

Sustainable Energy & Fuels

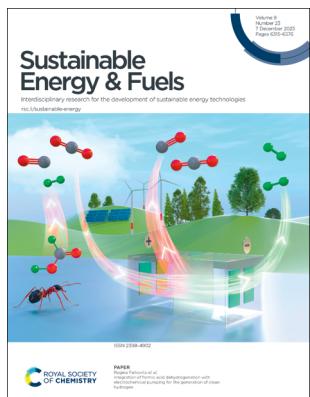
Interdisciplinary research for the development of sustainable energy technologies

rsc.li/sustainable-energy

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 2398-4902 CODEN SEFUA7 9(23) 6315–6576 (2025)



Cover

See Regina Palkovits *et al.*, pp. 6439–6446. Image reproduced by permission of RWTH Aachen University from *Sustainable Energy Fuels*, 2025, 9, 6439.



Inside cover

See Angappan Jayanthi and Subramaniam Jayabal, pp. 6324–6353. Image reproduced by permission of Subramaniam Jayabal from *Sustainable Energy Fuels*, 2025, 9, 6324.

EDITORIAL

6323

Introduction to next-generation battery technologies beyond lithium

Chunmei Ban,* Guillermo A. Ferrero,* Marta Sevilla* and Feixiang Wu*

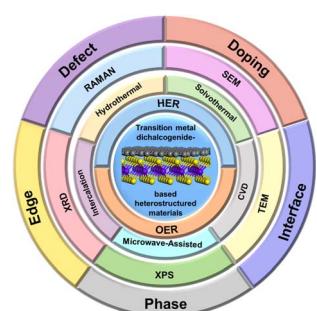


REVIEWS

6324

Recent advances in transition metal dichalcogenide-based heterostructured materials for electrochemical water splitting applications

Angappan Jayanthi and Subramaniam Jayabal*



Environmental Science: Atmospheres

 GOLD
OPEN
ACCESS

Connecting communities and inspiring new ideas

rsc.li/submittoEA

Fundamental questions
Elemental answers



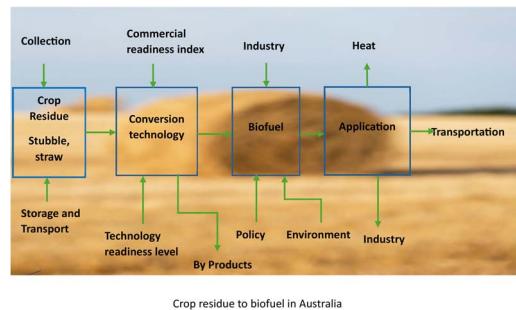
Registered charity number: 207890

REVIEWS

6354

Feasibility of biofuel production from crop stubble/straw in Australia: challenges and opportunities

M. A. Sattar,* M. A. Hosen and M. Johnstone

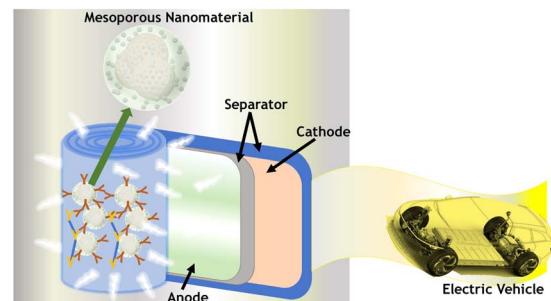


Crop residue to biofuel in Australia

6380

Recent advances in mesoporous nanostructured materials and nanohybrids for supercapacitor applications: a review

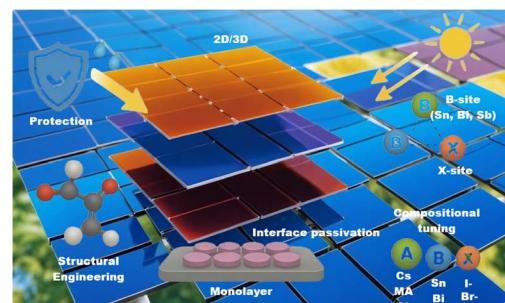
Mayank Pandey,* Kalim Deshmukh,* Preetinder Kaur, Ammar Zidan, Süleyman Aşır, Surinder Singh,* Naveen Kumar, Prasanta Kumar Sahoo, Suresh Sundaramurthy, S. K. Mehta, Deniz Türkmen and Niraj Kumar



6413

The role of perovskite composition, dimensionality, and additives in lead-free perovskite solar cell longevity: a review

