

# RSC Sustainability

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Stephen A. Matlin,\* Federico Rosei, Philippe Lambin  
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### Global essay competition: Young Voices in the Chemical Sciences for Sustainability



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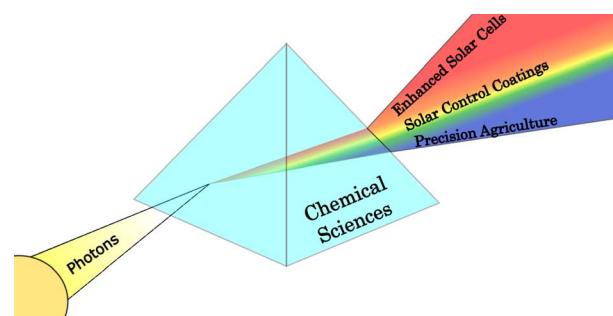
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## ESSAYS

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**Atoms and photons: how chemical sciences can catalyze the development of sustainable solutions powered by light**

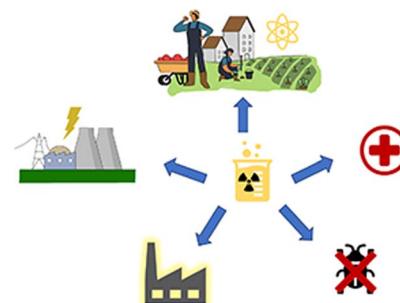
Govind Nanda\*



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**Chemical innovations in nuclear energy: paving the way for a carbon-neutral future**

Sarah Geo

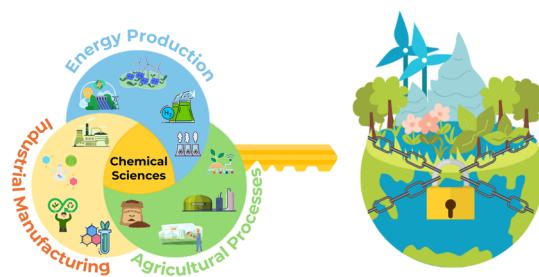


3579

**Chemical sciences: the key to a carbon-neutral future**

Alexandre M. S. Jorge\*

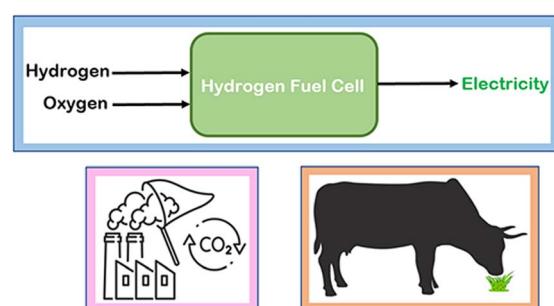
**Chemical Sciences: The Key to a Carbon-Neutral Future**



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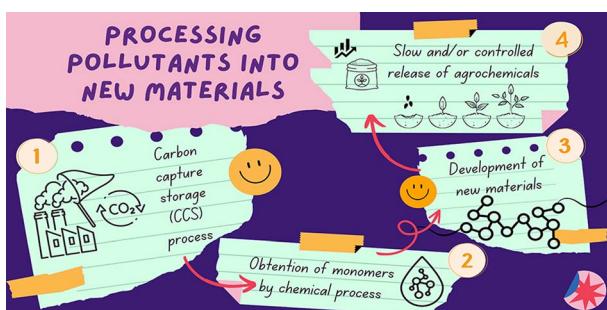
**From lab to landscape: the role of chemical sciences in sustainable technology**

