

# 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(5) 1985-2426 (2025)



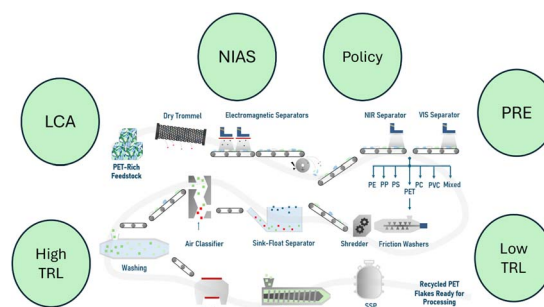
**Cover**  
See Dagmar R. D'hooge, Mariya Edeleva *et al.*, pp. 1996-2047. Image reproduced by permission of Ghent University and Erion Bezeraj from *RSC Sustainability*, 2025, 3, 1996.

## CRITICAL REVIEWS

1996

### State-of-the-art of industrial PET mechanical recycling: technologies, impact of contamination and guidelines for decision-making

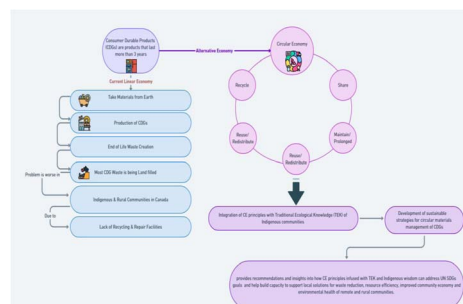
Erion Bezeraj, Simon Debrie, Francisco J. Arraez, Pablo Reyes, Paul H. M. Van Steenberghe, Dagmar R. D'hooge\* and Mariya Edeleva\*



2048

### Integrating traditional ecological knowledge into a circular economy framework using the example of consumer durable goods for northern rural communities

Yasamin Atabaki Fard Tehrani, Atanu Sarkar\* and Shegufra Shetranjiwalla\*



# Environmental Science: Atmospheres

GOLD  
OPEN  
ACCESS

Connecting communities  
and inspiring new ideas

[rsc.li/submittoEA](https://rsc.li/submittoEA)

Fundamental questions  
Elemental answers



## CRITICAL REVIEWS

2064

**Exploring mineral–organic interactions for eco-friendly concrete alternatives: a radical concept**

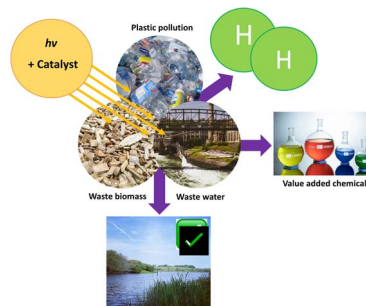
Peter Spencer, Hejie Li, Scott Hocknull, Gareth Chalmers and Tianfang Wang\*



2079

**Photocatalytic valorisation of real-world substrates**

Kathryn Ralphs,\* Junhong Liu, Lan Lan, Christopher Hardacre, Nathan Skillen and Peter K. J. Robertson

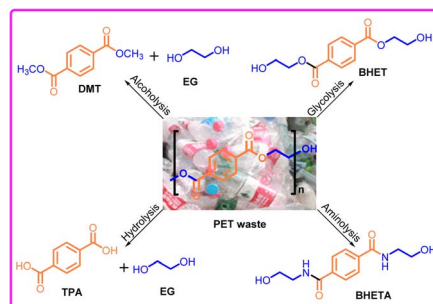


## TUTORIAL REVIEWS

2111

**Chemical degradation and recycling of polyethylene terephthalate (PET): a review**

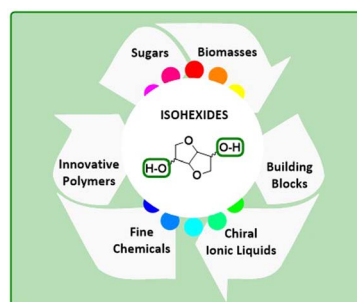
Zhiqiang Guo,\* Jin Wu and Junhong Wang\*



2134

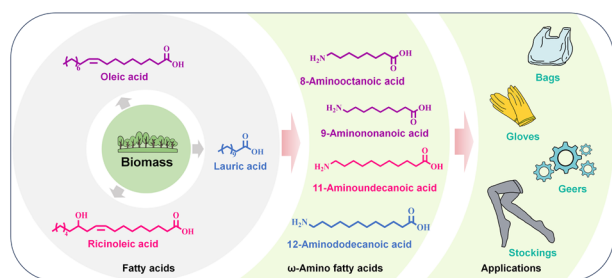
**Synthetic routes and fields of application of isohexides: comprehensive perspective of relevant industrial compounds**

