

# Catalysis Science & Technology

A multidisciplinary journal focussing on all fundamental science and technological aspects of catalysis

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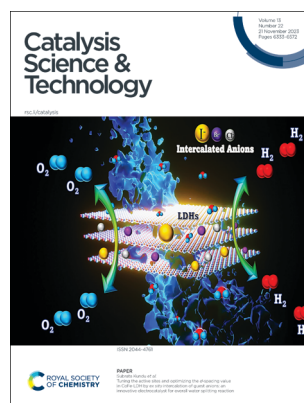
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ISSN 2044-4761 CODEN CSTAGD 13(22) 6333-6572 (2023)



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See Bert M. Weckhuysen *et al.*, pp. 6366–6376.  
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### Inside cover

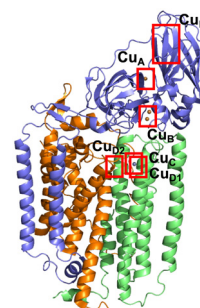
See Subrata Kundu *et al.*, pp. 6377–6391.  
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## REVIEW

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### Methane monooxygenases; physiology, biochemistry and structure

Yasuyoshi Sakai,\* Hiroya Yurimoto and Seigo Shima\*

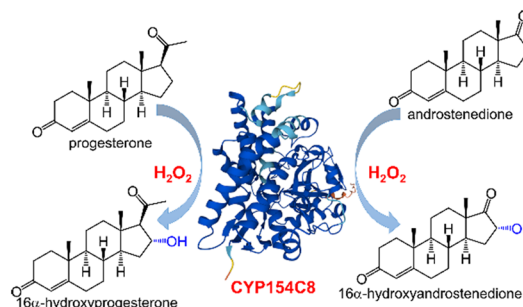


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### Efficient regio- and stereo-selective C–H bond hydroxylation of steroids using an engineered heme-thiolate peroxygenase biocatalyst

Jinia Akter, Eva F. Hayball and Stephen G. Bell\*



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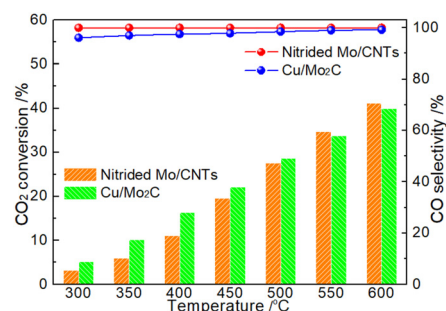
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### First comparison of catalytic CO<sub>2</sub> reduction to CO over molybdenum carbide, nitride and phosphide catalysts

Qingshan Rong, Wei Ding, Guogang Liu, Zhiqiang Zhang\* and Zhiwei Yao\*

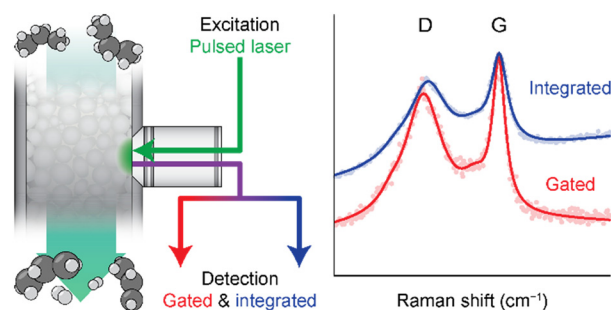


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### Operando time-gated Raman spectroscopy of solid catalysts

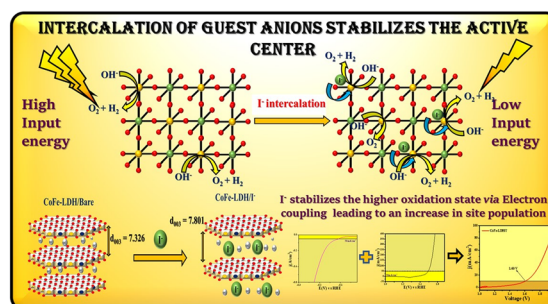
Robin Vogel, P. Tim Prins, Freddy T. Rabouw and Bert M. Weckhuysen\*



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### Tuning the active sites and optimizing the *d*-spacing value in CoFe-LDH by *ex situ* intercalation of guest anions: an innovative electrocatalyst for overall water splitting reaction

