

# 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(16) 3467–3766 (2024)



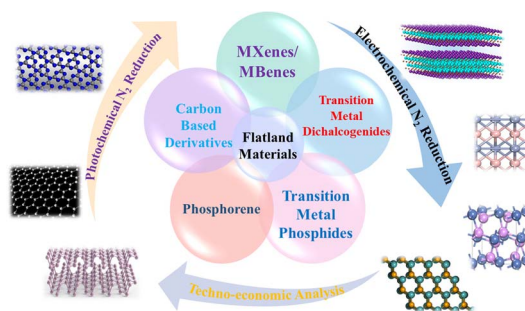
**Cover**  
See Sophia Haussener *et al.*, pp. 3583–3594. Image reproduced by permission of Sophia Haussener from *Sustainable Energy Fuels*, 2024, 8, 3583.

## REVIEWS

3476

### Flatland materials for photochemical and electrochemical nitrogen fixation applications: from lab-door experiments to large-scale applicability

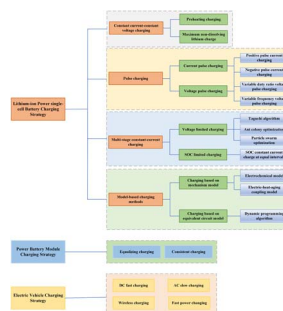
Syed Asim Ali, Iqra Sadiq and Tokeer Ahmad\*



3496

### Towards intelligent electric vehicle power batteries and multi-scenario application vehicle operation safety charging strategies: a review

Shan Li, Jian Ma, Xuan Zhao,\* Kai Zhang,\* Zhipeng Jiao and Qifan Xue



# ChemComm

Uncover new possibilities  
with outstanding  
preliminary research

Original discoveries, fuelling  
every step of scientific progress

[rsc.li/chemcomm](http://rsc.li/chemcomm)

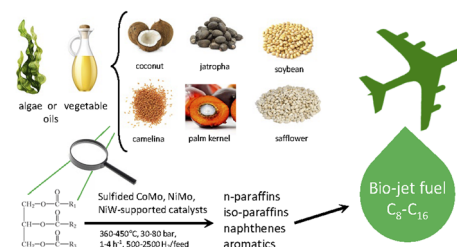
Fundamental questions  
Elemental answers

## REVIEWS

3524

### Hydroprocessing of biomass feedstock over sulfided CoMo-, NiMo-, and NiW-supported catalysts for bio-jet fuel component production: a review

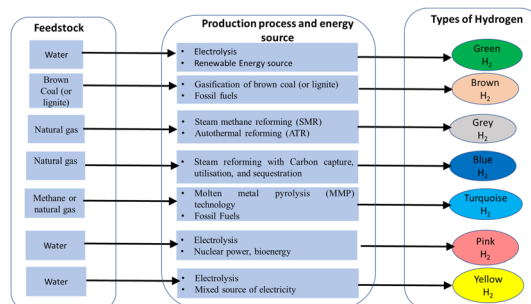
Marina V. Bukhtiyarova,\* Evgenia N. Vlasova and Galina A. Bukhtiyarova



3545

### An up-to-date review on the progress and challenges of hydrogen storage, and its safety and economic analysis

M. A. Sattar, M. G. Rasul,\* M. I. Jahirul and M. M. Hasan

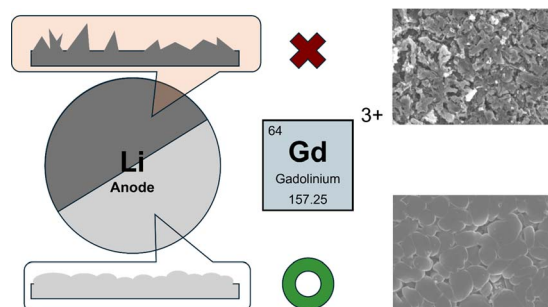


## COMMUNICATION

3574

### Electrolyte tuning with low concentrations of additive for dendrite suppression in lithium metal anodes

Abiral Baniya, Madan Bahadur Saud, Hansheng Li, M. Bilal Faheem, Yuchen Zhang, Ashok Thapa, Raja Sekhar Bobba, Poojan Indrajeet Kaswekar and Quinn Qiao\*