Daria Armani\*



## TUTORIAL REVIEWS

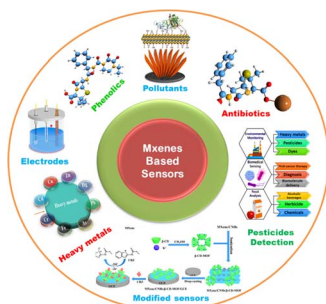
2149



### Multienzyme cascade synthesis of $\omega$ -amino fatty acids from vegetable-derived precursors for use as nylon monomers

Yueyue Zhou, Ran Lu, Xiaoxia Gao, Lu Lin, Yongjun Wei\* and Xiao-Jun Ji\*

2160

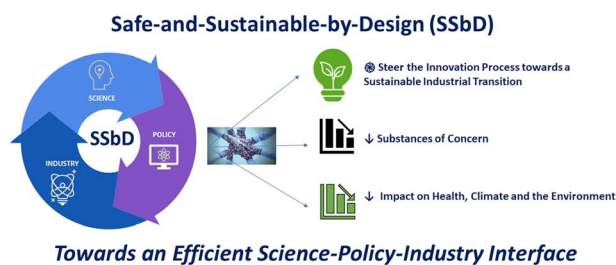


### MXene-based nanocomposites: a new horizon for electrochemical monitoring of environmental pollutants

Ali Hyder, Meher-Un-Nisa Khilji, Jamil A. Buledi, Ayaz Ali Memon,\* Azharuddin Ghanghro, Misbah ur Rehman and Khalid Hussain Thebo\*

## PERSPECTIVE

2185



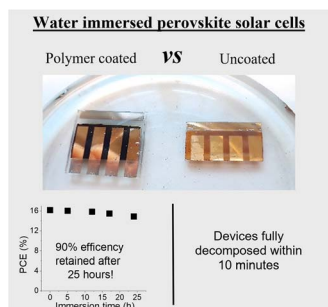
### Safe-and-Sustainable-by-Design (SSbD)

### Accelerating the industrial transition with safe-and-sustainable-by-design (SSbD)

Lya G. Soeteman-Hernández,\* Joel A. Tickner, Ann Dierckx, Klaus Kümmerer, Christina Apel and Emma Strömberg

## COMMUNICATIONS

2192



### Spray-coating polystyrene on perovskite solar cells increases thermal stability and moisture tolerance

Azar Sadollahkhani, Valentina Leandri, Mahboubeh Jamshidi and James M. Gardner\*

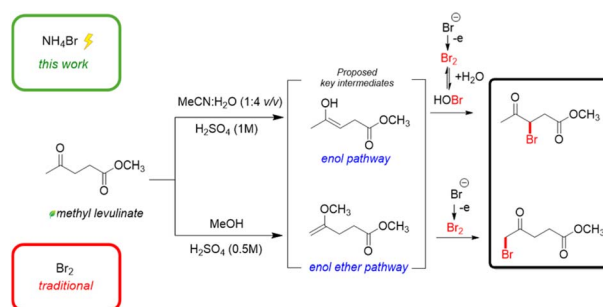


## COMMUNICATIONS

2198

### Medium-dependent regioselectivity of electrochemical bromination of methyl levulinate

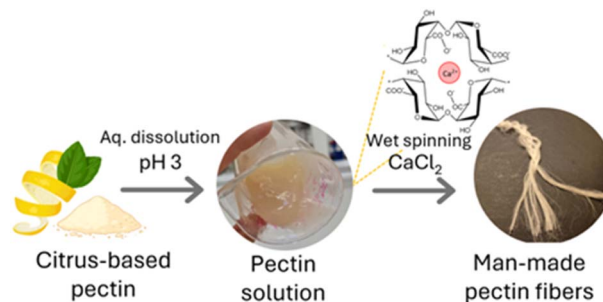
Dmitry A. Pirgach, Raghavendra Meena, Guanna Li, Fedor M. Miloserdov, Daan S. van Es, Pieter C. A. Bruijninx and Johannes H. Bitter\*



2205

### Man-made textile fibres from pectin

Aleksandra M. Kozłowski,\* Kristina E. Lindgren, Gino Mangiante and Tobias Köhnke

