

# Chem Soc Rev

Chemical Society Reviews

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## IN THIS ISSUE

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### Cover

See Elisa Chakraborty and Robin Weiss, pp. 11379–11397. Image reproduced by permission of Robin Weiss from *Chem. Soc. Rev.*, 2025, 54, 11379. The sphere was created using Blender and modified using AI.



### Inside cover

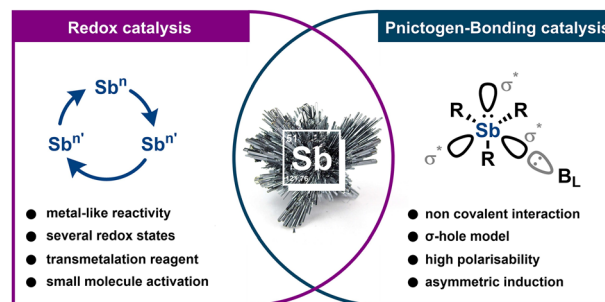
See Haitao Lei, Long Yan, Rui Cao *et al.*, pp. 11488–11544. Image reproduced by permission of Rui Cao from *Chem. Soc. Rev.*, 2025, 54, 11488.

## TUTORIAL REVIEWS

11379

### Organoantimony: a versatile main-group platform for pnictogen-bonding and redox catalysis

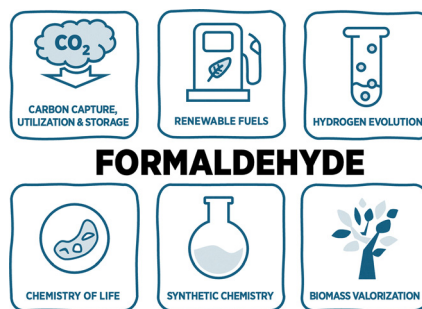
Elisa Chakraborty and Robin Weiss\*



11398

### Formaldehyde and its surrogates as a C1 platform for defossilised modern societies

Andrea Rodil, Jan Deska\* and Martin H. G. Prechtl\*



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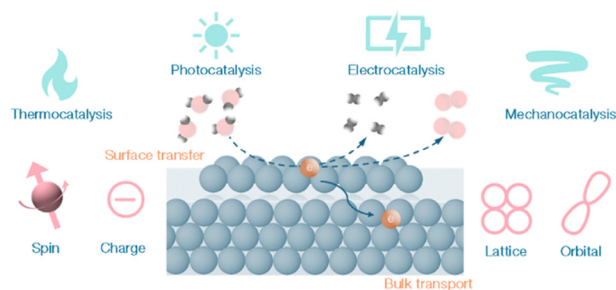


## TUTORIAL REVIEWS

11423

**Electron transfer in catalysis: from fundamentals to strategies**

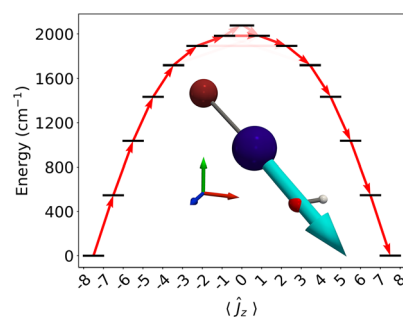
Xiaoning Li, Xinwei Guan,\* Lingfeng Zhu, Hui Li, Xiaofeng Yin, Shujie Sun, Haimei Xu, Yameng Fan, Peng Li, Long Hu, Zhijun Wu, Hongge Pan, Xiaolin Wang, Zhenxiang Cheng,\* Baohua Jia and Tianyi Ma\*



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**Ab initio electronic structure calculations of lanthanide single-molecule magnets; a practical guide**