Yana Walia



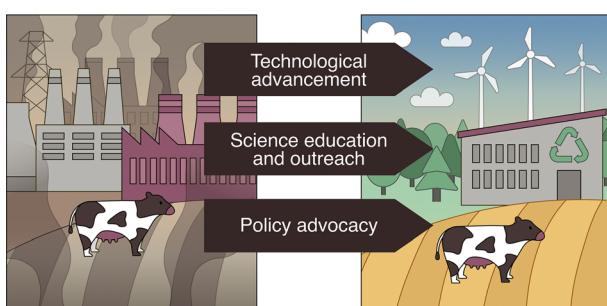
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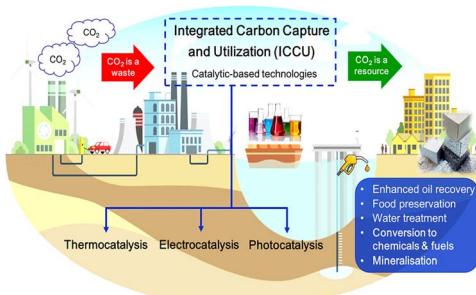
Tales da Silva Daitx\*

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**Towards a net-zero future: the chemical sciences across technology, education, and policy**

Amanda Mikaela Celestine Tolentino

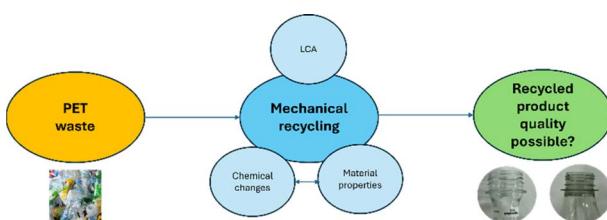
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**Utilizing advancements in chemical sciences for decarbonization: a pathway to sustainable emission and energy reduction**

Faith Mwende Johnson

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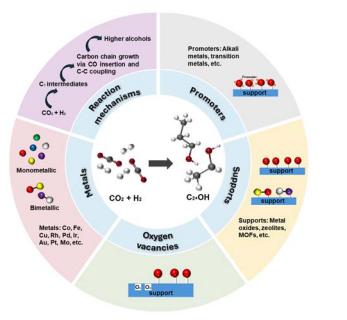
**Molecular and material property variations during the ideal degradation and mechanical recycling of PET**

Chiara Fiorillo, Lynn Trossaert, Erion Bezeraj, Simon Debrue, Hannelore Ohnmacht, Paul H. M. Van Steenberge, Dagmar R. D'hooge\* and Mariya Edeleva\*



## CRITICAL REVIEWS

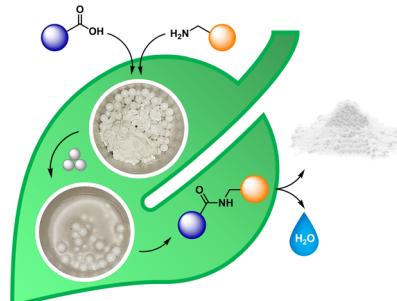
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Muenduen Phisalaphong and Alex C. K. Yip\*

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**Comparison of traditional and mechanochemical production processes for nine active pharmaceutical ingredients (APIs)**

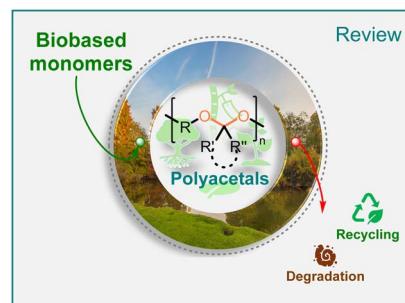
Emília P. T. Leitão\*



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**Synthesis of biobased polyacetals: a review**

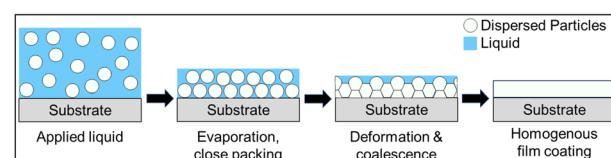
Anna C. Renner, Sagar S. Thorat and Mukund P. Sibi\*



3704

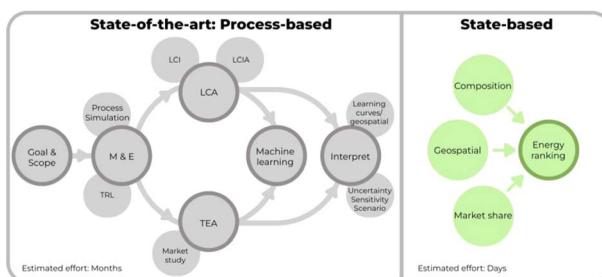
**Progress in waterborne polymer dispersions for coating applications: commercialized systems and new trends**