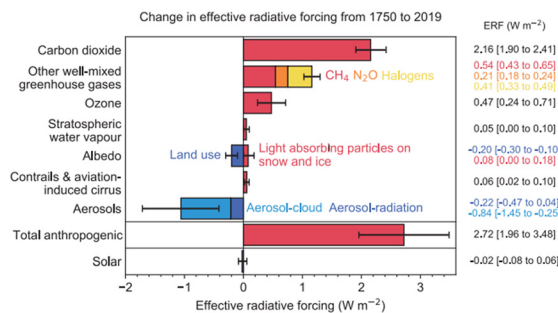
Sreenivasan Nagappan, Arun Karmakar, Ragunath Madhu, Hariharan N. Dhandapani, Suprobat Singha Roy and Subrata Kundu\*



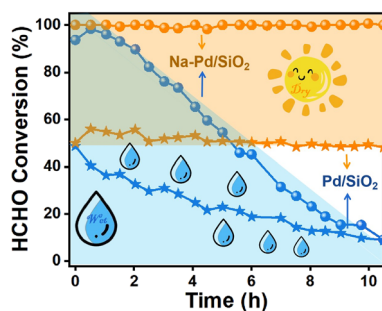
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### Low-concentration methane removal: what can we learn from high-concentration methane conversion?

Yun Wang, Haiyuan Zhang, Jie Zhang, Yijie Fu, Yuyin Wang, Yang Bai, Xin Feng, Jiahua Zhu, Xiaohua Lu, Liwen Mu\* and Wei Li\*



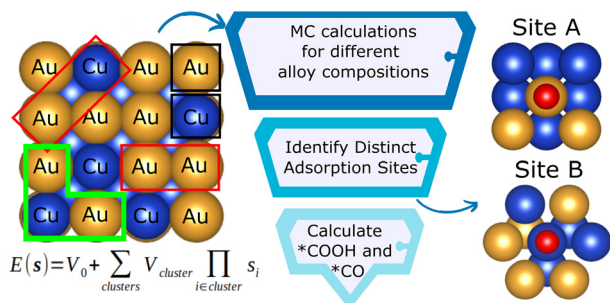
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### Abnormal inhibiting effect of H<sub>2</sub>O on Pd/SiO<sub>2</sub> and Na-Pd/SiO<sub>2</sub> catalysts for HCHO oxidation

Chunying Wang, Jingyi Wang, Xiaofeng Liu, Yaobin Li,\*  
Changbin Zhang, Yuming Zheng and Wenpo Shan\*

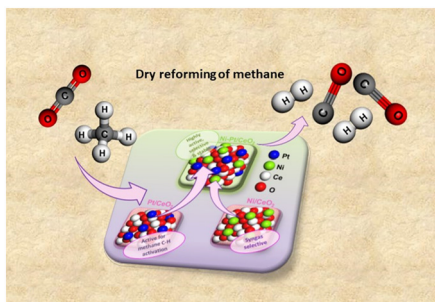
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### The effects of near-surface atomic order on the catalytic properties of Cu<sub>3</sub>Au and CuAu<sub>3</sub> intermetallics for the CO<sub>2</sub> reduction reaction

Lucas G. Verga, Yunzhe Wang, Tanmoy Chakraborty,  
Juarez L. F. Da Silva and Tim Mueller\*

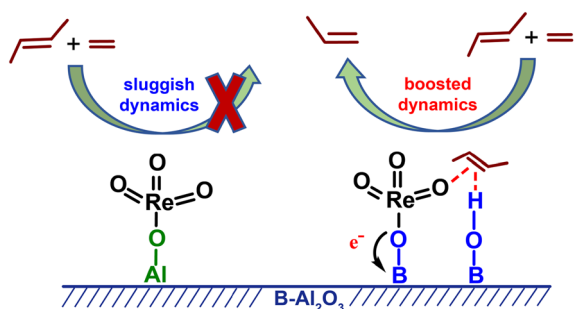
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### Low temperature reforming of methane with CO<sub>2</sub> over Pt/CeO<sub>2</sub>, Ni/CeO<sub>2</sub> and Pt-Ni/CeO<sub>2</sub> catalysts prepared by a solution-combustion method

Rubina Khatun, Nazia Siddiqui, Rohan Singh Pal,  
Sonu Bhandari, Tuhin Suvra Khan, Shivani Singh,  
Mukesh Kumar Poddar, Chanchal Samanta  
and Rajaram Bal\*

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### Enhancing the activity of a supported rhenium catalyst for cross-methathesis of ethene and 2-butene via promotion of boron

