

# EES Catalysis

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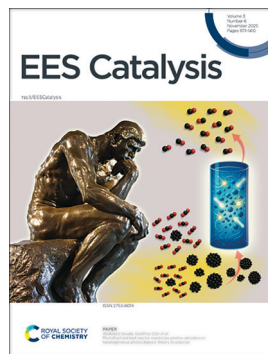
## IN THIS ISSUE

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### Cover

See Deborah J. Myers, Raphaël P. Hermann *et al.*, pp. 1229–1245. Image reproduced by permission of Raphael Hermann from *EES Catal.*, 2025, 3, 1229. Image reproduced by permission of Gunes Ozcan (Graphic Artist) from Oak Ridge National Laboratory.



### Inside cover

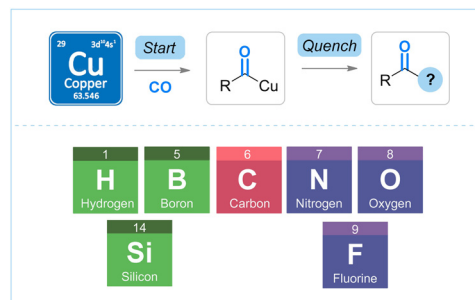
See Abdelaziz Gouda, Geoffrey Ozin *et al.*, pp. 1246–1256. Image reproduced by permission of Geoffrey A. Ozin from *EES Catal.*, 2025, 3, 1246. The authors acknowledge the artistic support of Dr Chenxi Qian, Ph.D., Assistant Professor, Department of Medical Biophysics, University of Toronto, in creating this cover artwork.

## REVIEWS

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### Carbonylation involving organocopper intermediates

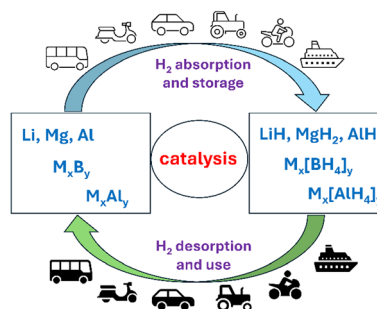
Zhi-Peng Bao and Xiao-Feng Wu\*



1196

### Advances in catalysing the hydrogen storage in main group metals and their tetrahydroborates and tetrahydroaluminates

Melinda Krebsz,\* Tibor Pasinszki, Sooraj Sreenath and Valeska P. Ting



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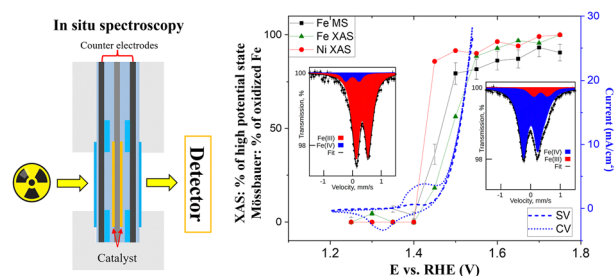


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1229

### Synergy between Ni and Fe in NiFe aerogel oxygen evolution reaction catalyst: *in situ* $^{57}\text{Fe}$ Mössbauer and X-ray absorption spectroscopy studies

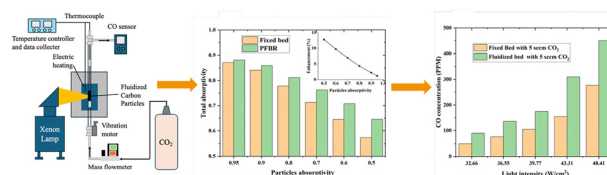
Haoran Yu, Matthew E. Sweers, Luigi Osmieri, Jae Hyung Park, A. Jeremy Kropf, Dali Yang, Lu Ma, Xiang Lyu, Alexey Serov, David A. Cullen, Piotr Zelenay, Deborah J. Myers\* and Raphaël P. Hermann\*



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### Photofluidized bed reactor maximizes photon utilization in heterogeneous photocatalysis: theory to practice

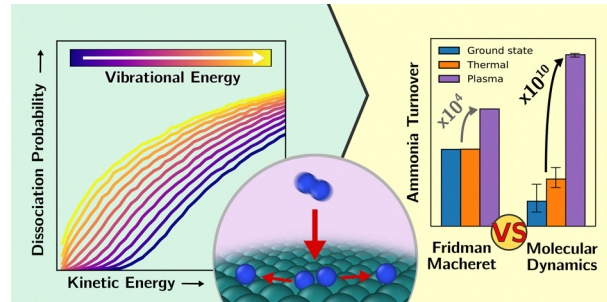
Haojin Wu, Abdelaziz Gouda,\* Shiquan Shan, Zhijun Zhou and Geoffrey Ozin\*