Kyle Pieters and Tizazu H. Mekonnen\*



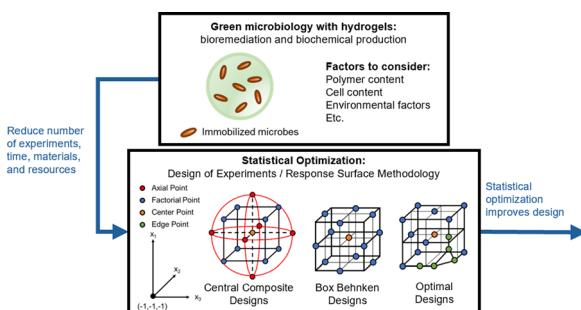
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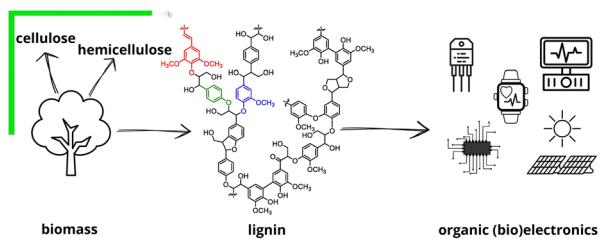
Britt Segers, Philippe Nimmemeers, Marc Spiller, Giorgio Tofani, Edita Jasiukaityté-Grojzdek, Elina Dace, Timo Kikas, Jorge M. Marchetti, Milena Rajić, Güray Yıldız and Pieter Billen\*

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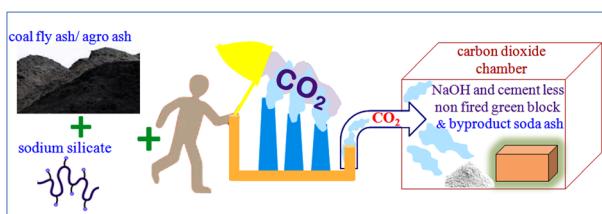
Conor G. Harris, Lewis Semprini, Willie E. Rochefort and Kaitlin C. Fogg\*

**Green gold: prospects of lignin in organic electronics and bioelectronics**

Laura Tronci and Assunta Marrocchi\*

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 **$\text{CO}_2$  assisted geo-polymerization: a win-win pragmatic approach for the synthesis of soda ash leading to reversal of the climate clock**

Sandeep Gupta\*

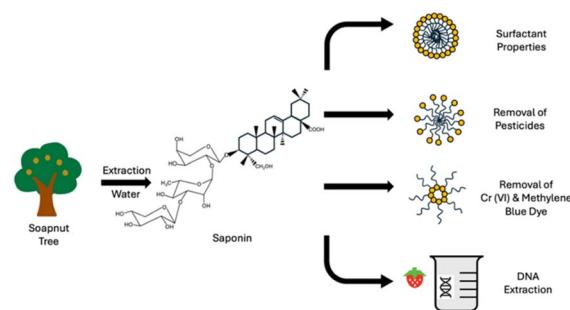


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**Using soapnut extract as a natural surfactant in green chemistry education: a laboratory experiment aligning with UN SDG 12 for general chemistry courses**

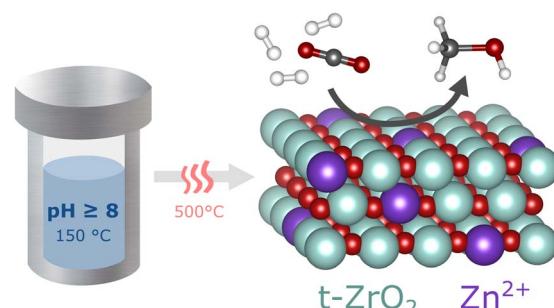
Zi Wang, Carter McLenahan and Liza Abraham\*



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**Hydrothermal synthesis of  $\text{ZnZrO}_x$  catalysts for  $\text{CO}_2$  hydrogenation to methanol: the effect of pH on structure and activity**

