

# Sustainable Energy & Fuels

Interdisciplinary research for the development of sustainable energy technologies

[rsc.li/sustainable-energy](https://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 8(9) 1797–2116 (2024)



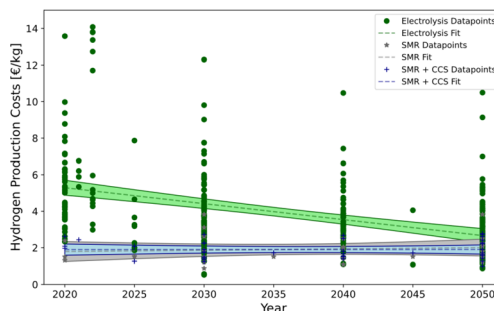
**Cover**  
See Sabrina Spatari *et al.*, pp. 1924–1935. Image reproduced by permission of Sabrina Spatari from *Sustainable Energy Fuels*, 2024, 8, 1924.

## REVIEWS

1806

### Future costs of hydrogen: a quantitative review

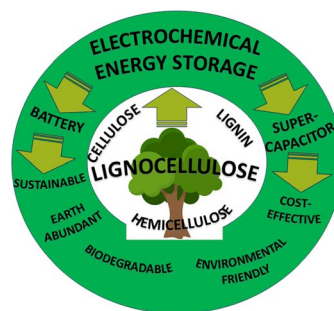
Florian Frieden\* and Jens Leker



1823

### Lignocellulosic biomass-based materials: a promising resource for viable energy storage

Md. Merajul Islam



# RSC Sustainability

GOLD  
OPEN  
ACCESS

Dedicated to sustainable  
chemistry and new solutions

For an open, green and inclusive future

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

Fundamental questions  
Elemental answers

## REVIEWS

1872

## Design and development of nanostructured photocatalysts for large-scale solar green hydrogen generation

Pratyush Kumar Sahu, Aslisha Champati, Abanti Pradhan\* and Brundabana Naik\*

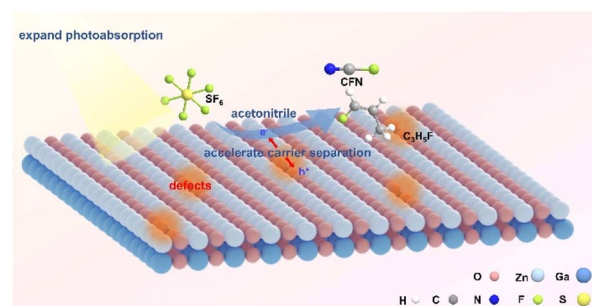


## COMMUNICATION

1918

## Boosted photoconversion of SF<sub>6</sub> over defective ZnGa<sub>2</sub>O<sub>4</sub> nanosheets under mild conditions

Shan Zhu, Yue Zhao, Fengxiang Ma, Yue Yin, Weijia Shi, Feng Zhu, Wenya Fan, Peijin Du\* and Jinyu Ding\*

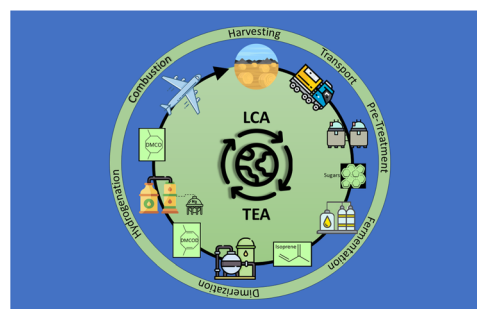


## PAPERS

1924

## A sustainable aviation fuel pathway from biomass: life cycle environmental and cost evaluation for dimethylcyclooctane jet fuel

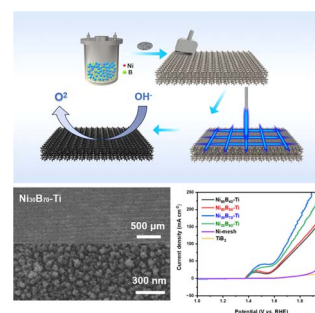
Rahamim Batten, Mukund Karanjikar and Sabrina Spatari\*



