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## IN THIS ISSUE

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### Cover

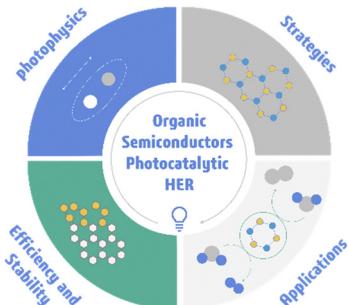
See Wenzhen Li,  
Shuang Gu *et al.*,  
pp. 504–515.  
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### Advances in organic semiconductors for photocatalytic hydrogen evolution reaction

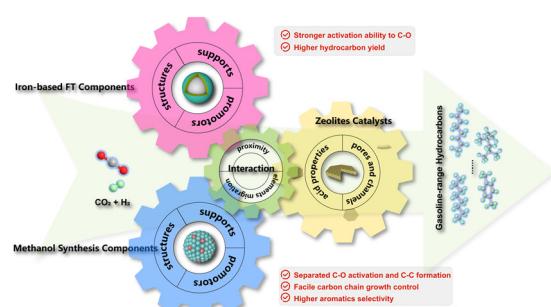
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### A review of the recent progress on direct heterogeneous catalytic $\text{CO}_2$ hydrogenation to gasoline-range hydrocarbons

Xin Shang, Guodong Liu, Xiong Su,\* Yanqiang Huang\*  
and Tao Zhang



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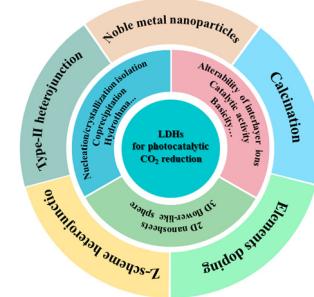


## REVIEWS

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## Layered double hydroxides and their composites as high-performance photocatalysts for $\text{CO}_2$ reduction

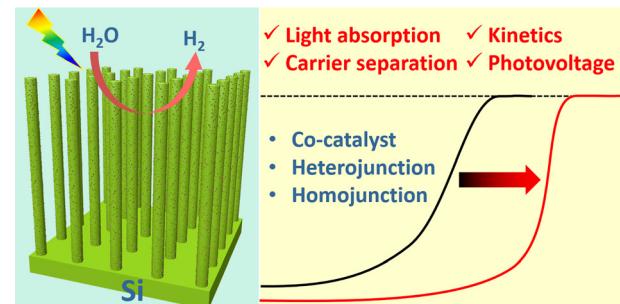
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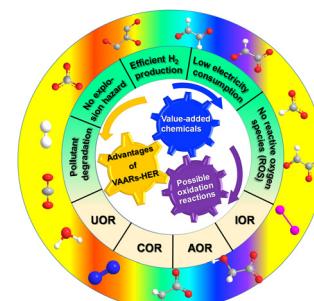
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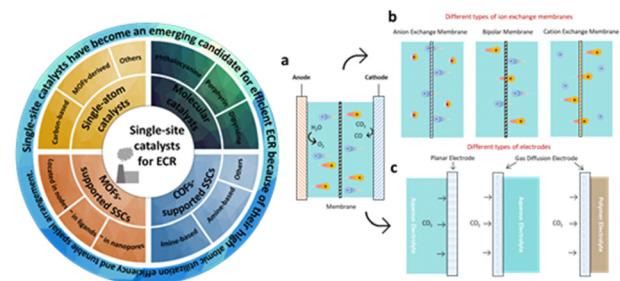
Endalkachew Asefa Moges, Chia-Yu Chang, Meng-Che Tsai,\* Wei-Nien Su\* and Bing Joe Hwang\*



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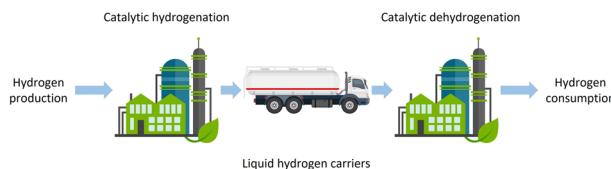
## Single-site catalysts for $\text{CO}_2$ electroreduction

Wenzhong Huang, Jie Xin Zhu, Shanlin Liu, Wei Zhang, Liang Zhou\* and Liqiang Mai\*



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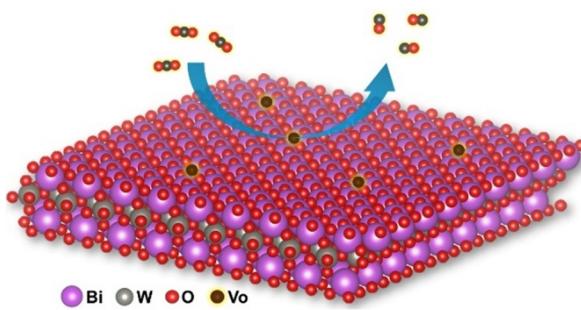