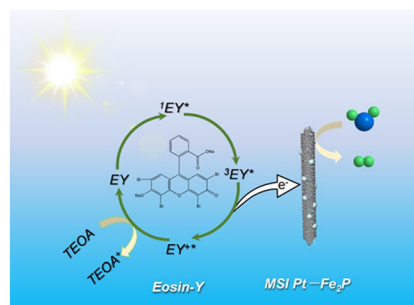
Yibo Yang, Gaolei Qin, Anping Yin, Yuhang Cai,  
Ziyu Zhou, Nengfeng Gong, Xiangjie Zhang, Tao Yan,  
Gengzhe Song, Xiaodong Sun, Hongliu Wan,\*  
Yong Yang, Yongwang Li and Zhi Cao\*



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### Metal-support interactions in Pt-embedded porous Fe<sub>2</sub>P nanorods for efficient hydrogen production

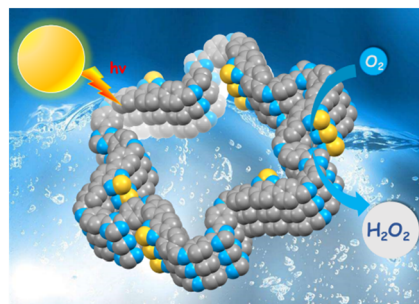
Ahmed Mahmoud Idris, Song Zheng, Meng Zhang, Xinyan Jiang, Guocan Jiang, Jin Wang, Sheng Li and Zhengquan Li\*



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### Understanding photocatalytic hydrogen peroxide production in pure water for benzothiadiazole-based covalent organic frameworks

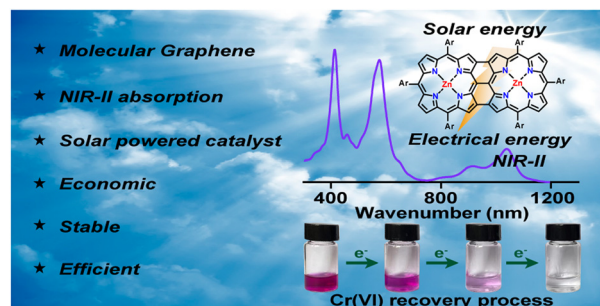
Linyang Wang, Jiamin Sun, Maojun Deng, Chunhui Liu, Servet Ataberk Cayan, Korneel Molken, Pieter Geiregat, Rino Morent, Nathalie De Geyter, Jeet Chakraborty\* and Pascal Van Der Voort\*



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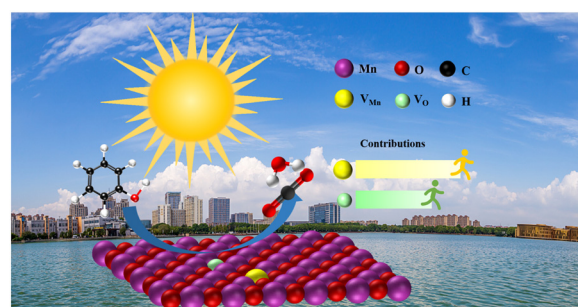
Fei Cheng, Taotao Qiang,\* Mingli Li and Tony D. James\*



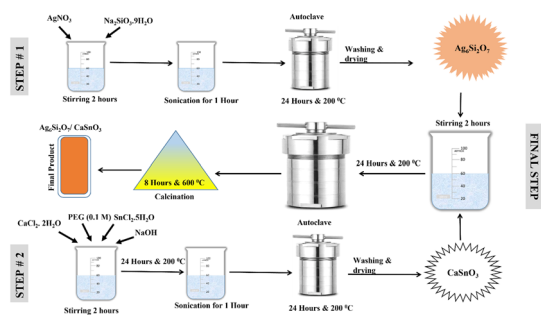
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### The quantitative contribution of interfacial coexisting Mn and O vacancies to MnO<sub>2</sub> photocatalytic degradation of phenol

Yahui Zhou, Xingxin Lei, Dali Yan, Jian Ye, Bo Deng\* and Weilin Xu



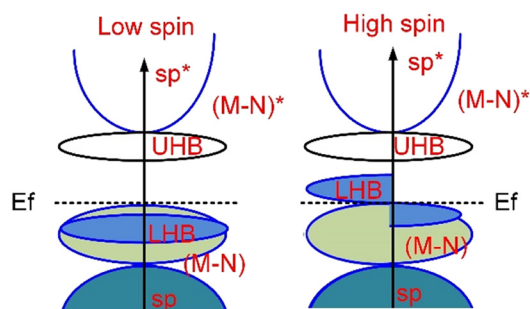
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### Tuning the catalytic performance of $\text{CaSnO}_3$ by developing an S-scheme p-n heterojunction through $\text{Ag}_6\text{Si}_2\text{O}_7$ doping