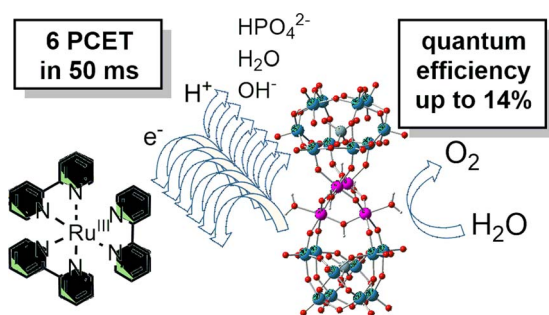
1936

## A facile strategy of "laser-direct-writing" to develop self-supported Ni<sub>30</sub>B<sub>70</sub>-Ti catalysts for boosted and durable alkaline oxygen evolution

Yiming Gao, Shengli Zhu, Zhenduo Cui, Zhaoyang Li, Shuilin Wu, Zhonghui Gao, Wence Xu, Meiqing Guo, Yanqin Liang\* and Hui Jiang\*



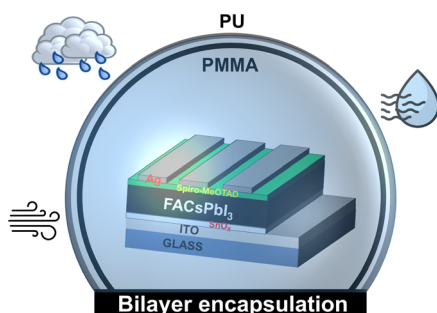
1944



### Sequential proton coupled electron transfer events from a tetraruthenium polyoxometalate in photochemical water oxidation

Elena Rossin, Marcella Bonchio, Mirco Natali\* and Andrea Sartorel\*

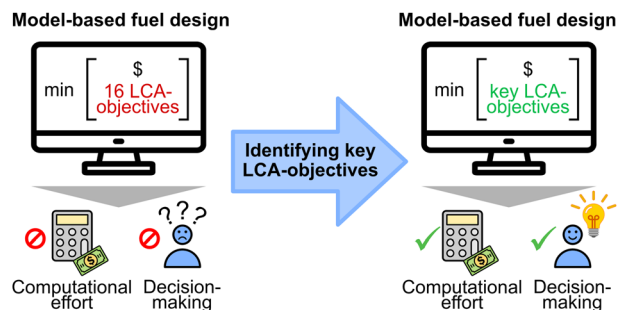
1953



### Facile and scalable bilayer polymer encapsulation to achieve long-term stability of perovskite solar cells under harsh humidity conditions

Rohith Kumar Raman, Saraswathi Ganesan, Ananthan Alagumalai, Vidya Sudhakaran Menon, Suresh Krishnan, Senthil A. Gurusamy Thangavelu and Ananthanarayanan Krishnamoorthy\*

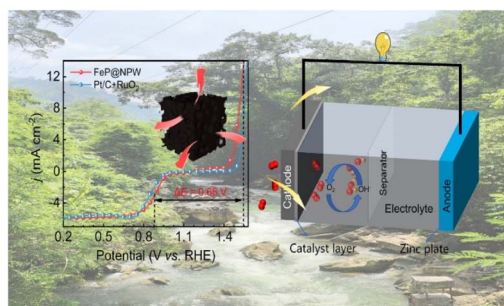
1966



### Identifying key environmental objectives for integrated process and fuel design

Simon Voelker, Philipp Ackermann, Marcel Granderath, Clemens Kortmann, Joern Viell, Alexander Mitsos and Niklas von der Assen\*

1983



### Chemical fabrication and synergistic mechanism of N-doped carbon modified with FeP as catalysts for flexible rechargeable Zn-air batteries

Xianli Wu, Ting Zhou, Guosheng Han, Shuling Liu, Mengmeng Cao, Shuqi Li, Jiawen Wang, Yanyan Liu,\* Jianchun Jiang, Yongfeng Wang and Baojun Li