1257

### Vibrational excitation in plasma catalysis: how important are dynamical effects?

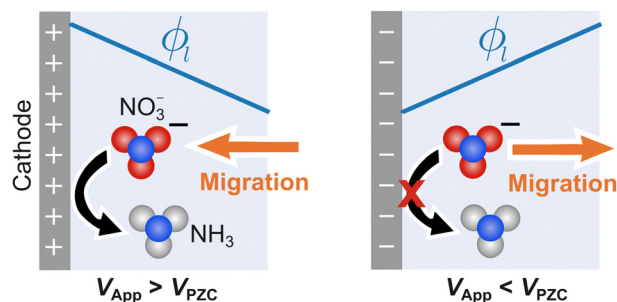
Floris van den Bosch, Nick Gerrits and Jörg Meyer\*



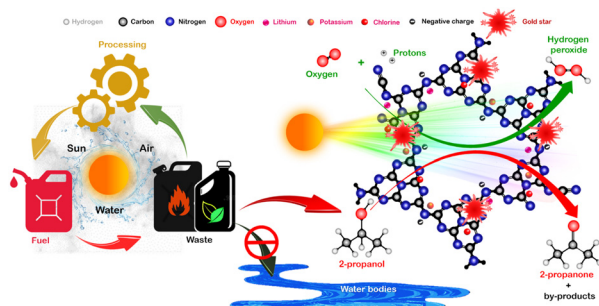
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### How the electric double layer impacts nitrate reduction to ammonia

Sofia Czerny-Holownia, Hailey R. Boyer, Alex J. King, Victoria Y. Yang, Jinyu Guo, Matthew J. Liu, Justin C. Bui, William A. Tarpeh\* and Eric W. Lees\*



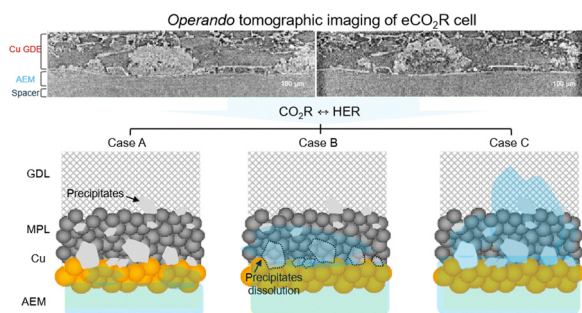
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### Plasmonic gold nanostars conjugated poly(heptazine imide) for photocatalytic $\text{H}_2\text{O}_2$ production from $\text{O}_2$ reduction

Pankaj Sharma,\* Koen Evers, Maicon Delarmelina, Anton Y. Bykov, Martin Wilding, Tianhao He, Anatoly V. Zayats, Richard A. Catlow and Fang Xie\*

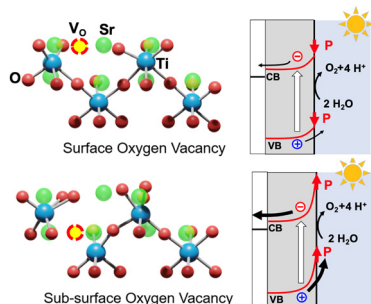
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### Visualizing degradation mechanisms in a gas-fed $\text{CO}_2$ reduction cell via operando X-ray tomography

Sol A Lee, Myeong Je Jang, Zhiyuan Qi, Kaiwen Wang, Ian Sullivan, Laura Paradis-Fortin, Dilworth Y. Parkinson, Walter S. Drisdell,\* Harry A. Atwater\* and Chengxiang Xiang\*

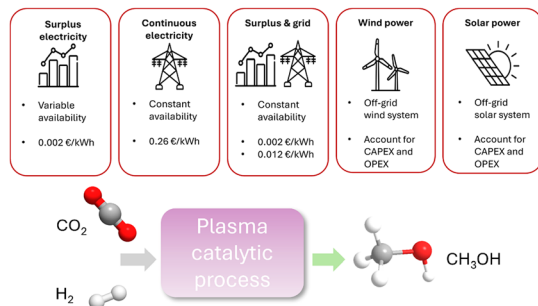
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### Oxygen vacancy-induced ferroelectric effect in (111) strontium titanate single crystals controls photoelectrochemical water oxidation

Samutr Assavachin, Chengcan Xiao, Hamed Vahdatvasei, Tatiana Mamani, Davide Donadio and Frank E. Osterloh\*

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### Techno-economic analysis of plasma-assisted $\text{CO}_2$ hydrogenation to methanol: feasibility and the impact of electricity supply

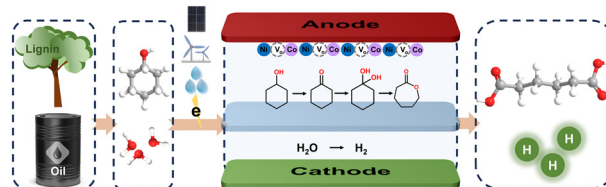
Giulia De Felice, Simona Eichkorn, Fausto Gallucci and Sirui Li\*