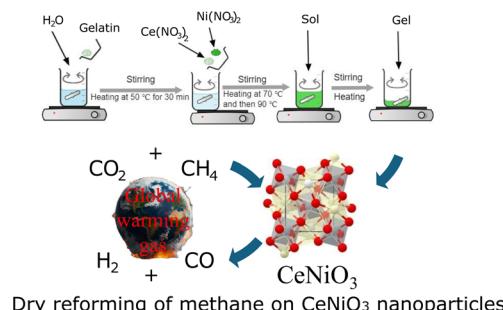
Issaraporn Rakngam, Gustavo A. S. Alves, Nattawut Osakoo, Jatuporn Wittayakun, Thomas Konegger and Karin Föttinger\*



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**$\text{CeNiO}_3$  perovskite nanoparticles synthesized using gelatin as a chelating agent for  $\text{CO}_2$  dry reforming of methane**

Usman Zahid, Wahid Sidik Sarifuddin, Abdul Hanif Mahadi, Holilah, Didik Prasetyoko and Hasliza Bahruji\*



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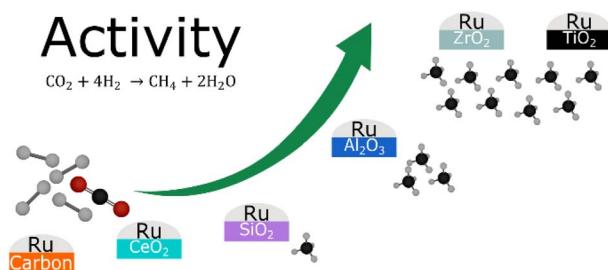
**General equations to estimate the  $\text{CO}_2$  production of (bio)catalytic reactions in early development stages**

Pablo Domínguez de María\*



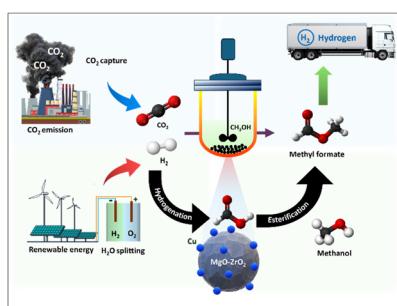
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**CO<sub>2</sub> hydrogenation on ruthenium: comparative study of catalyst supports**

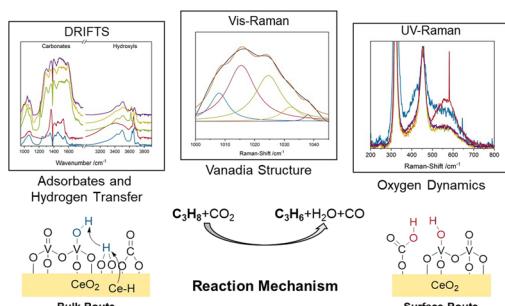
Göran Baade, Jens Friedland, Koustuv Ray and Robert Güttel\*

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**Cu–Mg synergy enhanced synthesis of methyl formate over noble metal-free heterogeneous catalyst systems**

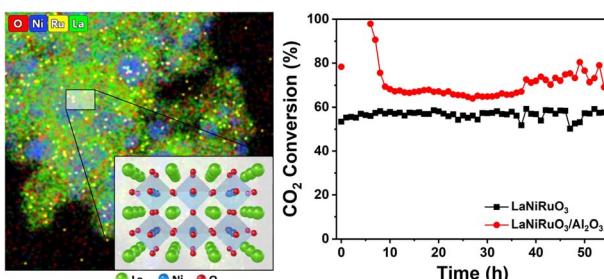
Jyotishman Kaishyop, Arpan Mukherjee, Abhay Giri Goswami, Tuhin Suvra Khan and Ankur Bordoloi\*

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**Unraveling the mechanism of the CO<sub>2</sub>-assisted oxidative dehydrogenation of propane over VO<sub>x</sub>/CeO<sub>2</sub>: an *operando* spectroscopic study**

