

# EES Catalysis

rsc.li/eescatalysis

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.

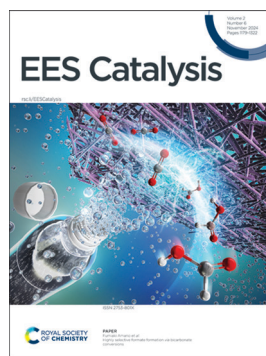
## IN THIS ISSUE

eISSN 2753–801X CODEN ECEACE 2(6) 1179–1322 (2024)



### Cover

See Javier Pérez-Ramírez *et al.*, pp. 1263–1276. Image reproduced by permission of Javier Pérez-Ramírez from *EES Catal.*, 2024, 2, 1263.



### Inside cover

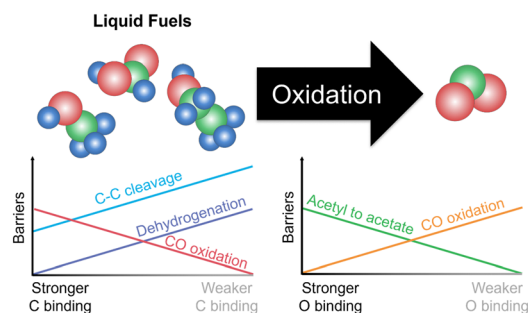
See Fumiaki Amano *et al.*, pp. 1277–1284. Image reproduced by permission of Fumiaki Amano from *EES Catal.*, 2024, 2, 1277.

## REVIEWS

1186

### Uniting activity design principles of anode catalysts for direct liquid fuel cells

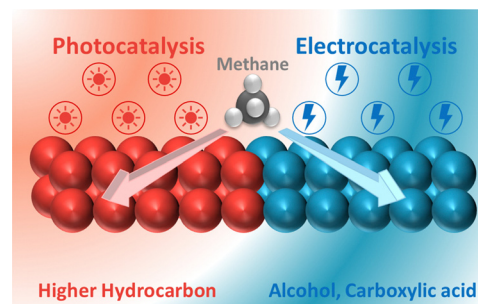
Daniel J. Zheng, Jiayu Peng,\* Kaylee McCormack, Hongbin Xu, Jin Soo Kang, Zhenshu Wang, Zhichu Ren, Ju Li, Yuriy Román-Leshkov\* and Yang Shao-Horn\*



1210

### Green energy driven methane conversion under mild conditions

Jiakang You, Yifan Bao, Yanzhao Zhang, Muxina Konarova, Zhiliang Wang\* and Lianzhou Wang\*



**GOLD  
OPEN  
ACCESS**

# EES Solar

**Exceptional research on solar  
energy and photovoltaics**



Part of the EES family

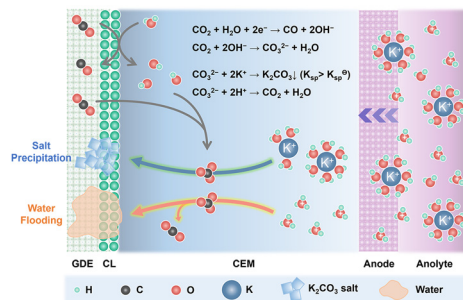
**Join  
in** | Publish with us  
[rsc.li/EESolar](https://rsc.li/EESolar)

## MINIREVIEWS

1228

Salt precipitation and water flooding intrinsic to electrocatalytic CO<sub>2</sub> reduction in acidic membrane electrode assemblies: fundamentals and remedies

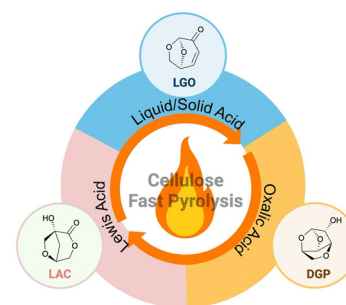
Qianqian Bai, Likun Xiong, Yongjia Zhang, Mutian Ma, Zhenyang Jiao, Fenglei Lyu,\* Zhao Deng and Yang Peng\*



1238

## Catalytic fast pyrolysis of cellulose to oxygenates: roles of homogeneous and heterogeneous catalysts

Yingchuan Zhang,\* Zijing Li, Tao Zhou and Guangri Jia\*

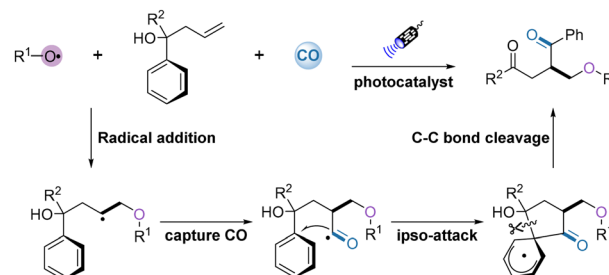


## COMMUNICATIONS

1247

## Visible light-promoted oxycarbonylation of unactivated alkenes

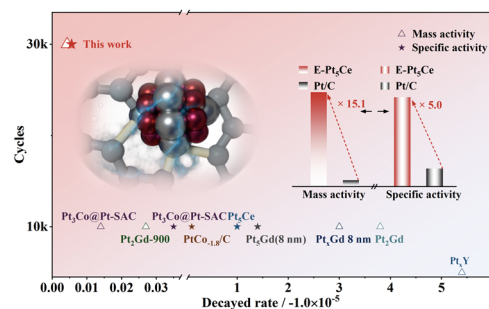
Hefei Yang, Yuanrui Wang, Le-Cheng Wang and Xiao-Feng Wu\*