## Catalytic hydrogen storage in liquid hydrogen carriers

Yuwen Ni, Zhe Han,\* Yuchao Chai, Guangjun Wu and Landong Li\*

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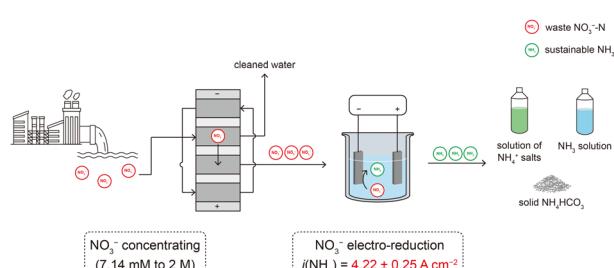


*In situ* solvothermal reduction engineering enables delicate control over surface-rich oxygen vacancies on  $\text{Bi}_2\text{WO}_6$  for highly efficient photocatalytic  $\text{CO}_2$  reduction

Huanhuan Liu, Yanxu Chen, Wentao Wang, Xiaoyue He, ZiXu He, Lei Li, Suyuan Zeng, Ruiguo Cao and Genqiang Zhang\*

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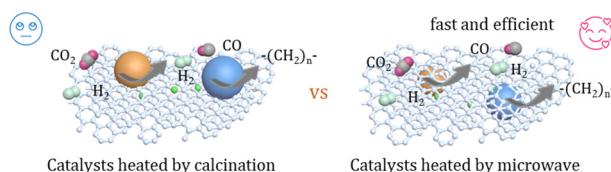
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Sustainable waste-nitrogen upcycling enabled by low-concentration nitrate electrodialysis and high-performance ammonia electrosynthesis

Yifu Chen, Pouya Ammari-Azar, Hengzhou Liu, Jungkuk Lee, Yu Xi, Michael J. Castellano, Shuang Gu\* and Wenzhen Li\*

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Microwave-assisted carbon-confined iron nanoparticles for steering  $\text{CO}_2$  hydrogenation to heavy hydrocarbons

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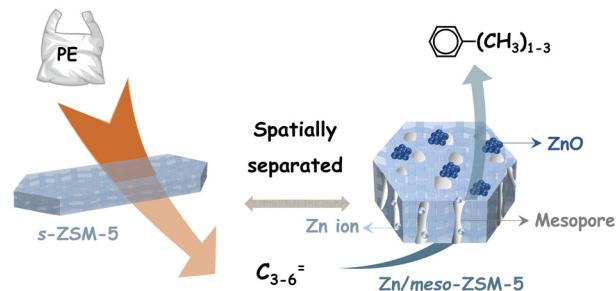


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**Selective conversion of polyethylene wastes to methylated aromatics through cascade catalysis**

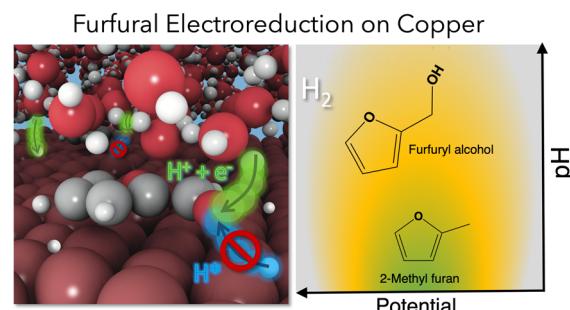
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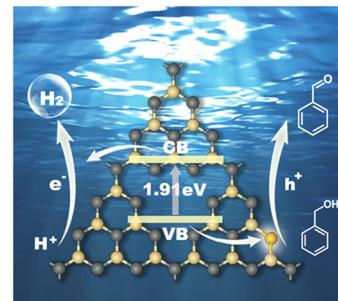
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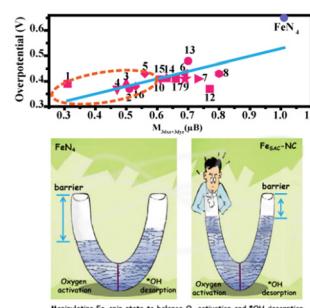
Zhi Lin, Yiqing Wang, Ta Thi Thuy Nga, Jie Zhang, Ruizhe Wang, Zhengqi Zhang, Yufei Xu, Daming Zhao, Chung-Li Dong and Shaohua Shen\*

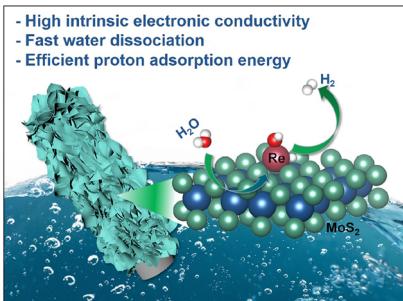


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Fan Liu, Chengxiang Shi, Lun Pan, Zhen-Feng Huang,\* Xiangwen Zhang and Ji-Jun Zou\*





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Jianmin Yu, Yongteng Qian, Qing Wang, Chenliang Su, Hyoyoung Lee,\* Lu Shang\* and Tierui Zhang\*