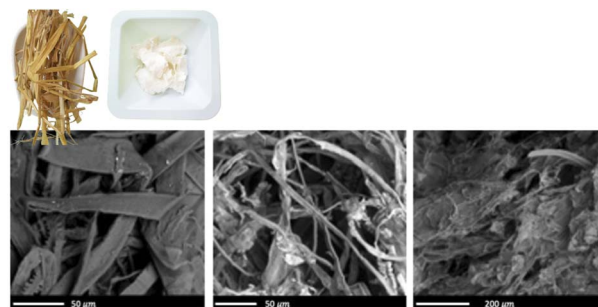


## PAPERS

2210

### Producing dissolving pulp from agricultural waste

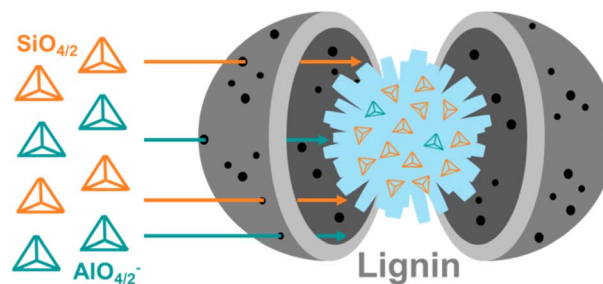
Joanna Wojtasz, Niclas Sjöstedt, Benjamin Storm, Manuel Mammen Parayil, Amanda Ulefors, Linnea Nilsson, Maria Alejandra Hernández Leal, Anne Michud, Åsa Östlund, Tomas Rydberg and Diana Bernin\*



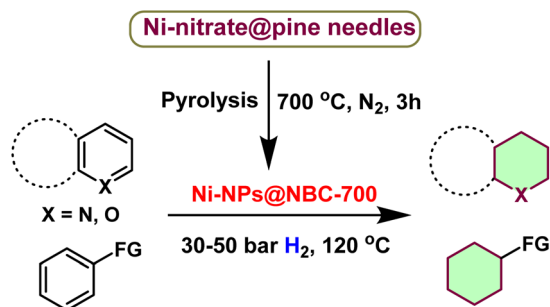
2221

### Eco-designed ZSM-5 zeolites: biomass-assisted modifications and catalytic evaluation through model reactions

Camille Longue, Anne Bolmont, Valérie Ruaux, Aurélie Vicente, Nourrdine Chaouati, Marie Desmurs, Benoît Louis\* and Ludovic Pinard\*



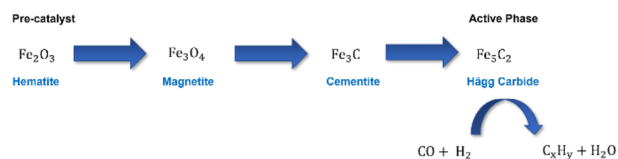
2235



### A biomass-derived nickel-based nanomaterial as a sustainable and reusable catalyst for hydrogenation of arenes and heteroarenes

Vishakha Goyal, Tarun Bhatt, Anshid Kuttasseri, Arup Mahata,\* Radek Zbořil,\* Kishore Natte\* and Rajenahally V. Jagadeesh\*

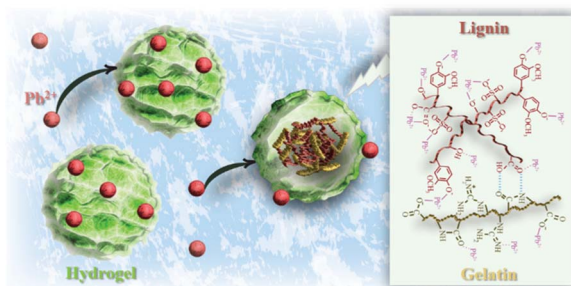
2246



### The impact of co-feeding carbon dioxide in Fischer-Tropsch-to-olefin catalysis: an inelastic neutron scattering study

Alisha L. Davidson, Ramandeep S. Dosanjh, Stewart F. Parker and David Lennon\*

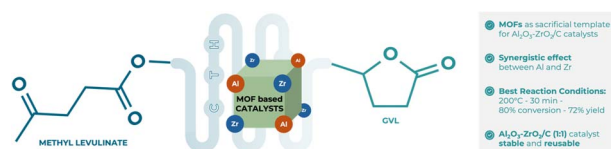
2255



### Novel green fabrication of stable hydrogel beads from industrial waste lignin for efficient Pb(II) ion removal

Xiwen Hu, Muhammad Amirul Islam,\* Aria Khalili, Amir Aghaei, Jae-Young Cho and Mohtada Sadrzadeh\*

