

# Catalysis Science & Technology

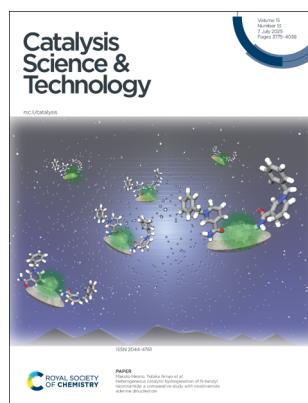
A multidisciplinary journal focussing on all fundamental science and technological aspects of catalysis

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## IN THIS ISSUE

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### Cover

See Makoto Hirano, Yutaka Amao *et al.*, pp. 3806–3815.  
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### Inside cover

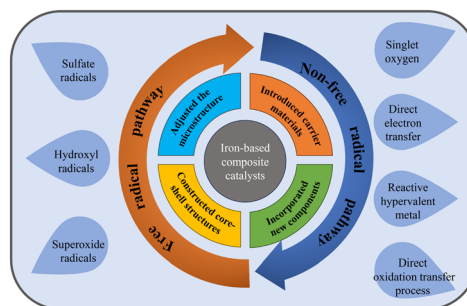
See Kaushik Ghosh *et al.*, pp. 3816–3826.  
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The authors would like to acknowledge the help of Tanya Pattnaik in preparing the cover artwork.

## PERSPECTIVE

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### Advancements in transition metal iron-based catalysts: enhancing catalytic activity through electron transfer

Lu Huang, Weigang Zhu and Yunxin Wu\*

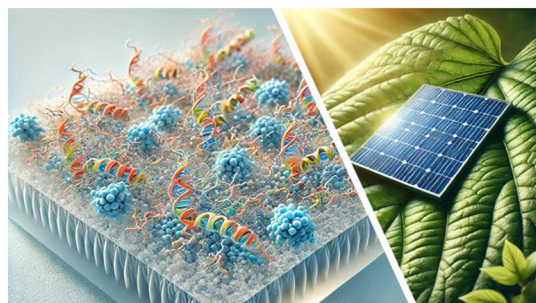


## REVIEW

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### Bioelectrocatalysis for solar fuels and sustainable energy

Rodrigo M. Iost, Senentxu Lanceros-Méndez and Frank N. Crespilho\*



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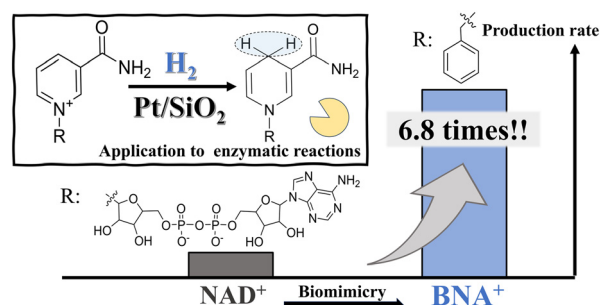


## PAPERS

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# Heterogeneous catalytic hydrogenation of *N*-benzyl nicotinamide: a comparative study with nicotinamide adenine dinucleotide

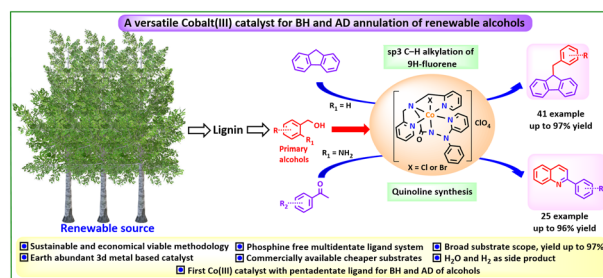
Makoto Hirano,\* Wataru Onodera, Masazumi Tamura and Yutaka Amao\*



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# A passage from pincer complexes to rationally designed phosphine-free Co(III) catalysts supported by a pentadentate ligand for activation of alcohols: studies on *sp*<sup>3</sup> C–H alkylation of 9*H*-fluorene and quinoline synthesis

