

# 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 2(1) 1–250 (2024)



**Cover**  
See Iwona Cybulska, Damien P. Debecker *et al.*, pp. 37–90. Image reproduced by permission of Damien Debecker from RSC. *Sustainability.*, 2024, 2, 37.



**Inside cover**  
See Antonio J. Capezza, Marcos A. Sabino *et al.*, pp. 125–138. Image reproduced by permission of Antonio Capezza from RSC. *Sustainability.*, 2024, 2, 125.

## EDITORIAL

9

### Reflecting on the successes of the first full year of RSC Sustainability

Tom Welton

## CRITICAL REVIEW

11

### Recent advancements towards the green synthesis of carbon quantum dots as an innovative and eco-friendly solution for metal ion sensing and monitoring

Jyoti Dhariwal, Gyandshwar K. Rao\* and Dipti Vaya\*



# Royal Society of Chemistry approved training courses

Explore your options.  
Develop your skills.  
Discover learning  
that suits you.

**Courses in the classroom,  
the lab, or online**

Find something for every  
stage of your professional  
development. Search our  
database by:

- subject area
- location
- event type
- skill level

Members **get at least 10% off**

Visit [rsc.li/cpd-training](https://rsc.li/cpd-training)

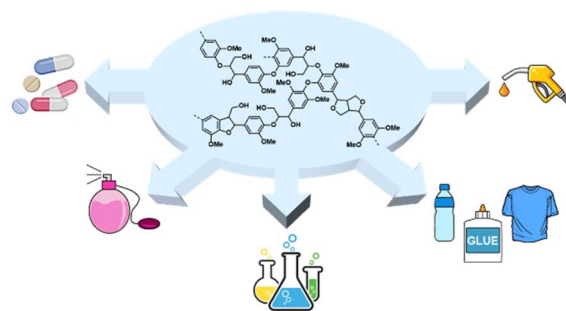


**SAVE  
10%**

37

## A guide to lignin valorization in biorefineries: traditional, recent, and forthcoming approaches to convert raw lignocellulose into valuable materials and chemicals

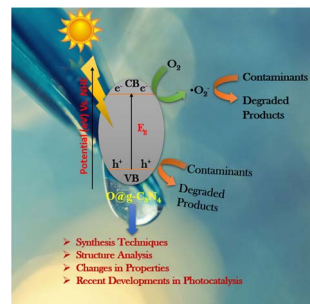
Filippo Brienza, David Cannella, Diego Montesdeoca, Iwona Cybulska\* and Damien P. Debecker\*



91

## Sustainability-driven photocatalysis: oxygen-doped g-C<sub>3</sub>N<sub>4</sub> for organic contaminant degradation

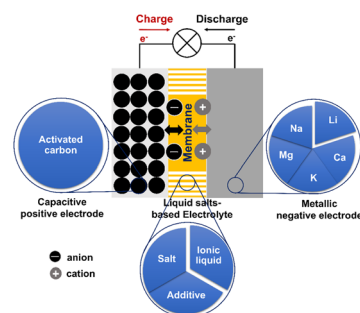
Soumya Ranjan Mishra, Vishal Gadore and Md. Ahmaruzzaman\*



101

## Alkali and alkaline earth metals in liquid salts for supercapacitors

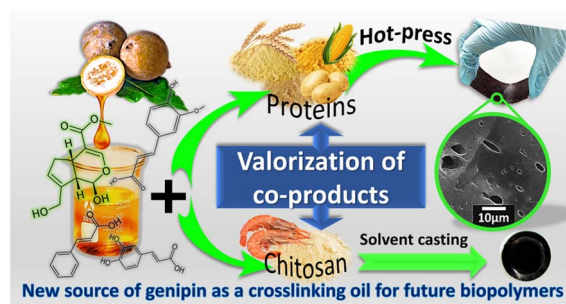
Qiang Guo, Peiyong Fan, Yuhang Zhang, Li Guan, Han Wang, Anna Croft\* and George Zheng Chen\*



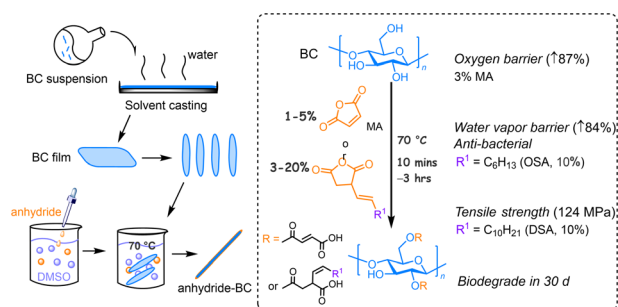
125

## New sources of genipin-rich substances for crosslinking future manufactured bio-based materials

Liliana B. Hurtado Colmenares, Maryam Nejati, Yuan Fang, Boyang Guo, Amparo Jiménez-Quero, Antonio J. Capezza\* and Marcos A. Sabino\*



