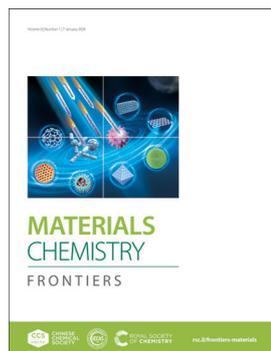


### IN THIS ISSUE

ISSN 2052-1537 CODEN MCFAC5 8(1) 1-298 (2024)



#### Cover

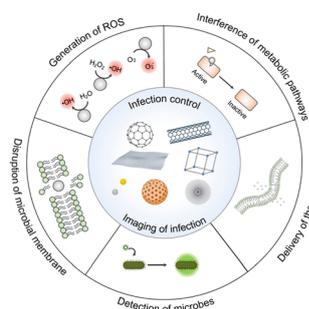
See Xuan Li, Ken Cham-Fai Leung *et al.*, pp. 9–40. Image reproduced by permission of Ken C.-F. Leung and Xuan Li *et al.* from *Mater. Chem. Front.*, 2024, 8, 9.

### REVIEWS

9

#### Nano-based theranostic approaches for infection control: current status and perspectives

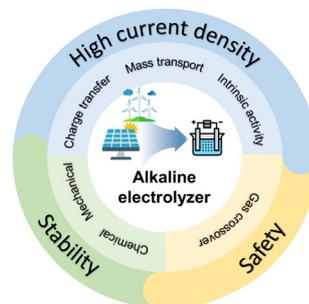
Regina Huang, Qin Hu, Chung-Nga Ko, Fung Kit Tang, Shouhu Xuan, Hai Ming Wong, Lijian Jin, Xuan Li\* and Ken Cham-Fai Leung\*



41

#### Critical challenges and opportunities for the commercialization of alkaline electrolysis: high current density, stability, and safety

Jiseok Kwon, Seunggun Choi, Chanjin Park, Hyuksu Han\* and Taeseup Song\*



# EES Catalysis

GOLD  
OPEN  
ACCESS

Exceptional research on energy  
and environmental catalysis

Open to everyone. Impactful for all

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

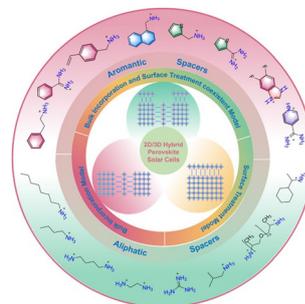
Fundamental questions  
Elemental answers



82

## The role of organic spacers in 2D/3D hybrid perovskite solar cells

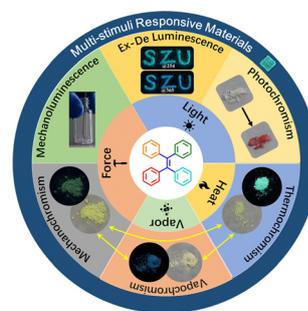
Yu Zou, Yuping Gao and Yongsheng Liu\*



104

## Colorful variation of tetraphenylethene derivatives in the solid state

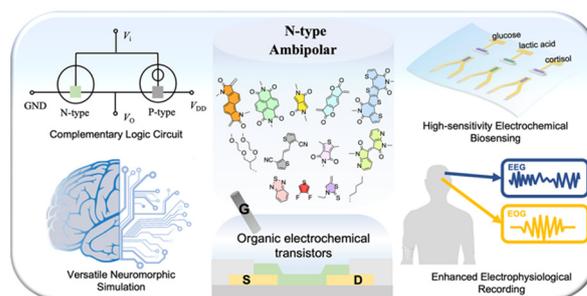
Guangxi Huang, Xinxiang Du, Heng Bo and Bing Shi Li\*



133

## Materials design and applications of n-type and ambipolar organic electrochemical transistors

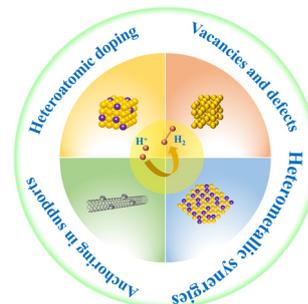
Yuqiu Lei, Peiyun Li, Yuting Zheng and Ting Lei\*



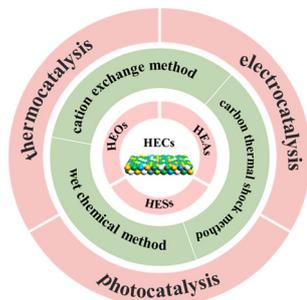
159

## Sub-nanometric materials for hydrogen evolution reaction

Yaodong Yu, Ruixin Liu, Yuyao Sun, Ziyi Liu, Xinrong Shi, Jianping Lai\* and Lei Wang\*