1992

## Multi-period optimization of hydrogen refueling station layouts considering refueling satisfaction and hydrogen fuel cell vehicle market diffusion

Yan Zhou, Xunpeng Qin\* and Wenlong Yang

Upper-level Planning: Multi-period HRS Location Optimization by the Decision-Maker

Objective:  $\max\{\text{Vehicle flow intercepted by the HRS}\}$   
 Decisions: (1) Number of HRSs constructed per period  
 (2) Location of HRSs  
 (3) Capacity of HRSs

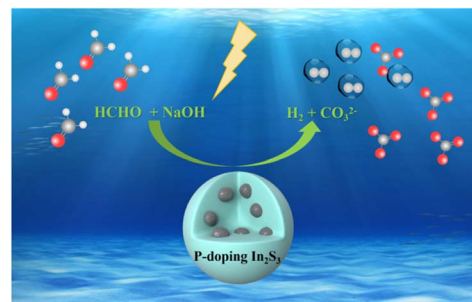
Lower-level Planning: Hydrogen Refueling Strategy

Objective:  $\max\{\text{HFCV refueling satisfaction on all paths}\}$   
 Decisions: (1) Hydrogen Refueling Strategy  
 (2) Hydrogen Refueling Amount

2010

## Phosphorus-doped $\text{In}_2\text{S}_3$ with rich sulfur vacancies toward efficient photocatalytic hydrogen production from formaldehyde solution

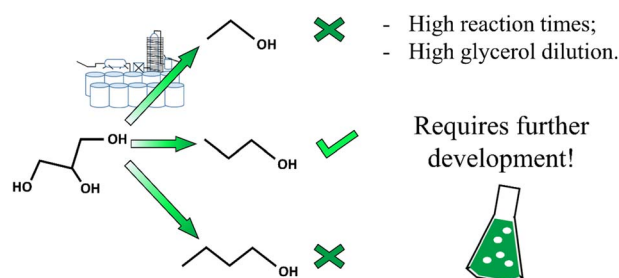
Jing Sui, Zhengxin Peng, Nan Lu, KaiCheng Qian, Xiaofan Zhang, Tong Wei, Renhong Li and Xiaoqing Yan\*



2019

## Biochemical production of short-chain alcohols from glycerol: process simulation and economic evaluation

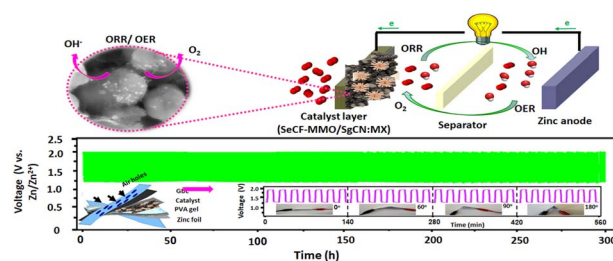
Lia G. M. Albuquerque, Raquel M. Cavalcante and André F. Young\*



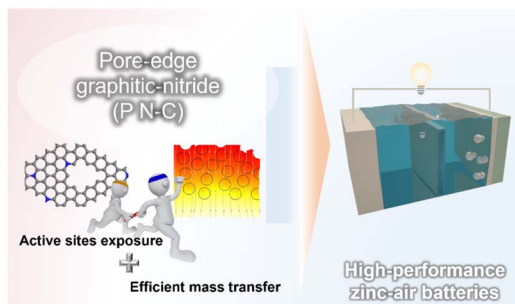
2038

## Selenium-doped mixed metal oxide nanoparticles decorated on $\text{g-C}_3\text{N}_4$ and MXene sheets as promising bifunctional oxygen electrocatalysts for rechargeable Zn-air batteries