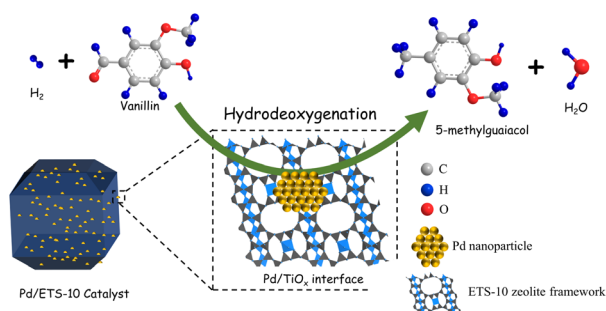
139



## Development of strong and high-barrier food packaging films from cyclic-anhydride modified bacterial cellulose

Zhuolun Jiang, Ka Man Cheung and To Ngai\*

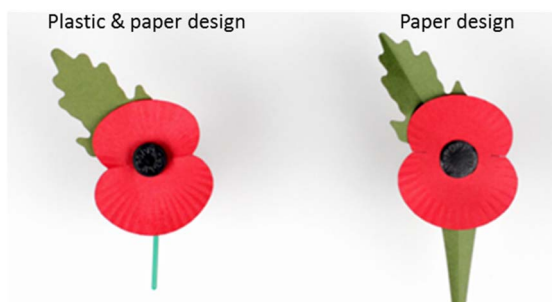
153



## Construction of Pd–TiO<sub>x</sub> interfaces for selective hydrodeoxygenation of C=O bonds in vanillin by supporting Pd nanoparticles on ETS-10 zeolite

Jianbin Huang, Chang Zhou, Jian Zhang,\* Hao Meng, Shiyao Lu and Feng-shou Xiao\*

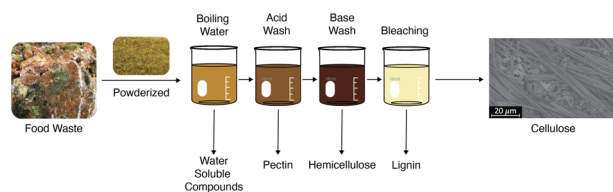
159



## Eco-design of the remembrance poppy: a life cycle assessment study

Andrea Paulillo, Martina Pucciarelli, Phil Prior and Paola Lettieri\*

170



## Extraction of cellulose from restaurant food waste

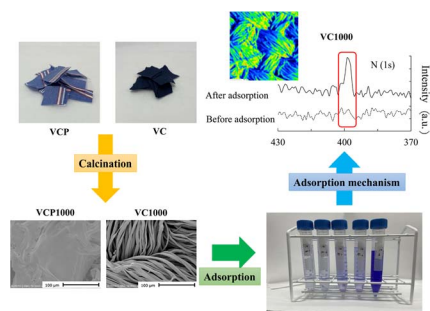
Matthew T. Garnett, Harrish Kumar Senthil Kumar, Bryan S. Beckingham and Symone L. M. Alexander\*



179

### Adsorption efficiency of crystal violet from the aqueous phase onto a carbonaceous material prepared from waste cotton and polyester

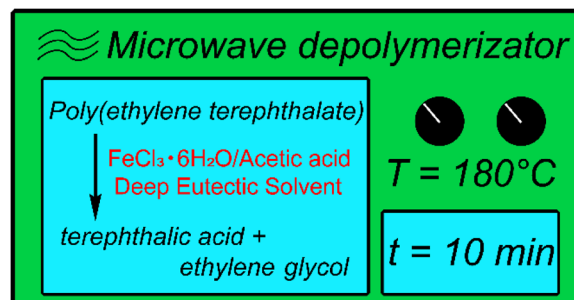
Fumihiko Ogata, Kazuki Sugimura, Noriaki Nagai, Chalermpong Saenjum, Keiji Nishiwaki and Naohito Kawasaki\*



187

### Effect of chloride salts and microwaves on polyethylene terephthalate (PET) hydrolysis by iron chloride/acetic acid Lewis/Brønsted acidic deep eutectic solvent