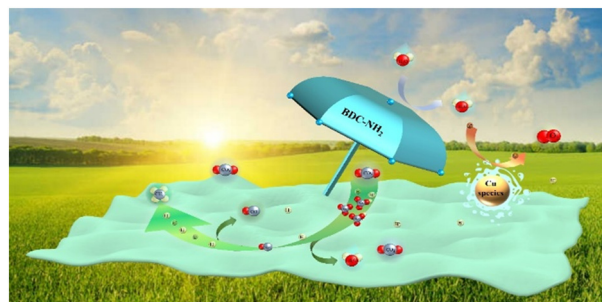
Prashant Kukreti, Rahul Chauhan and Kaushik Ghosh\*



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# Copper species-loaded hydrophobic Bi<sub>2</sub>WO<sub>6</sub> for photocatalytic reduction of carbon dioxide with water to methane

Jingkai Yan, Ning Jiang, Min Zhao, Li Zhao, Feifei Li and Xuzhuang Yang\*

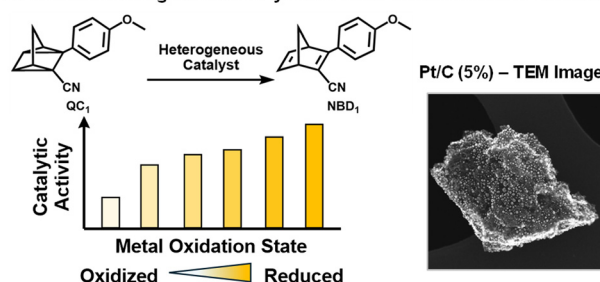


3837

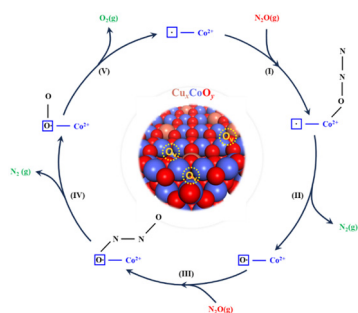
# Design, testing and characterization of noble-metal catalysts for the heat-release reaction of a molecular solar thermal energy storage isomer pair

Benjamin Rollins,\* Alberto Gimenez-Gomez, Andrew M. Steele, Helen Hölzel, Rebecca J. Salhouse, Kevin Moreno, Kasper Moth-Poulsen, Ignacio Funes-Ardoiz\* and Diego Sampedro\*

## Noble Metal Heterogeneous Catalysts for MOST back-conversion reaction



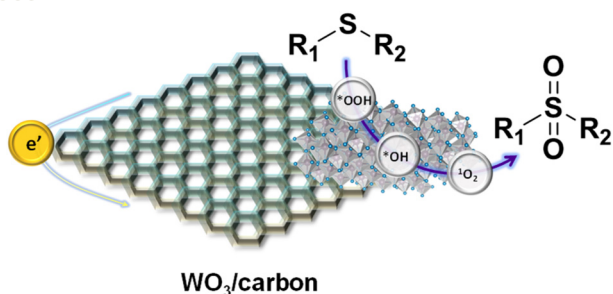
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### Unveiling intrinsic active sites and pivotal intermediate species in $\text{N}_2\text{O}$ decomposition over $\text{Co}_3\text{O}_4$ -based catalysts

Yihuai Zhang, Qi Dong, Jianning Zhang, Tao Zhang\* and Junhua Li

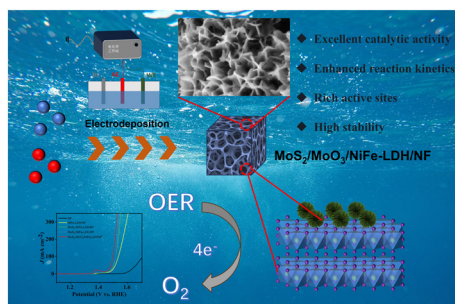
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### Selective oxidation of sulfides catalysed by $\text{WO}_3$ supported on chitosan-derived carbon

Gabriel Franco Yamakawa, Lara Kelly Ribeiro,\* Roberta Yonara Nascimento Reis, Lucia Helena Mascaro, Elson Longo and Marcelo Assis\*