Navid Hussain Shah, Muhammad Abbas, Muhammad Qasim, Muhammad Sulman, Muhammad Imran, Sohail Azmat, Yanyan Cui\* and Yaling Wang\*

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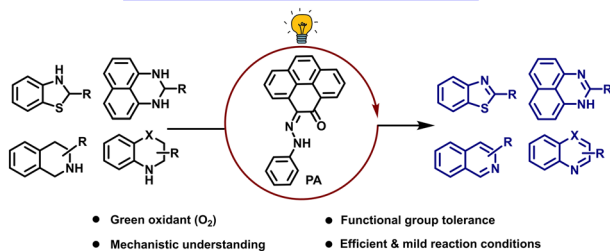


### Spin-state reconfiguration of single-atom dimers *via* superexchange interactions enables nitrate reduction to ammonia

Yun Shan,\* Tinghui Li\* and Lizhe Liu\*

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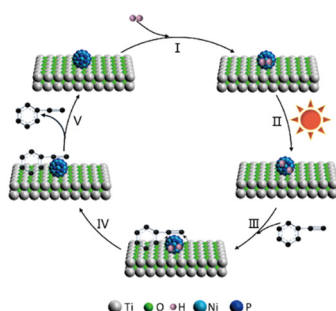
#### Photocatalytic Oxidative Dehydrogenation by Iminoquinone



### Photochemical oxidative dehydrogenation of saturated N-heterocycles by an iminoquinone

Baishanal Mandal, Amreen K. Bains, Monojit Roy and Debashis Adhikari\*

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### Selective hydrogenation of phenylacetylene over $\text{TiO}_2$ supported $\text{Ni}_2\text{P}$ nanoparticles under visible light irradiation

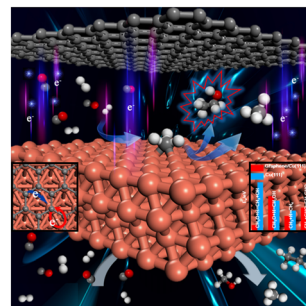
Xincheng Li, Ruiyi Wang,\* Jin Zhang, Jing Wang, Yunwei Wang\* and Zhanfeng Zheng\*



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### Mechanistic exploration of syngas conversion at the interface of graphene/Cu(111): identifying the effect of promoted electron transfer on the product selectivity

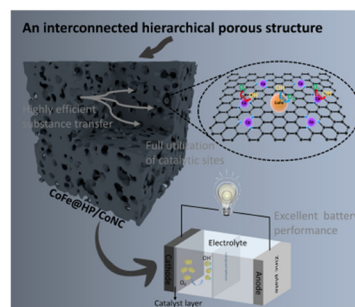
Zhongzeng Wei, Bing Bai, Hui Bai,\* Yongliang Duan, Mingxue Yang, Haojie Cao, Zhijun Zuo, Jianping Zuo, Qiang Wang and Wei Huang\*



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### Amorphous zeolite imidazole framework-derived hierarchically porous and multi-catalytic active site bifunctional catalysts for zinc–air batteries

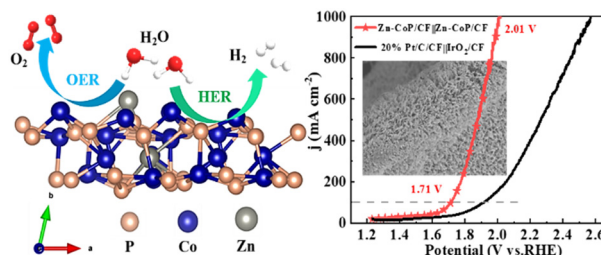
Supeng Ye, Yunxian Zhang, Fei Lin, Yingjian Huang, Xuelong Zhou, Qixing Wu and Fang Wang\*



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### Electronic modulation of CoP nanosheets array by Zn doping as an efficient electrocatalyst for overall water splitting

Xiaoyi Li, Jianfeng Huang,\* Zixuan Liu, Qian Chen, Guanjun Chen, Yifei Zhang, Koji Kajiyoshi, Yong Zhao, Yijun Liu, Liyun Cao\* and Liangliang Feng\*



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### Efficient depolymerization of PET over Ti-doped SBA-15 with abundant Lewis acid sites via glycolysis

Songlei Mo, Yong Guo, Xiaohui Liu and Yanqin Wang\*