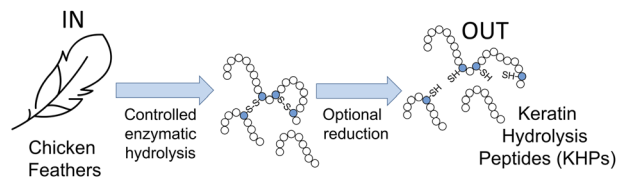
Marco Rollo, Massimo A. G. Perini, Alessandro Sanzone, Lorenzo Polastri, Matteo Tiecco, Alejandro Torregrosa-Chinillach, Elisa Martinelli\* and Gianluca Ciancaleoni\*



197

### A green process for the specific decomposition of chicken feather keratin into polythiol building blocks

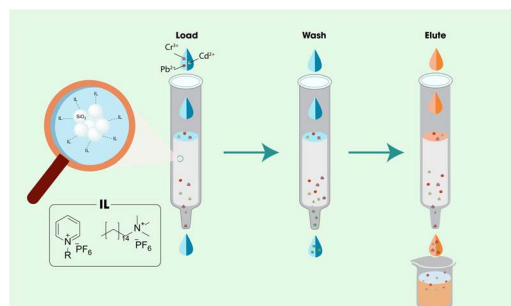
Andreas Schieder, Julia Diener, Martin Diekmann, Christian Bartsch, Florian Dietrich, Claudia Falcke, Iva Anic, Steffen Roth, Volker Sieber, Andreas Taden\* and Michael Richter\*



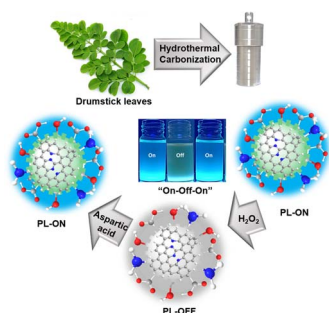
211

### Hexafluorophosphate ionic liquid-modified silica sorbent for selective separation and preconcentration of Pb<sup>2+</sup>, Cd<sup>2+</sup>, and Cr<sup>3+</sup> in water samples

Linh Dieu Nguyen, The Thai Nguyen, Nhi Hoang Nguyen, Chi Thien Gia Hua, Tan Hoang Le Doan, Linh Thuy Ho Nguyen and Phuong Hoang Tran\*



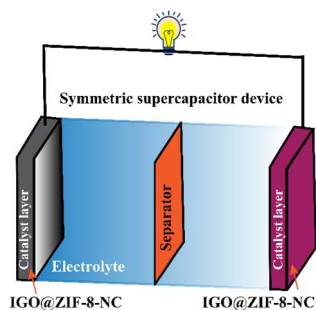
223



### Nitrogen-doped carbon quantum dots from biomass as a FRET-based sensing platform for the selective detection of H<sub>2</sub>O<sub>2</sub> and aspartic acid

K. Sandeep Raju, Gouri Sankar Das and Kumud Malika Tripathi\*

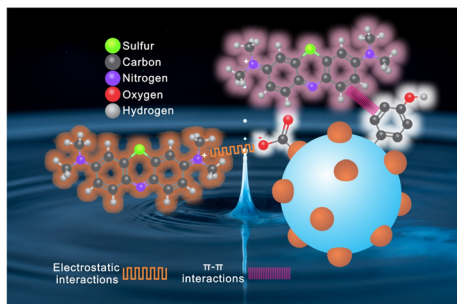
233



### An improved Hummers method derived graphene oxide wrapped ZIF-8 polyhedron derived porous heterostructure for symmetric supercapacitor performance

Rahul Patil, Nitish Kumar, Babasahab Matsagar, Kevin C. W. Wu, Rahul R. Salunkhe\* and Saikat Dutta\*

239



### Spent coffee ground-calcium alginate biosorbent for adsorptive removal of methylene blue from aqueous solutions

Catalina V. Flores, Juan L. Obeso, Herlys Viltres, Enelio Torres-García, Amin Reza Rajabzadeh, Seshasai Srinivasan, Ricardo A. Peralta,\* Ilich A. Ibarra\* and Carolina Leyva\*

## CORRECTION

247

### Correction: Towards sustainable synthesis: a life cycle assessment of polymer of intrinsic microporosity (PIM-1) by green mechanosynthesis

Ching Yoong Loh, Rui Huang, Rory Bell and Ming Xie\*