Leon Schumacher, Marius Funke and Christian Hess\*

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**Exsolved LaNiRuO<sub>3</sub> perovskite-based catalysts for CO<sub>2</sub> methanation reaction**

Ayesha A. Alkhoori, Eswararava Prasadara Komarala, Aasif A. Dabbawala, Aseel G. S. Hussien, Dalaver H. Anjum, Samuel Mao and Kyriaki Polychronopoulou\*

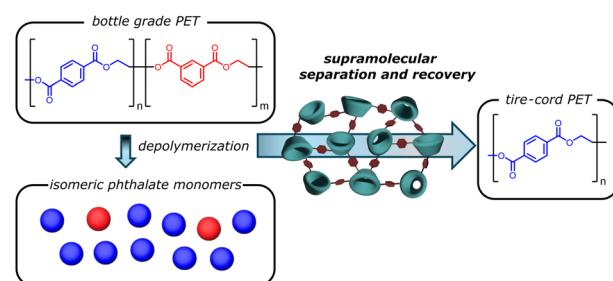


## PAPERS

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**Supramolecular purification of aromatic polyester monomers from chemical depolymerization**

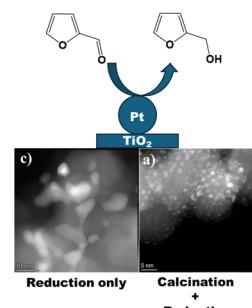
Gavan W. Lienhart, Thomas Palisin, William Gross, Amelia Moll and James M. Eagan\*



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**Controlling the nanoparticle size and shape of a Pt/TiO<sub>2</sub> catalyst for enhanced hydrogenation of furfural to furfuryl alcohol**

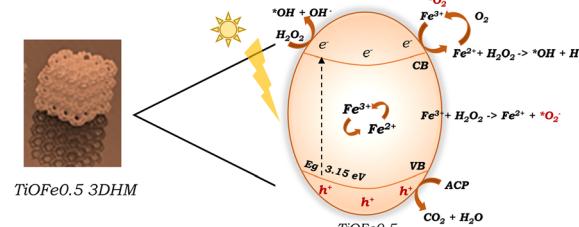
Heba Alsharif, Matthew B. Conway, David J. Morgan, Thomas E. Davies, Stuart H. Taylor and Meenakshisundaram Sankar\*



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**Additive manufacturing of hollow connected networks for solar photo-Fenton-like catalysis**

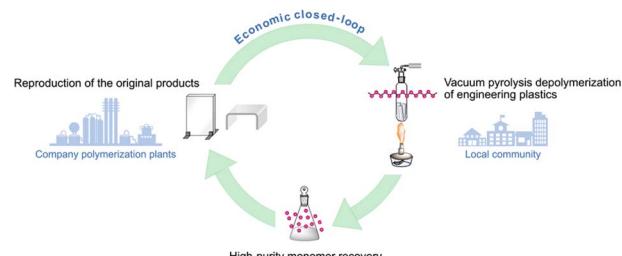
Miguel Ángel Gracia-Pinilla,\* Norma Alicia Ramos-Delgado,\* Cristian Rosero-Arias, Remco Sanders, Stephan Bartling, Jędrzej Winczewski, Han Gardeniers and Arturo Susarrey-Arce\*



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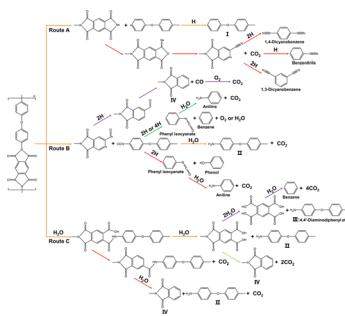
**High-purity monomer recovery from commercial engineering plastics by vacuum pyrolysis depolymerization**

