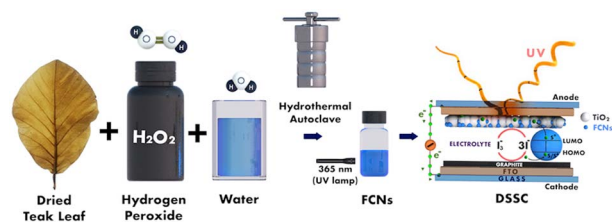
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### Sustainable low temperature carrier gas-free growth of graphene on non-catalytic substrates

Laurance Papale, Bronson Philippa,\* Boris Makarenko, Oomman K. Varghese and Mohan V. Jacob\*

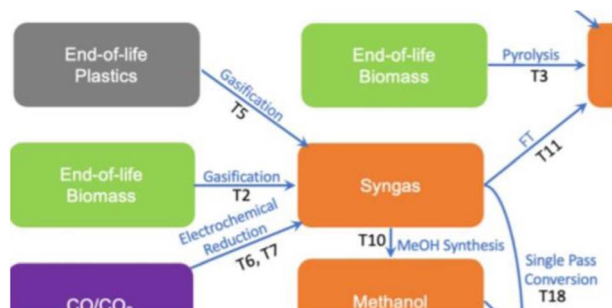
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### Hydrogen peroxide assisted synthesis of fluorescent carbon nanoparticles from teak leaves for dye-sensitized solar cells

Arup Kumer Roy,\* William Ghann, Saswata Rabi, Jackson Barua, Sumit Majumder, Ruhul Amin, M. K. Mohammad Ziaul Hyder and Jamal Uddin\*

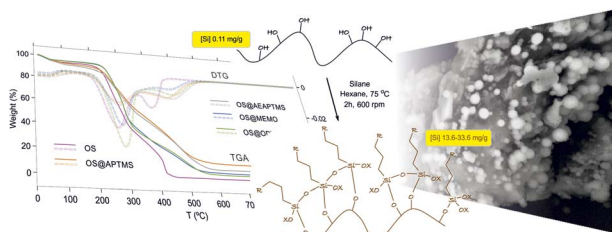
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### Counterfactual sustainability screening – the definition and undertaking of a sustainability screening method for the assessment of defossilised supply chains

Edward G. Platt and Peter Styring\*

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### High degree of silanization of olive wood shell stone and its use in polyester biocomposites

Melissa Olmedo-Navarro, Juana M. Pérez,\* Natalia Gutiérrez-Segura, Bernardo Sánchez-Sevilla, Yolanda Soriano-Jerez, Diego A. Alonso, Mari Carmen Cerón and Ignacio Fernández\*

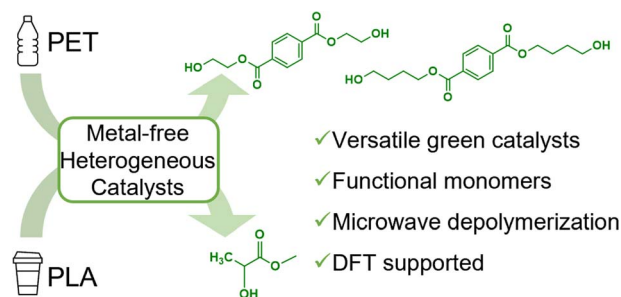


## PAPERS

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### Guanidine functionalized porous SiO<sub>2</sub> as heterogeneous catalysts for microwave depolymerization of PET and PLA

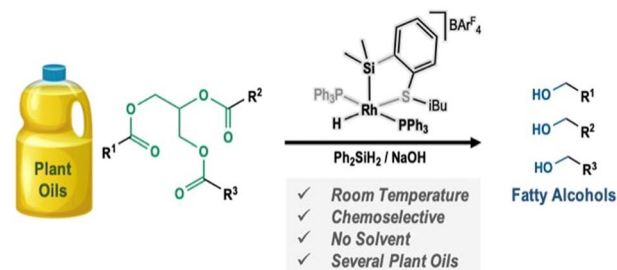
Éadaoin Casey, Rachel Breen, Gerard Pareras, Albert Rimola, Justin D. Holmes and Gillian Collins\*



