Chem Soc Rev

Chemical Society Reviews

rsc.li/chem-soc-rev

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 0306-0012 CODEN CSRVBR 53(16) 8089-8514 (2024)



Cover

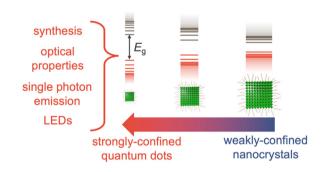
See Lakshminarayana Polavarapu, Robert L. Z. Hoye *et al.*, pp. 8095–8122. Image reproduced by permission of Robert Hoye and Junzhi Ye from *Chem. Soc. Rev.*, 2024, **53**, 8095.

TUTORIAL REVIEWS

8095

Strongly-confined colloidal lead-halide perovskite quantum dots: from synthesis to applications

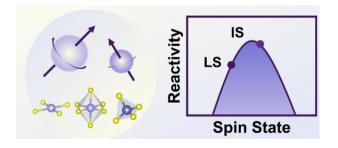
Junzhi Ye, Deepika Gaur, Chenjia Mi, Zijian Chen, lago López Fernández, Haitao Zhao, Yitong Dong, Lakshminarayana Polavarapu* and Robert L. Z. Hoye*



8123

Spin states of metal centers in electrocatalysis

Yuwei Zhang, Qian Wu, Justin Zhu Yeow Seow, Yingjie Jia, Xiao Ren* and Zhichuan J. Xu*





Advance your career in science

with professional recognition that showcases your **experience**, **expertise** and **dedication**

Stand out from the crowd

Prove your commitment to attaining excellence in your field

Gain the recognition you deserve

Achieve a professional qualification that inspires confidence and trust

Unlock your career potential

Apply for our professional registers (RSci, RSciTech) or chartered status (CChem, CSci, CEnv)

Apply now

rsc.li/professional-development

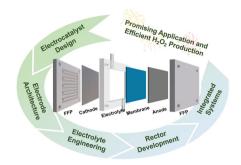


REVIEW ARTICLES

8137

Advancing H₂O₂ electrosynthesis: enhancing electrochemical systems, unveiling emerging applications, and seizing opportunities

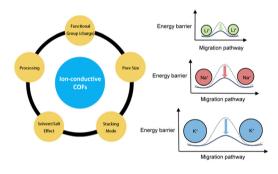
Zhiping Deng, Seung Joon Choi, Ge Li* and Xiaolei Wang*



8182

Ion transport mechanisms in covalent organic frameworks: implications for technology

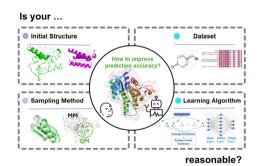
Wonmi Lee, Haochen Li, Zhilin Du and Dawei Feng*



8202

Navigating the landscape of enzyme design: from molecular simulations to machine learning

Jiahui Zhou and Meilan Huang*



8240

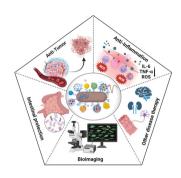
Nature-inspired adhesive systems

Ming Li,* Anran Mao, Qingwen Guan and Eduardo Saiz*



REVIEW ARTICLES

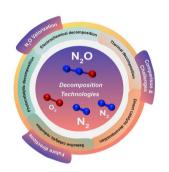
8306



Microbe-material hybrids for therapeutic applications

Meng Chen, Lili Xia, Chenyao Wu, Zeyu Wang, Li Ding,* Yujie Xie,* Wei Feng* and Yu Chen*

8379

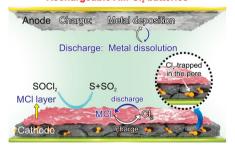


Progress and challenges in nitrous oxide decomposition and valorization

Xuanhao Wu, Jiaxin Du, Yanxia Gao, Haiqiang Wang, Changbin Zhang, Runduo Zhang,* Hong He,* Gaoqing (Max) Lu* and Zhongbiao Wu*

8424

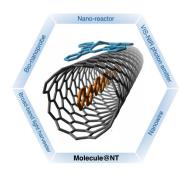




Rechargeable alkali metal-chlorine batteries: advances, challenges, and future perspectives

Zehui Xie, Lidong Sun, Muhammad Sajid, Yuancheng Feng, Zhenshan Lv and Wei Chen*

8457



Advanced 1D heterostructures based on nanotube templates and molecules

Charlotte Allard, Laurent Alvarez, Jean-Louis Bantignies, Nedjma Bendiab, Sofie Cambré, Stephane Campidelli, Jeffrey A. Fagan, Emmanuel Flahaut, Benjamin Flavel, Frédéric Fossard, Etienne Gaufrès,* Sebastian Heeg, Jean-Sebastien Lauret, Annick Loiseau, Jean-Baptiste Marceau, Richard Martel, Laëtitia Marty, Thomas Pichler, Christophe Voisin, Stephanie Reich, Antonio Setaro, Lei Shi and Wim Wenseleers