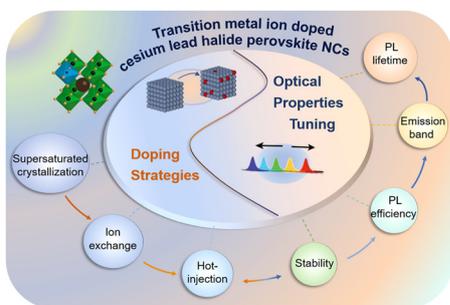
179



### High-entropy catalysts: new opportunities toward excellent catalytic activities

Zhonglian Shi, Li Wang, Yingping Huang, Xin Ying Kong\* and Liqun Ye\*

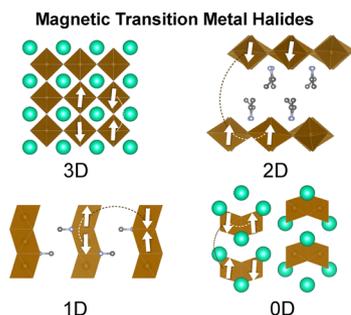
192



### Transition metal ion-doped cesium lead halide perovskite nanocrystals: doping strategies and luminescence design

Yunqin Zhang, Datao Tu,\* Luping Wang, Chenliang Li, Yuhan Liu and Xueyuan Chen\*

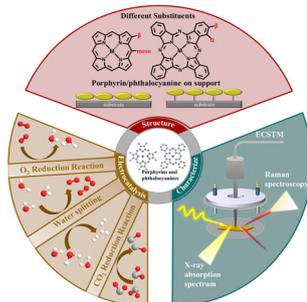
210



### Magnetic hybrid transition metal halides

Zhongwei Chen, Jie Xue, Zhiyu Wang and Haipeng Lu\*

228



### Metal porphyrins and metal phthalocyanines as designable molecular model electrocatalysts

Ya-Chen Feng, Xiang Wang\* and Dong Wang\*



## REVIEWS

248

**Recent progress on MRI probes for metal ion detection and biological applications**

Zhiming Deng, Dingyou Lu, Sulai Liu,\* Xianzheng Tan\* and Guosheng Song\*

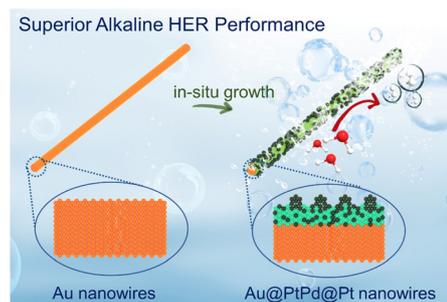


## RESEARCH ARTICLES

265

**Ultrathin core–shell–satellite structured Au@PtPd@Pt nanowires for superior electrocatalytic hydrogen evolution**

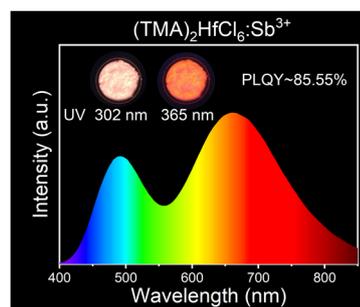
Caikang Wang, Xian Jiang,\* Qicheng Liu, Jiaqian Ding, Juan Zhou,\* Yawen Tang, Gengtao Fu and Jong-Min Lee\*



274

**Excitation-dependent efficient photoluminescence in an organic–inorganic (C<sub>4</sub>H<sub>12</sub>N)<sub>2</sub>HfCl<sub>6</sub> perovskite induced by antimony doping**

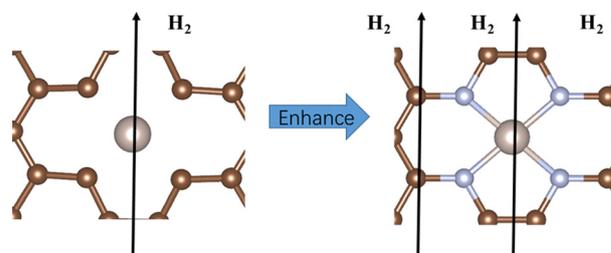
Jingheng Nie, Xiangyan Yun, Zexiang Liu, Hailin Zhou, Hanlin Hu, Haizhe Zhong, Yumeng Shi\* and Henan Li\*

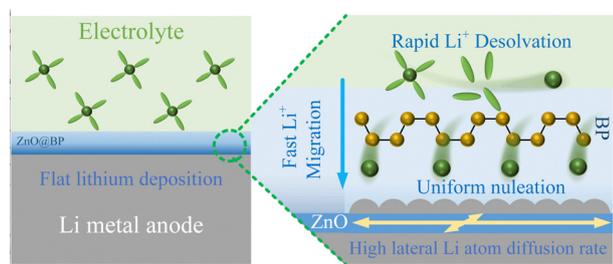


282

**Nitrogen-coordinated ruthenium on porous carbon enhanced hydrogen evolution reactions**

Xin Chen, Kang Wang and Xianran Xing\*





### Activating the electrode–electrolyte interface via a ZnO@black phosphorus modulation layer for dendrite-free Li metal anodes

Pengwei Li, Guodong Zhang, LiangPing Xiao, Kai Chen, Xingyun Li,\* Bin Han, Jiebin Qiu, Qingchi Xu\* and Jun Xu\*