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### Direct chemoselective reduction of plant oils using silane catalysed by Rh(III) complexes at ambient temperature

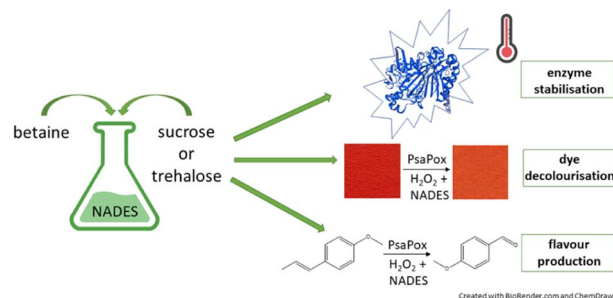
Unai Prieto-Pascual, Itxaso Bustos, Zoraida Freixa,\* Amit Kumar\* and Miguel A. Huertos\*



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### Improving the stability and activity of a dye-decolourizing peroxidase using NADESs

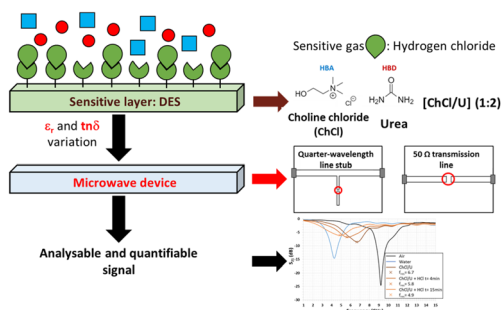
Maria Garbe,\* Linnea Ute Lutz, Leander Tom Lehmann, Theresa Strotmann, Ralf G. Berger and Franziska Ersoy



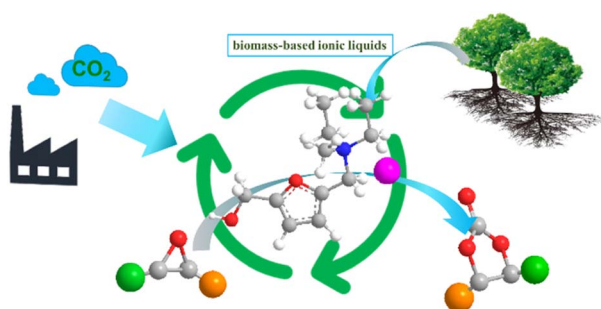
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### The use of deep eutectic solvents as a promising approach in the design of microwave-based green gas sensors

Emilie Bertrand,\* Mohamed Himdi, David Rondeau, Xavier Castel, Thomas Delhaye and Ludovic Paquin



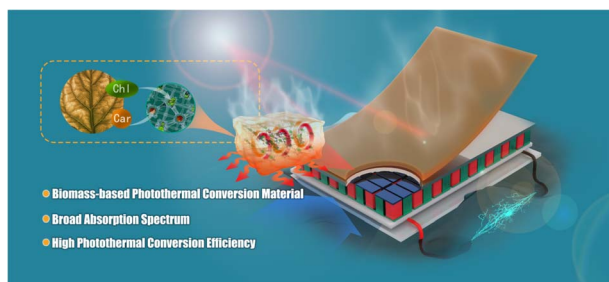
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### Biomass-based ionic liquids efficiently catalyzed the cycloaddition reaction of epoxides with CO<sub>2</sub> by hydrogen-bonding and the anion cooperative effect

Kaixin Guo, Na Ji, Feng Han,<sup>\*</sup> Qingfeng Yang, Ning Wang and Chengxia Miao<sup>\*</sup>

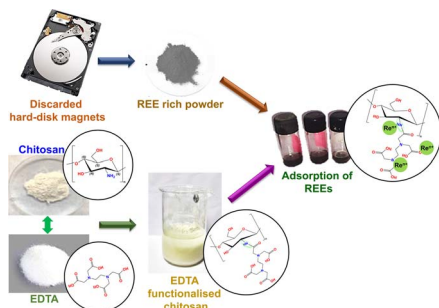
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### A biomass hydrogel solar evaporator based on low-grade tobacco leaves for water evaporation and thermoelectric conversion applications