Lina Jaya Diguna, Alice Lim, Yuliar Firdaus, Livia Janice Widiapradja, David Hadid Sidiq, Anna Magdalena Melnychenko, Setiyadi Tri Utomo, Arramel Arramel* and Muhammad Danang Birowosuto*

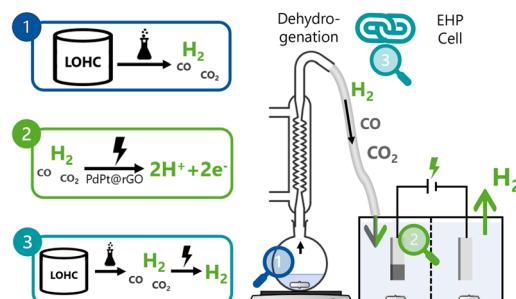


PAPERS

6439

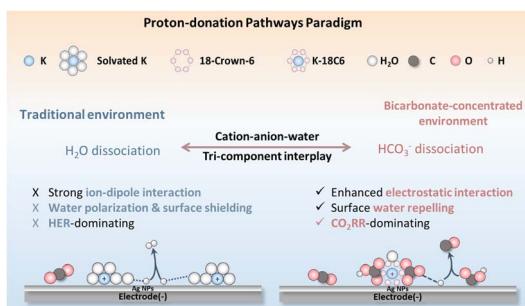
Integration of formic acid dehydrogenation with electrochemical pumping for the generation of clean hydrogen

Fabian Ketter, Shwetambara Jha, Sonja D. Mürtz and Regina Palkovits*



PAPERS

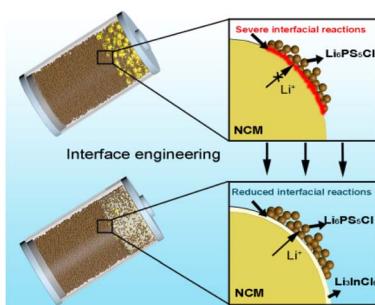
6447



Cation solvation engineering for enhanced CO₂ electroreduction

Haoran Zhang, Tianxiang Yan, Akhmat Fauzi, Jianlong Lin, Yixin Jin, Yihan Xu, Zhanpeng Liang, Tribidasari A. Ivandini and Sheng Zhang*

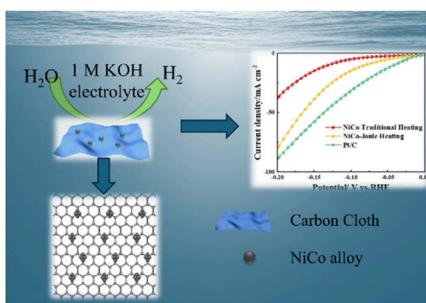
6455



Constructing stable cathode interfaces with halide-sulfide dual electrolytes for all-solid-state lithium batteries with enhanced electrochemical performance

Wenzhuang Liu, Jiahao Li, Jinghua Wu* and Xiayin Yao*

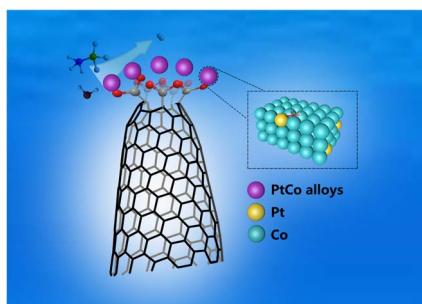
6464



Ultrafast synthesis of NiCo alloy catalysts by Joule heating for the electrocatalytic hydrogen evolution reaction

Wence Ma, Zhiyuan Niu, Haidong Wang, Jinlong Li, Kaixin Zhu, Weiguang Ma and Xu Zong*

6470



Dual engineering of electronic structure and nanoconfinement for high-efficiency ammonia borane hydrolysis over PtCo-oxCNH catalysts

Weixia Li, Wenjing Yi, Runzi Liao, Houfa Chen and Xinzheng Yue*

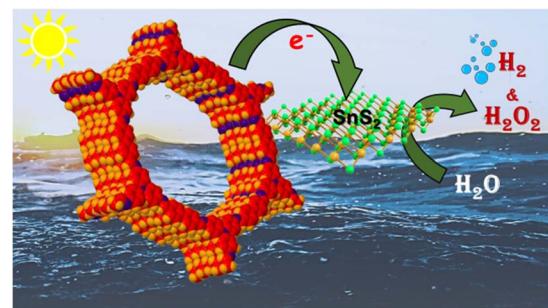


PAPERS

6479

Visible-light-driven green hydrogen and hydrogen peroxide production using a 2D porous organic polymer engineered with 2D SnS₂