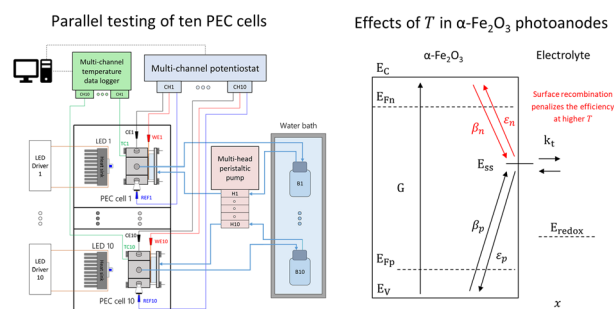


## PAPERS

3583

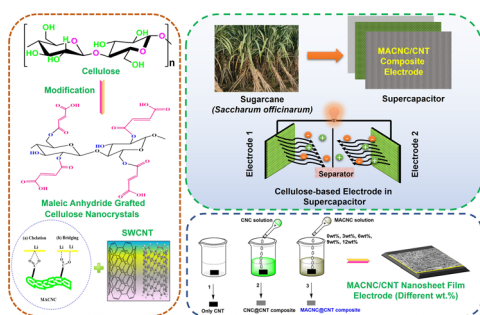
### High-throughput parallel testing of ten photoelectrochemical cells for water splitting: case study on the effects of temperature in hematite photoanodes

Roberto Valenza, Isaac Holmes-Gentle, Franky E. Bedoya-Lora and Sophia Haussener\*





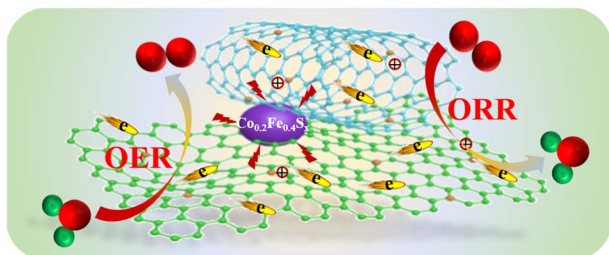
3595



### Chemically tuned cellulose nanocrystals/single wall carbon nanosheet based electrodes for hybrid supercapacitors

Nitesh Choudhary, Shiva Singh, Gaurav Malik, Shakshi Bhardwaj, Siddharth Sharma, Akshay Tomar, Sheetal Issar, Ramesh Chandra\* and Pradip Kumar Maji\*

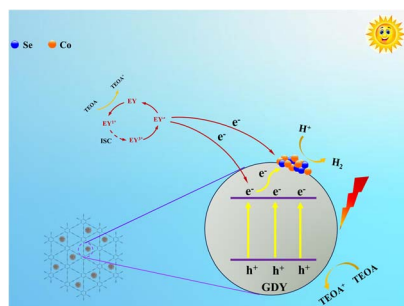
3610



### Dual-carbon coupling modulated bimetallic sulfides as high-efficiency bifunctional oxygen electrocatalysts in a rechargeable Zn–air battery

Yongxia Wang,\* Jingjing Liu, Jiayi Liu, Zhaodi Wang, Biyan Zhuang, Nengneng Xu, Xiangzhi Cui\* and Jinli Qiao\*

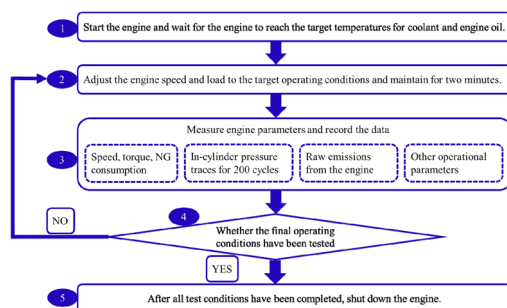
3617



### Visible light induced efficient photocatalytic hydrogen production by graphdiyne/CoSe ohmic heterojunction

Bingzhu Li, Xiaohua Ma,\* Minjun Lei,\* Chunyin Long, Youlin Wu and Zhiliang Jin\*