Nicholas F. Chilton

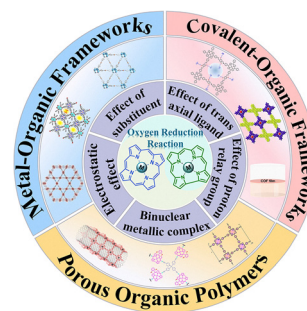


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11488

**Metalloporphyrin- and metallocorrole-based catalysts for the oxygen reduction reaction: from molecules to materials**

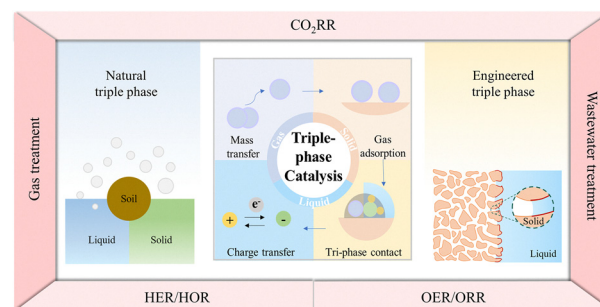
Haitao Lei,\* Jinxiu Han, Qian Zhao, Jinkun Liu, Long Yan,\* Wei Zhang and Rui Cao\*



11545

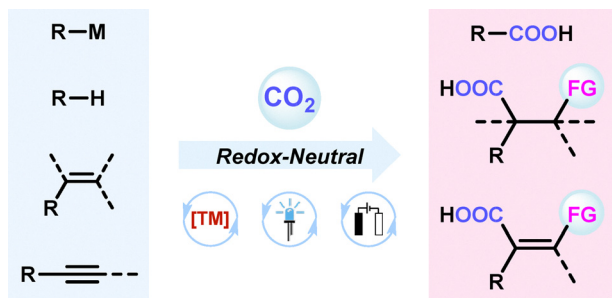
**Advances in triple-phase catalysis for energy and environmental applications**

Xiaoying Li, Jinwei Xu, Yusheng Ye, Baoliang Chen\* and Xin Xiao\*



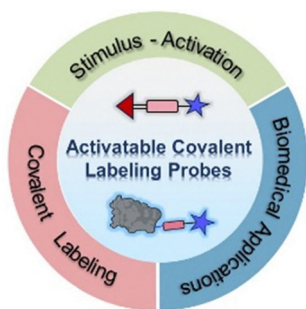
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**Catalytic redox-neutral carboxylation with CO<sub>2</sub>**

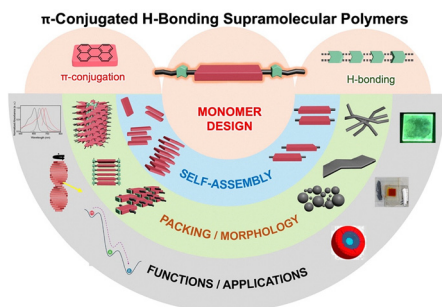
Si-Shun Yan, Tian-Yu Gao, Yi Liu, Yi-Fei Chen, Jun-Ze Zuo, Qin-Fang Zhang, Lei Song,\* Wei Zhang, Jian-Heng Ye and Da-Gang Yu\*

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**Activatable covalent labeling probes: design, mechanism, and biological applications**

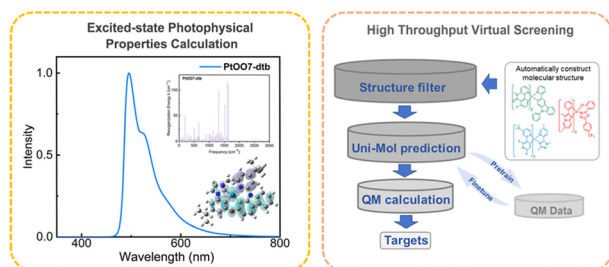
Yinxing Miao, Yuyang Tian and Deju Ye\*

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**Hydrogen-bonded  $\pi$ -conjugated supramolecular polymers**

Pedro Ximenis, Daniel Martínez, Llorenç Rubert and Bartolome Soberats\*

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**Organic Luminescent Materials****Combining quantum chemistry, machine learning and rate theory for organic luminescent materials**

Rongrong Li, Qi Ou\* and Zhigang Shuai\*

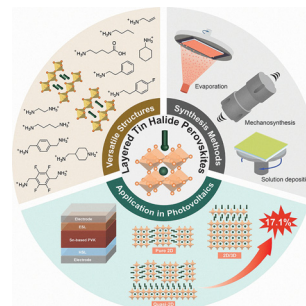


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## Layered tin halide perovskites in photovoltaics