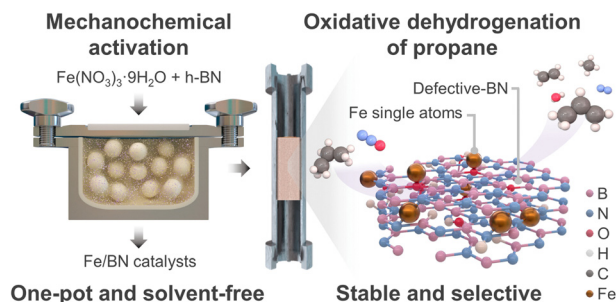
1253

Embedding the intermetallic Pt<sub>5</sub>Ce alloy in mesopores through Pt–C coordination layer interactions as a stable electrocatalyst for the oxygen reduction reaction

Nannan Jiang, Hao Wang, Huihui Jin, Xuwei Liu and Lunhui Guan\*



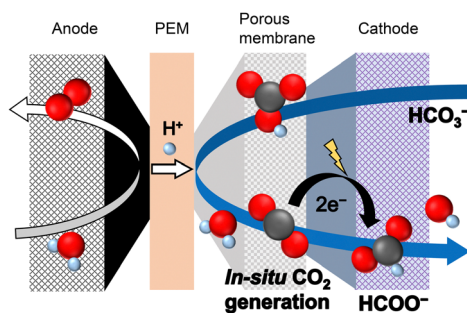
1263



### Mechanochemically-derived iron atoms on defective boron nitride for stable propylene production

Gian Marco Beshara, Ivan Surin, Mikhail Agrachev, Henrik Eliasson, Tatiana Otroshchenko, Frank Krumeich, Rolf Erni, Evgenii V. Kondratenko and Javier Pérez-Ramírez\*

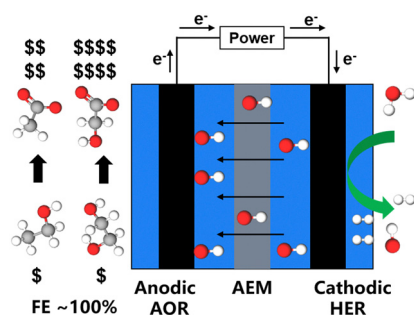
1277



### Highly selective formate formation via bicarbonate conversions

Kohta Nomoto, Takuya Okazaki, Kosuke Beppu, Tetsuya Shishido and Fumiaki Amano\*

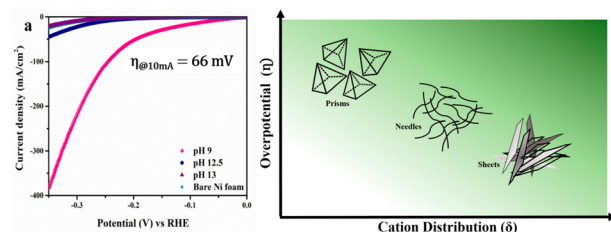
1285



### Medium entropy alloy wavy nanowires as highly effective and selective alcohol oxidation reaction catalysts for energy-saving hydrogen production and alcohol upgrade

Xiaoyang Fu, Chengzhang Wan, Huaixun Huyan, Sibao Wang, Ao Zhang, Jingxuan Zhou, Hongtu Zhang, Xun Zhao, Jun Chen, Xiaoqing Pan, Yu Huang\* and Xiangfeng Duan\*

1293



### Cation distribution: a descriptor for hydrogen evolution electrocatalysis on transition-metal spinels

Aya K. Gomaa, Maram G. Zonkol, Ghada E. Khedr and Nageh K. Allam\*

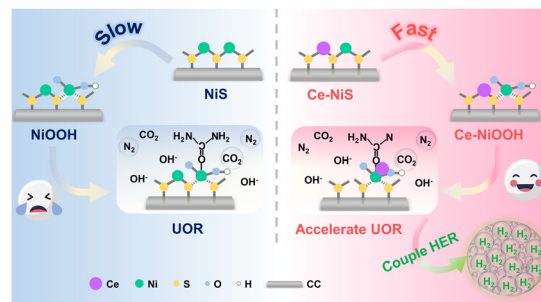


## PAPERS

1306

### Ce-induced NiS bifunctional catalyst transformation: enhancing urea oxidation coupled with hydrogen electrolysis

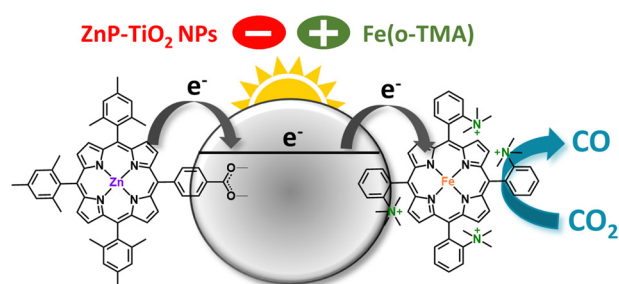
Yingzhen Zhang, Wei Zhang, Jianying Huang,\*  
Weilong Cai\* and Yuekun Lai\*



1314

### Efficient CO<sub>2</sub>-to-CO conversion in dye-sensitized photocatalytic systems enabled by electrostatically-driven catalyst binding

Vasilis Nikolaou,\* Palas Baran Pati, H el ene Terrisse,\*  
Marc Robert\* and Fabrice Odobel\*



## CORRECTION

1320

### Correction: High photocatalytic yield in the non-oxidative coupling of methane using a Pd-TiO<sub>2</sub> nanomembrane gas flow-through reactor

Victor Longo, Luana De Pasquale, Francesco Tavella, Mariam Barawi, Miguel Gomez-Mendoza,  
V ctor de la Pe a O'Shea, Claudio Ampelli, Siglinda Perathoner, Gabriele Centi and Chiara Genovese\*