3630



### Experimental and computational study on the effects of exhaust gas recirculation on thermodynamics, combustion and emission characteristics of a diesel pilot ignition natural gas engine

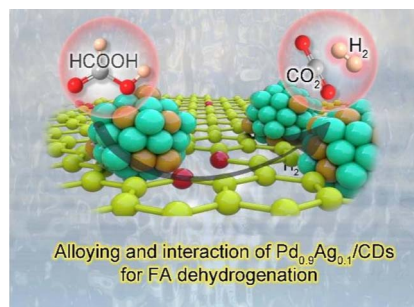
Jun Shu, Jianqin Fu,\* Wenhui Yang, Jianxiang Huang, Tingpu He and Jingping Liu



3645

### Anchoring PdAg alloys on self-crosslinked carbon dots as efficient catalysts for formic acid dehydrogenation under ambient conditions

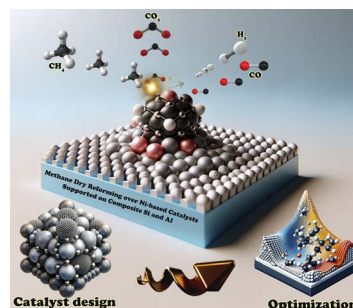
Zhenluo Yuan, Ouyang Liu, Shuyan Guan, Xianyun Liu, Linyan Bian, Qiuming Peng, Shumin Han, Yanping Fan\* and Baozhong Liu\*



3652

### Sustainable syngas generation from methane: enhanced catalysis with metal-promoted nickel on silica–alumina composites

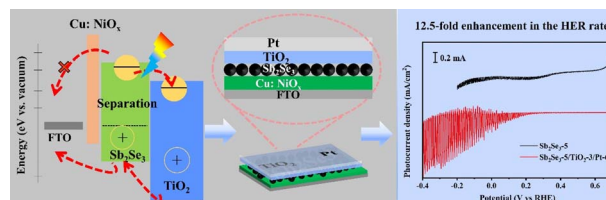
Ahmed S. Al-Fatesh,\* Ahmed A. Ibrahim, Mohammed O. Bayazed, Ahmed E. Abasaed, Maher M. Alrashed, Mohammed F. Alotibi,\* Anis H. Fakeeha and Ahmed I. Osman\*



3670

### Interfacial engineering enabling solution-processed Cu: NiO<sub>x</sub>/Sb<sub>2</sub>Se<sub>3</sub>/TiO<sub>2</sub>/Pt photocathodes for highly efficient photoelectrochemical water-splitting

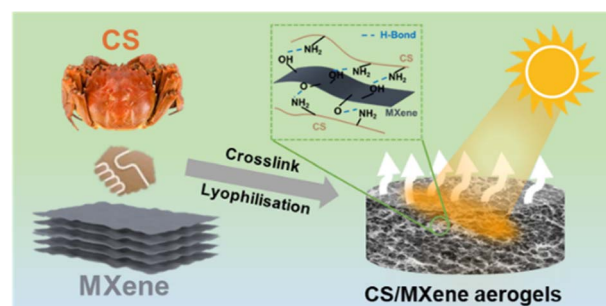
Yinbo Zhan, Ying-Chu Chen\* and Xia Long\*