2273



### Continuous flow production of $\gamma$ -valerolactone from methyl-levulinate promoted by MOF-derived Al<sub>2</sub>O<sub>3</sub>-ZrO<sub>2</sub>/C catalysts

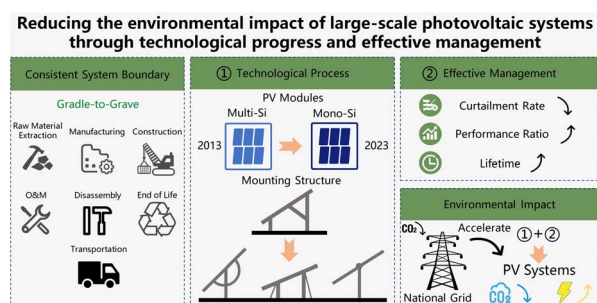
Marina Ronda-Leal, Alina M. Balu, Rafael Luque, Francesco Mauriello, Alberto Ricchebuono, Christophe Len, Antonio A. Romero and Emilia Paone\*



2286

## Reducing the environmental impact of large-scale photovoltaic systems through technological progress and effective management

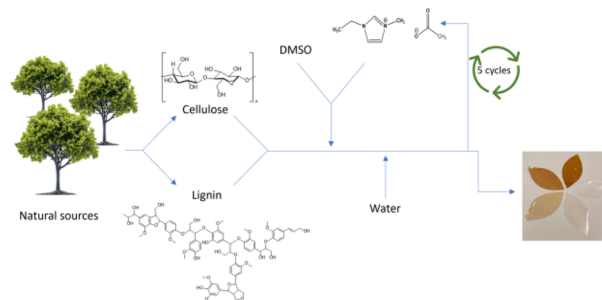
Xingyong Li, Fanran Meng,\* Alan Dunbar, Lixiao Zhang,\* Yan Hao, Tong He, Na Yang, Junnan Mao, Fanxin Meng and Gengyuan Liu



2301

## Fabricating lignocellulosic films as potential biobased plastics

Antonella Rozaria Nefeli Pontillo, Sirui Chen, Diego Freire Ordóñez, Niall Mac Dowell, Koon-Yang Lee and Tom Welton\*



2311

## Strategic innovation in CuBTC/PANI nanocomposites for dye remediation: a holistic approach for enhancing adsorption, isotherms, and kinetic studies

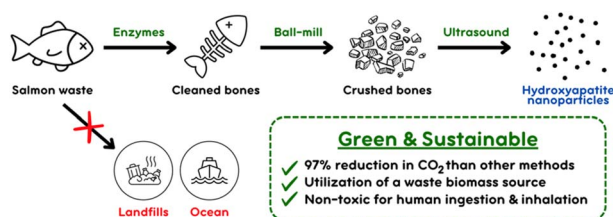
Bhavika Garg, Palkaran Sethi and Soumen Basu\*



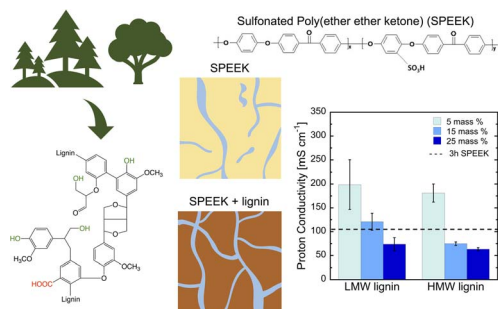
2325

## Transforming waste fish bones into nanoparticles with ultrasound and aqueous organic acids

Sarah Boudreau, Sabahudin Hrapovic, Emma McIsaac, Edmond Lam, Fabrice Berru e\* and Francesca M. Kerton\*



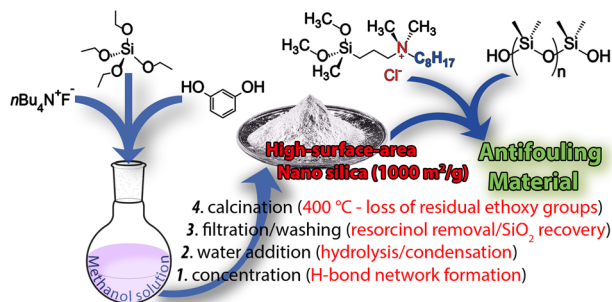
2333



### Superior proton conductivity and selectivity in sulfonated ionomer biocomposites containing renewably processed and fractionated lignin