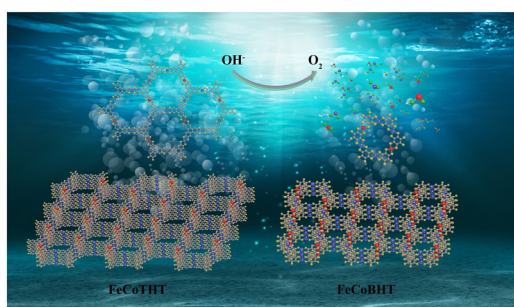
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### Construction of an advanced $\text{MoS}_2/\text{MoO}_3/\text{NiFe-LDH/NF}$ heterostructure catalyst toward boosting efficient alkaline oxygen evolution reaction

Hui-Zhan Wen, Yang Zhao, Hai-Tao Zhang, Zha-Xi Wan-Me, Xue-Ying Wan and Yu-Long Xie\*

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### The effect of organic ligand skeletons of 2D $\pi$ -d conjugated metal-organic frameworks on their OER performance and stability

Xiaolong Yang, Haoqiang Ai,\* Zheng Cui,\* Xiaohan Song, Yuanyuan Liu, Baibiao Huang,\* Huixuan Wang and Danning Xing\*

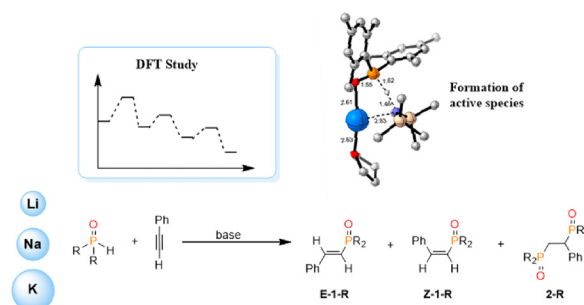


## PAPERS

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# Understanding alkali-metal driven hydrophosphorylation: mechanism and challenges in the Pudovik reaction

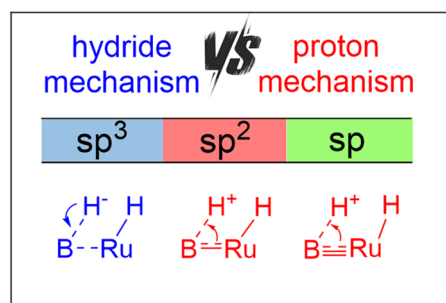
Irina Bozhinovska, Gregori Ujaque, Matthias Westerhausen\* and Agustí Lledós\*



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# The critical role of boron hybridization ( $sp^3$ vs. $sp^2$ vs. $sp$ ) in hydrogenation mechanisms by boron-based Ru catalysts

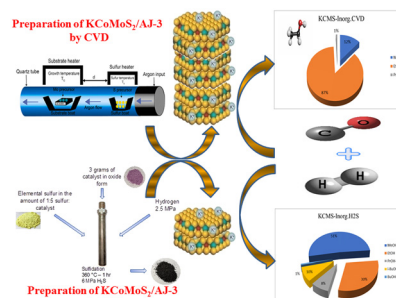
Chuanyi Xiong, Huayu Liang, Yinwu Li\* and Zhuofeng Ke\*



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# Tuning ethanol synthesis pathways from syngas: nanosheet-structured K-doped Co-MoS<sub>2</sub> catalysts and the role of CVD sulfidation

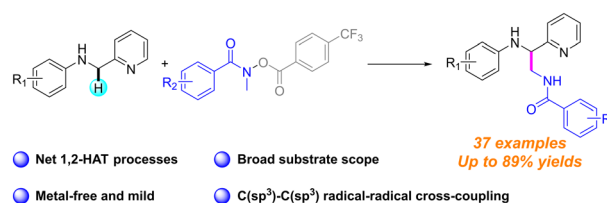
Mohamed E. Osman,\* Anton S. Konopatsky, Nikita A. Repev, Dmitry V. Shtansky, Pavel A. Nikulshin and Victor M. Kogan