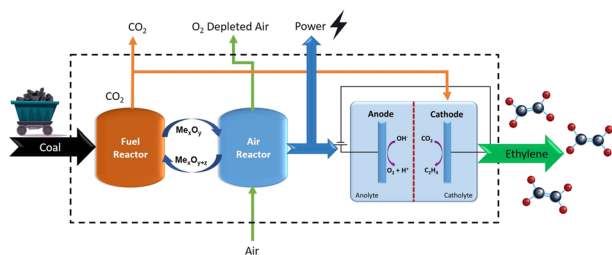
3680

### MXene nanosheet-reinforced chitosan as a stable photothermal evaporator for efficient solar evaporation

Fuqiang Zhang, Zhiqiang Qi, Xiangsheng Han, Hongzhen Cai and Keyan Yang\*



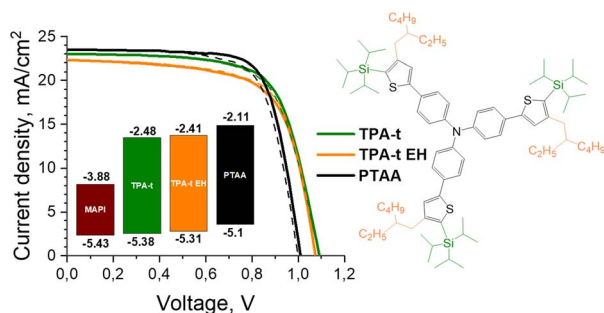
3688



### System-level feasibility analysis of a novel chemical looping combustion integrated with electrochemical CO<sub>2</sub> reduction

Nimish Pankhedkar, Rohan Sartape, Meenesh R. Singh, Ravindra Gudi,\* Pratim Biswas and Suresh Bhargava

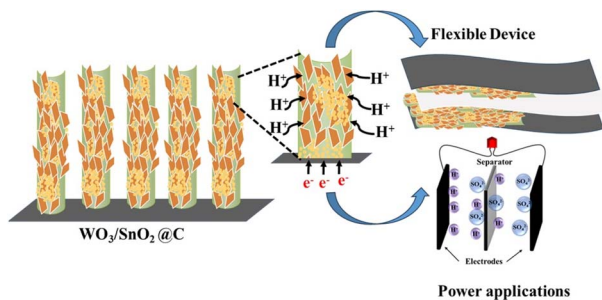
3704



### Conjugated small molecules based on alkylsilyl-modified triphenylamine: promising hole transport materials in perovskite photovoltaics

Ilya V. Martynov,\* Aleksandra N. Zhivchikova, Mikhail D. Tereshchenko, Ilya E. Kuznetsov, Stepan Baryshev, Valentyn S. Volkov, Marina Tepliakova, Alexander V. Akkuratov and Aleksey V. Arsenin

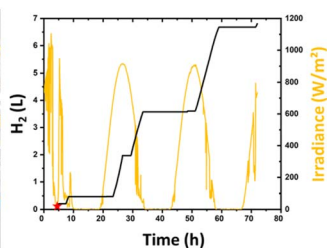
3711



### Synergistic effect of heterointerface engineering and oxygen vacancy in electro-spun polymer fibres derived carbon-supported 1D hierarchical WO<sub>3</sub>/SnO<sub>2</sub> nanostructures for high-performance supercapacitor devices

Vaishali Tanwar, Saurabh Kumar Pathak and Pravin Popinand Ingole\*

3726



### Thermally integrated photoelectrochemical devices with perovskite/silicon tandem solar cells: a modular approach for scalable direct water splitting

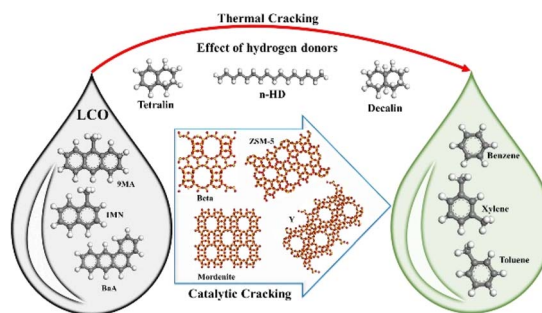
Angela R. A. Maragno, Adina Morozan, Jennifer Fize, Michel Pellat, Vincent Artero,\* Sophie Charton\* and Muriel Matheron\*



3740

## Effect of temperature, hydrogen donor, and zeolites on light cycle oil cracking: thermodynamic, experimental, and DFT analyses

Akshata Vijay Ramteke, Marvi Kaushik, Divesh Bhatia\* and K. K. Pant\*



3753

## Precise control of TiO<sub>2</sub> overlayer on hematite nanorod arrays by ALD for the photoelectrochemical water splitting

Jiao Wang, Letizia Liccardo, Heydar Habibimarkani, Ewa Wierzbicka, Thorsten Schultz, Norbert Koch, Elisa Moretti\* and Nicola Pinna\*