Eri Yoshida\*



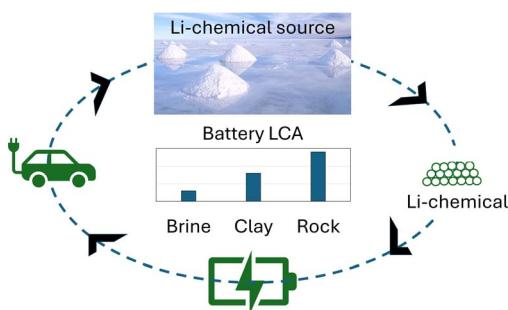
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**The thermal behavior and pyrolysis mechanism of a polyimide gas separation membrane**

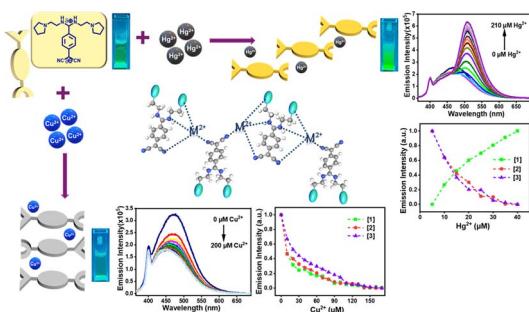
Qinxu Li, Bo Chen, Songyuan Yao, Chao Sang, Lu Lu, Shilong Dong, Hui Cao, Zhihao Si\* and Peiyong Qin\*

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**Life-cycle analysis of lithium chemical production in the United States**

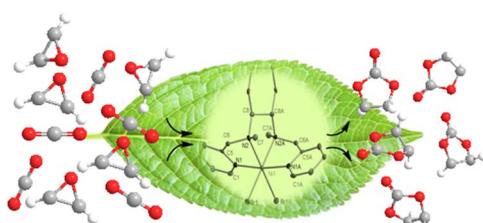
Rakesh Krishnamoorthy Iyer\* and Jarod C. Kelly

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**Self-assembled tetracyanoquinodimethane derivatives: differential fluorescent responses on sensing copper and mercury ions in an aqueous medium**

Anuradha Sureshrao Mohitkar, Nilanjan Dey and Subbalakshmi Jayanty\*

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- Single-component and efficient catalytic system
- Low amount of catalyst and 1 atm CO<sub>2</sub>
- Solvent-free conditions

**Efficient single-component nickel catalysts with tetradentate aminopyridine ligands for cycloaddition reactions of CO<sub>2</sub> and epoxides under mild conditions**

Congcong Zhang, Minghui Shi, Ning Yu, Bowen Zhang,\* Feng Han\* and Chengxia Miao\*

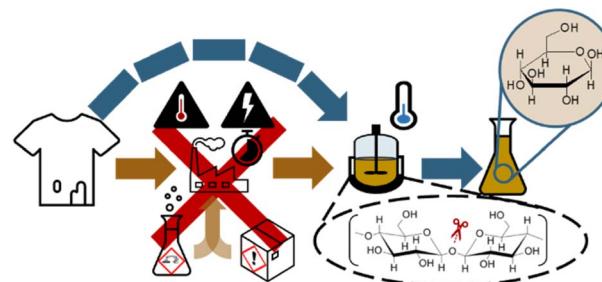


## PAPERS

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**Direct measurement of PFAS levels in surface water using an engineered biosensor**Madison Mann, Victoria Kartseva, Chelli Stanley,  
Maggie Blumenthal, Richard Silliboy and Bryan Berger\*

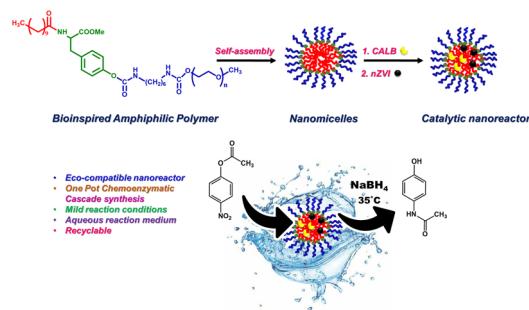
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**Effects of chemical pretreatment on the enzymatic hydrolysis of post-consumer waste viscose**Edvin Bågenholm-Ruuth, Mahla Bagherigelvardi,  
Caroline Gustafsson, Miguel Sanchis-Sebastiá\*  
and Ola Wallberg