Mohadese Rastgoo-Deylami, Ali Esfandiar\* and Valeri P. Tolstoy



2050

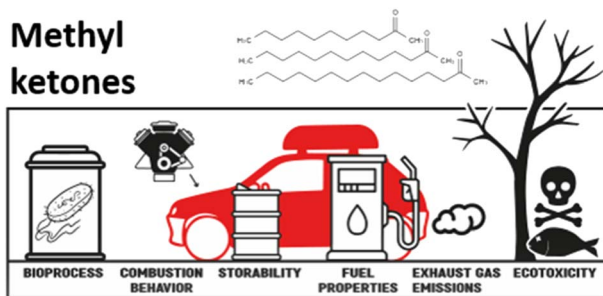


### Pore-edge graphitic nitride-dominant hierarchically porous carbons for boosting oxygen reduction catalysis

Lilai Liu, Youzheng Wu, Hui Wang, Xueying Yang, Weirun Zhu, Shuanshan Ma, Xiangyu Lu, Yaqiang Li, Penghui Ren,\* Peixia Yang\* and Ruopeng Li\*

2059

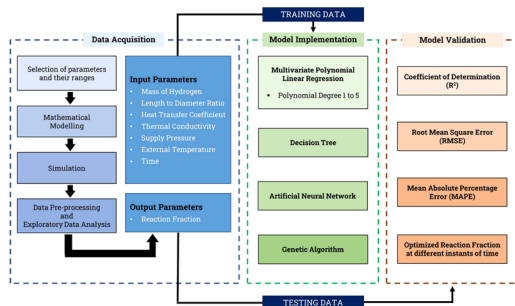
### Methyl ketones



### Methyl ketones: a comprehensive study of a novel biofuel

Carolin Grütering, Christian Honecker, Marius Hofmeister, Marcel Neumann, Lukas Raßpe-Lange, Miaomiao Du, Bastian Lehrheuer, Maximilian von Campenhausen, Franziska Schuster, Maximilian Surger, Birgitta E. Ebert, Andreas Jupke, Till Tiso, Kai Leonhard, Katharina Schmitz, Stefan Pischinger and Lars M. Blank\*

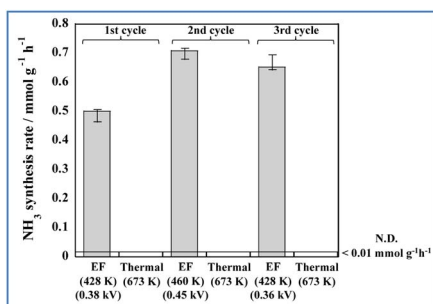
2073



### Machine learning modelling and optimization for metal hydride hydrogen storage systems

Abhijit Kumar, Saurabh Tiwari,\* Nandlal Gupta and Pratibha Sharma

2087



### Air-stable iron phosphide catalysts for electric field-assisted low-temperature ammonia synthesis

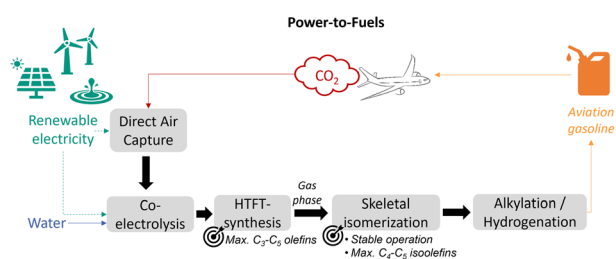
Ryuku Maeda, Hiroshi Sampei, Tomohiro Tsuda, Hiromu Akiyama, Yuta Mizutani, Takuma Higo, Hideaki Tsuneki, Takato Mitsudome\* and Yasushi Sekine\*



2094

## Coupling the high-temperature Fischer–Tropsch synthesis and the skeletal isomerization reaction at optimal operation conditions in the Power-to-Fuels process route for the production of sustainable aviation gasoline

Dorela Dhamo,\* Jannis Kühn, Simon Lüttin, Michael Rubin and Roland Dittmeyer



2104

## Influence of Ru-substitution on the performance of pyrochlore catalysts in oxidative steam reforming of ethanol

Yu-Hsuan Huang, Ho-Chen Hsieh, Yun-Hsin Wang, Sheng-Feng Weng and Chi-Shen Lee\*