Zuoyu Wang, Lu Han, Gaolei Xi, Tao Jia,<sup>\*</sup> Yi Liu, Xiao He, Hongxia Wang<sup>\*</sup> and Bin Li<sup>\*</sup>

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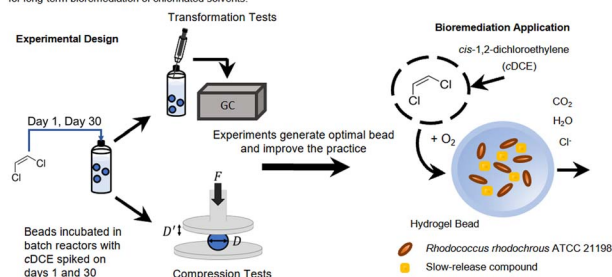


### Recovery of rare earth elements (Nd, Dy) from discarded hard disk magnets using EDTA functionalised chitosan

Shruti Srivastava, Anurag Bajpai, Syed Mohammad Musthaq and Krishanu Biswas<sup>\*</sup>

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Poly(vinyl)-alcohol – alginate beads with immobilized cells and a slow-release compound were optimized for long-term bioremediation of chlorinated solvents.



### The optimization of poly(vinyl)-alcohol-alginate beads with a slow-release compound for the aerobic cometabolism of chlorinated aliphatic hydrocarbons

Conor G. Harris, Hannah K. Gedde, Audrey A. Davis, Lewis Semprini, Willie E. Rochefort and Kaitlin C. Fogg<sup>\*</sup>



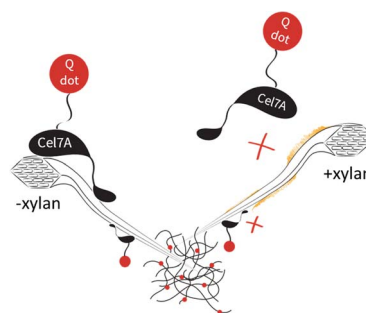


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### Xylan inhibition of cellulase binding and processivity observed at single-molecule resolution

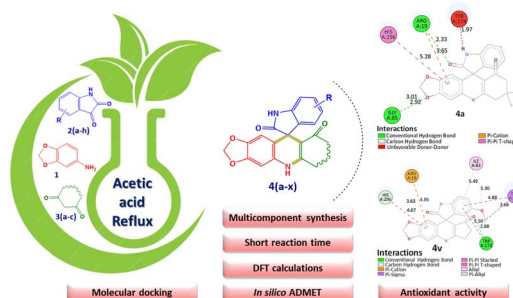
Nerya Zexer, Alec Paradiso, Daguan Nong, Zachary K. Haviland, William O. Hancock and Charles T. Anderson\*



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### *In silico* exploration of acetic acid driven multicomponent synthesis: design, characterization, and antioxidant evaluation of spiroacridines and spiroquinolines

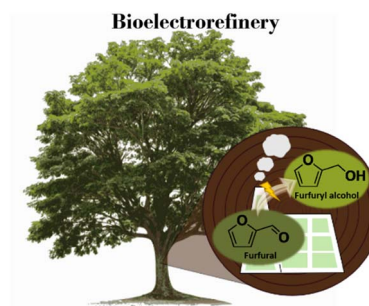
Subham G. Patel, Dipti B. Upadhyay, Nirajkumar V. Shah, Mehul P. Parmar, Paras J. Patel, Apoorva Malik, Rakesh K. Sharma and Hitendra M. Patel\*



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### Revisiting the electrocatalytic hydrogenation of furfural to furfuryl alcohol using biomass-derived electrolytes

Maria Wolfsgruber, Robert H. Bischof, Christian Paulik, Adam Slabon\* and Bruno V. M. Rodrigues\*



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### Ionic liquid strategy for chitosan production from chitin and molecular insights

Van Minh Dinh,\* Santosh Govind Khokarale, Pedro Ojeda May, Tobias Sparrman, Knut Irgum and Jyri-Pekka Mikkola\*