Mainak Sarkar, Pekham Chakrabortty, R. V. Singh, Mrinal R. Pai, Mahboob Alam, Sk. Manirul Islam* and Ahmed Mohamed Tawfeek



6492

Low-concentration electrolyte with lithium nitrate as the sole salt for constructing a LiF/Li₃N inorganic composite SEI and enabling stable lithium metal battery cycling

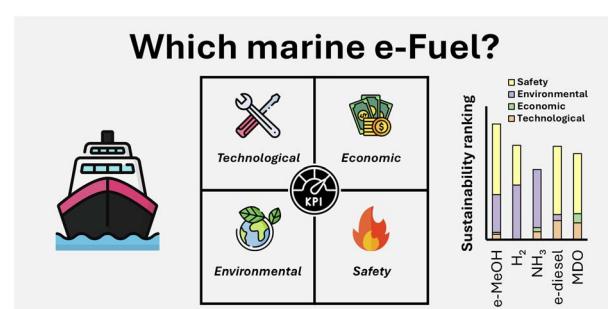
Xuanzhong Wen, Qiu Chen, Pan Luo, Mingshan Wang,* Li Liao, Yin Shen, Xiaoshuang Luo, Jialin Song, Michael Zaiser* and Xing Li*



6506

Quantitative sustainability assessment of e-fuels for maritime transport

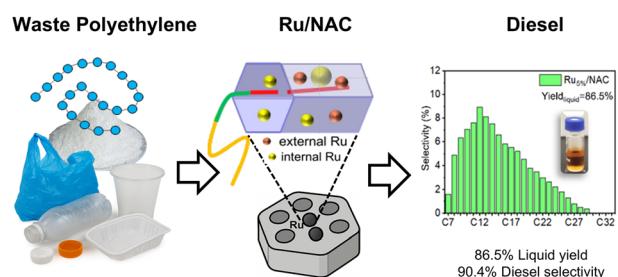
Francesco Zanobetti, Andrea Bernardi, Gianmaria Pio, Diego Freire Ordóñez, David Danaci, Benoît Chachuat,* Valerio Cozzani and Nilay Shah



6522

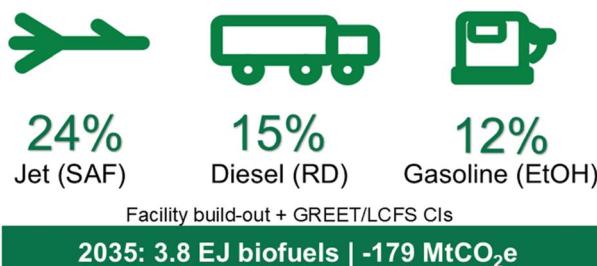
Upcycling polyethylene into diesel-range hydrocarbons over Ru catalysts confined in thermally stable mesoporous N-doped carbon

Shitong Yu, Zhenghang Ren, Kaige Wang, Rui Xiao, Zhicheng Luo* and Huiyan Zhang*



PAPERS

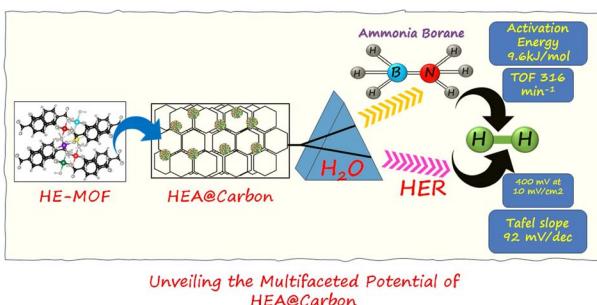
6532



Life cycle greenhouse gas emissions and carbon intensity of U.S. fuel use and projection for the next 10 years-based on built capacity and expansion plans

Tai-Yuan Huang, Doris Oke* and Troy R. Hawkins

6548



Magnetically recoverable high-entropy alloy catalyst in carbon matrix for ammonia borane-driven hydrogen evolution and electrocatalytic hydrogen production

Manish Ramesh Shingole, Siddhartha Kolay, Asheesh Kumar, P. Ruz, V. Sudarsan and Seemita Banerjee*

CORRECTION

6563

Correction: Advances and strategies in scalable coating techniques for flexible perovskite solar cells

Hou-Chin Cha, Shih-Han Huang, Chia-Feng Li, Feng-Yu Tsai, Wei-Fang Su* and Yu-Ching Huang*