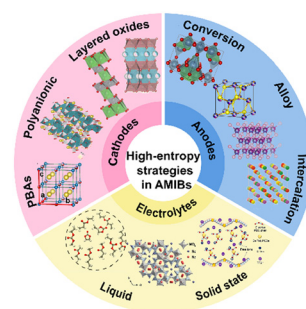
Menggiong Zhu, Bhumika Chaudhary, Anamika Mishra, Michael Saliba and Jovana V. Milić\*



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## Recent advances in high-entropy materials for efficient alkali metal-ion batteries

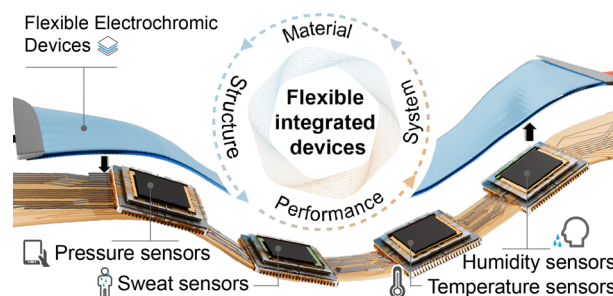
Liping Duan, Yichen Du, Yijiang Liu, Haowei Tang, Chi Zhou, Dong Ha Kim,\* Zhiqun Lin\* and Xiaosi Zhou\*



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## Electrochromic-based visualised flexible biosensing platforms: from single device to multifunctional device integration

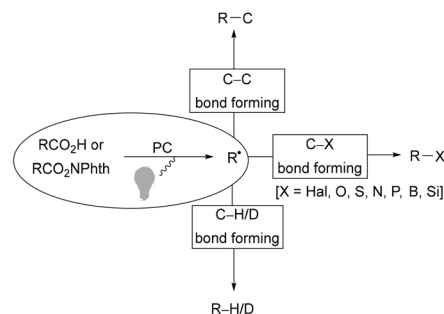
Yuxiao Zhang, Rongrong Bao, Jianbei Qiu, Yue Liu,\* Zhengwen Yang\* and Caofeng Pan\*



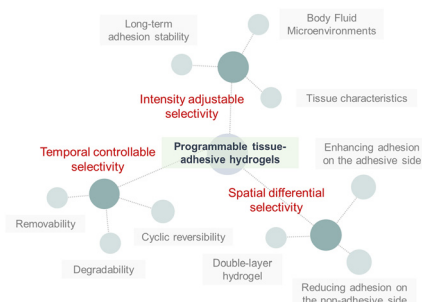
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## Decarboxylative photocatalytic transformations

Francisco Foubelo, Carmen Nájera,\* M. Gracia Retamosa, José M. Sansano, Ana Sirvent and Miguel Yus



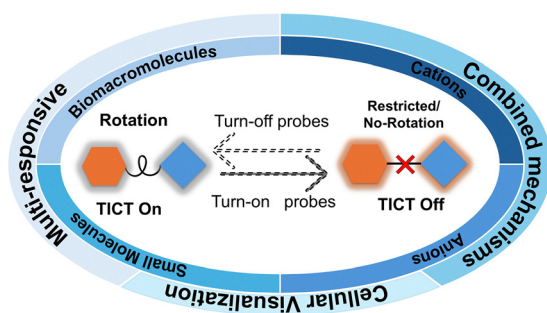
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## Programmable tissue-adhesive hydrogels with temporal and spatial selectivity

Lei Liang, Hong Zhang, Fanglian Yao and Junjie Li\*

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## Twisted intramolecular charge transfer (TICT) based fluorescent probes and imaging agents

Yueci Wu, Han-Min Wang, Xi-Le Hu, Yi Zang, Jia Li,\*  
 Hai-Hao Han,\* Xiao-Peng He,\* Simon E. Lewis,\*  
 Hanafy M. Ismail\* and Tony D. James\*