Xueting Wang, Mayura Silva, Colleen Clarke, Bronson Lynn, Mark Robertson, Aidan J. Leopold, Oreoluwa Agede, Lilin He, Stephen Creager, Mark E. Roberts, Mark C. Thies and Eric M. Davis\*

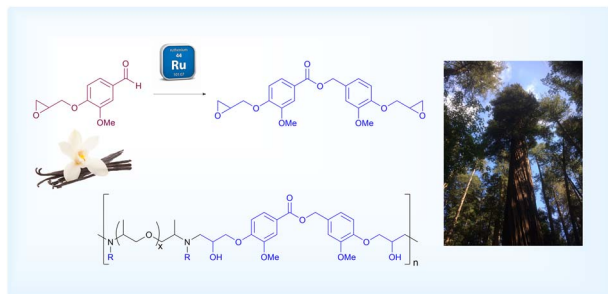
2352



### A new synthetic approach for high surface area mesoporous silica and its use towards sustainable antifouling materials

Paola Marzullo, Alessandro Presentato, Francesca D'Anna, Vincenzo Campisciano, Rosa Alduina, Enrico Tornatore, Francesco Giacalone, Leonarda Francesca Liotta\* and Michelangelo Gruttadauria\*

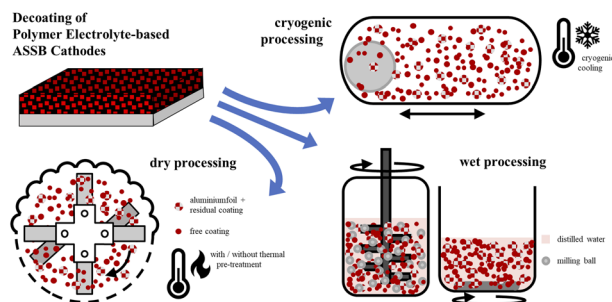
2366



### Ruthenium-catalyzed dimerization of vanillin for the formation of a biobased epoxy thermoset resin

Flavia Ferrara, Iuliana Ribca, Namratha Prabhu, Josselin Mante, Maureen Gumbo, Andreas Ekebergh\*, Mats Johansson\* and Nina Kann\*

2377



### On decoating of polymer electrolyte-based solid-state battery cathodes

Anna Thielen\*, Thomas Leißner, Tobias Eisenmann and Urs A. Peuker\*

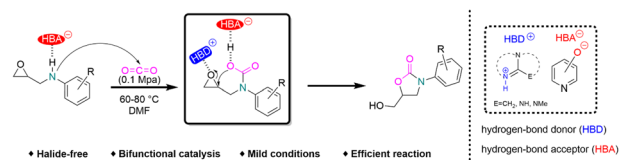


## PAPERS

2390

### Organocatalyzed aza-Payne-type rearrangement of epoxy amines and carbon dioxide for efficient construction of oxazolidinones

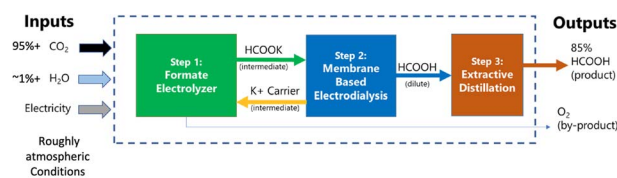
Xin Yuan, Jiahui Ma, Zhenjiang Li,\* Ziqi Liu, Yanqi Shi, Min Zhang, Yujia Wang, Xin Zou, Sha Li and Kai Guo



2404

### Life cycle assessment of formic acid synthesis utilizing CO<sub>2</sub> from direct air capture

Nicholas Badger,\* Dylan Mattice, Matthew Atwood and Shahriar Amini\*



## CORRECTIONS

2422

### Correction: Continuous flow production of $\gamma$ -valerolactone from methyl-levulinate promoted by MOF-derived Al<sub>2</sub>O<sub>3</sub>-ZrO<sub>2</sub>/C catalysts

Marina Ronda-Leal, Alina M. Balu, Rafael Luque, Francesco Mauriello, Alberto Ricchebuono, Christophe Len, Antonio A. Romero and Emilia Paone\*

2423

### Correction: Techno-economic assessment of two-stage hydrolysis of lignin for BTX production using iron-based catalysts

Giuseppe Bagnato, Jamie Horgan and Aimaro Sanna\*