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### Optimization of competitive adsorption *via* oxygen vacancies on NiCo hydroxides for selective electrosynthesis of adipic acid coupled with hydrogen production

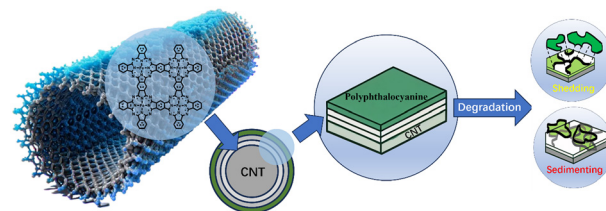
Xun Pan, Lingzhi Sun, Kuang Chen, Jingui Zheng, Shaohan Xu, Chao Miao and Guohua Zhao\*



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### Dynamic evolution of self-renewal Fe–N–C catalysts for the acidic oxygen reduction reaction

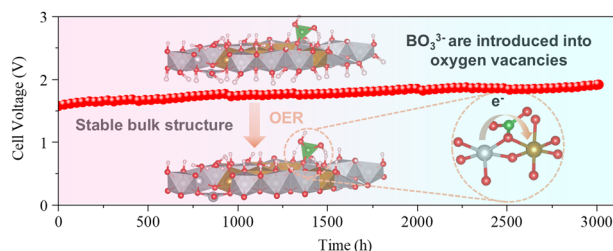
Fangzhou Liu, Leo Lai, Zhongyuan Guo, Fangxin She, Justin Prabowo, Hao Li,\* Li Wei\* and Yuan Chen\*



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### Stabilizing amorphous NiFe-based catalysts *via* borate bridging for water oxidation under industrial conditions

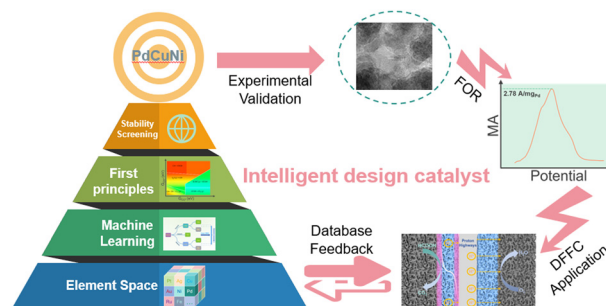
Wei Qi, Youze Zeng, Liuqing Wang, Jinsheng Li, Zhuoqi Wang, Feiyan An, Kai Li, Meiling Xiao,\* Changpeng Liu, Wei Xing\* and Jianbing Zhu\*



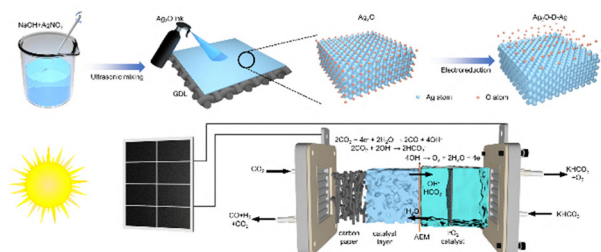
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### Historical experimental data and theoretical volcano map-accelerated cross-scale design of a highly active and durable ternary alloy electrocatalyst for formic acid oxidation

Pengcheng Liu, Dezhi Su, Xiao Chen, Yanyi Liu, Kaili Wang,\* Da Chen,\* Xijun Liu and Jia He\*



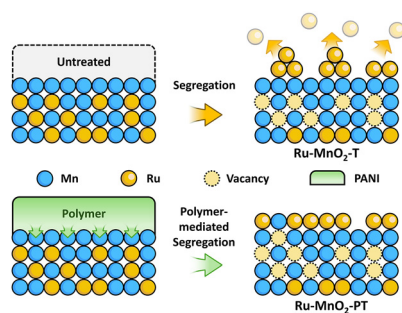
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### Oxide-derived low-coordination Ag catalysts enable efficient photovoltaic-driven electrochemical CO<sub>2</sub> reduction in MEA electrolyzers

Yanxin Xie, Zeyu Guo, Zhikai Lang, Kezhong Liu, Jiabao Lv, Jianhua Yan, Songqiang Zhu, Yongzhi Zhou, Bo Xu,\* Hao Bin Wu,\* Mengxia Xu\* and Angjian Wu\*

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### Polymer-mediated exsolution and segregation of ruthenium oxides on $\beta$ -MnO<sub>2</sub> for durable water oxidation in proton-exchange membrane electrolyzers

Yanzhi Zhang, Xingyi Zhan, Zhihe Wei, Chenghao Wang, Zhangyi Zheng, Shiwei Mei, Daqi Song, Mutian Ma, Xinyu Zhang, Xiya Yang, Tong Zhou, Jianrong Zeng, Yang Peng\* and Zhao Deng\*