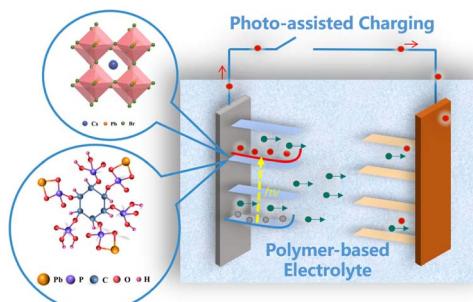
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**Unifying *Candida antarctica* lipase B and nZVI in bioinspired polymer nanomicelles: a nanobiohybrid synergy for sustainable synthesis of acetaminophen**

Falguni Shukla, Dilraj Singh and Sonal Thakore\*



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**Photo-assisted (de)lithiation to enhance photoelectrochemical storage in quasi-solid-state Li-ion batteries**Xin Mi, Jun Pan, Menglin Duan, Fuqiang Huang\*  
and Peng Qin\*

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**Aqueous-mediated DABCO and DABCO-ionic liquid catalysed synthesis of 3-acetylcoumarins: exploration by kinetic, electrochemical and spectroscopic studies**

Arpita A. Shanbhag, Lokesh A. Shastri\* and Samundeeswari L. Shastri

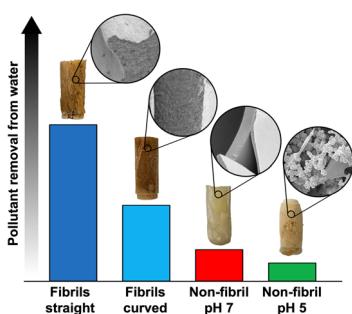
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**Beyond waste: cellulose-based biodegradable films from bio waste through a cradle-to-cradle approach**

Mai N. Nguyen, Minh T. L. Nguyen, Marcus Frank and Dirk Hollmann\*

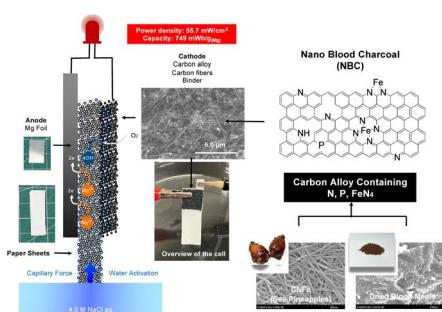
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**Elucidating the role of the nanostructure in protein aerogels for removal of organic water pollutants**

Rodrigo Sanches Pires, Antonio J. Capezza, David Jonsson, Jessica Lyrner Morén, Mikael S. Hedenqvist and Christofer Lendel\*

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**Sustainable water-activated metal–air paper batteries based on waste biomass-based electrocatalysts**

Kosuke Ishibashi and Hiroshi Yabu\*

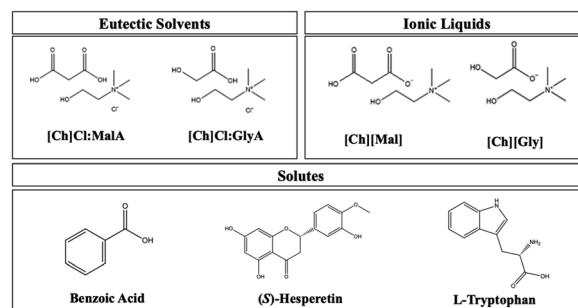


## PAPERS

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**What is better to enhance the solubility of hydrophobic compounds in aqueous solutions: eutectic solvents or ionic liquids?**

Olga Ferreira,\* Liliana P. Silva, Heloísa H. S. Almeida, Jordana Benfica, Dinis O. Abrantes, Simão P. Pinho and João A. P. Coutinho



## CORRECTION

4061

**Correction: Hydrothermal synthesis of ZnZrO<sub>x</sub> catalysts for CO<sub>2</sub> hydrogenation to methanol: the effect of pH on structure and activity**

Issaraporn Rakngam, Gustavo A. S. Alves, Nattawut Osakoo, Jatuporn Wittayakun, Thomas Konegger and Karin Föttinger\*