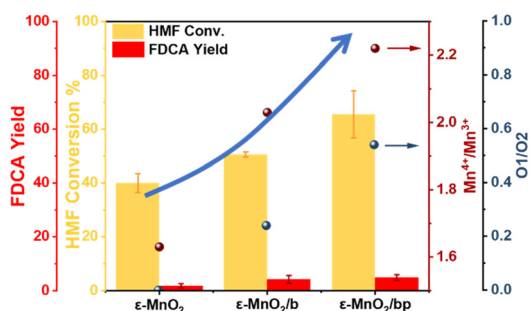
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# Visible-light-induced C-H alkylation of pyridine derivatives via 1,2-hydrogen atom transfer

Meiling Ye, Zeyu Tian, Yuanyuan Li, Hang Wang, Tianle Huang, Zhongzhen Yang\* and Yong Wu\*



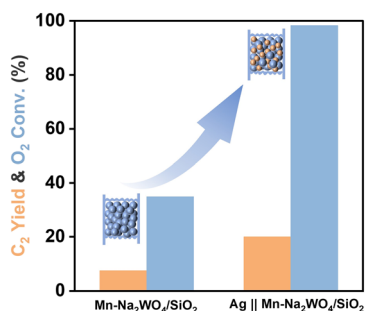
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### Electrocatalytic oxidation of 5-hydroxymethylfurfural by MnO<sub>2</sub> with tunable surface oxidation states

Yongle Zhang, Yingyi Tu, Yuning Huo, Guang Pan, Qiao Zhang,\* Zhiting Liu, Guangxing Yang and Feng Peng\*

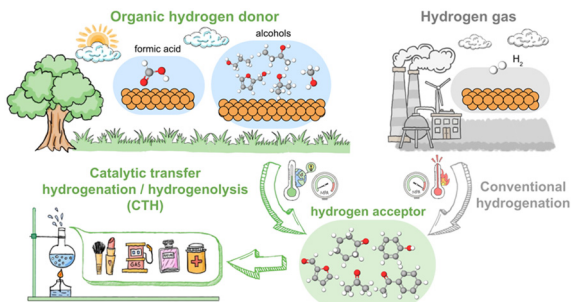
3955



### Silver enhanced oxidative coupling of methane over the Mn-Na<sub>2</sub>WO<sub>4</sub>/SiO<sub>2</sub> catalyst

Yilin Zhao, Fangwei Liu, Jingbo Hu, Yang Yang, Jianzhou Wu,\* Shihui Zou\* and Jie Fan\*

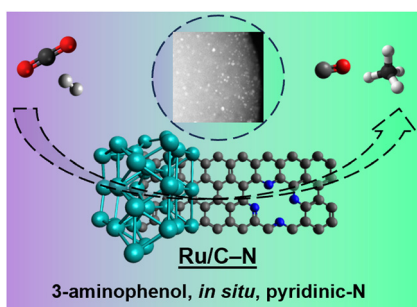
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### Elucidating the essential role of hydrogen bonding and direct H-transfer in transfer hydrogenation on transition metal catalysts

Aojie Li and Srinivas Rangarajan\*

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### Enhancing CO<sub>2</sub> hydrogenation via nitrogen-doped carbon nanospheres and *in situ* ruthenium nanoparticle synthesis

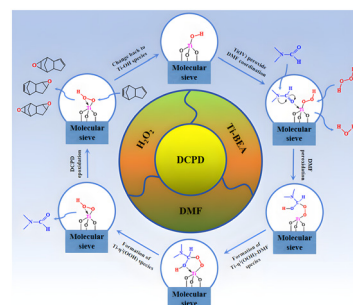
Pradeep S. Murthy, Oliver J. Conquest, Lizhuo Wang, Xiaoyan Liu,\* Jian Liu,\* Catherine Stampfl\* and Jun Huang\*



3991

### Novel DMF-mediated cyclic intermediates facilitating the epoxidation of dicyclopentadiene over a Ti-BEA/H<sub>2</sub>O<sub>2</sub> system

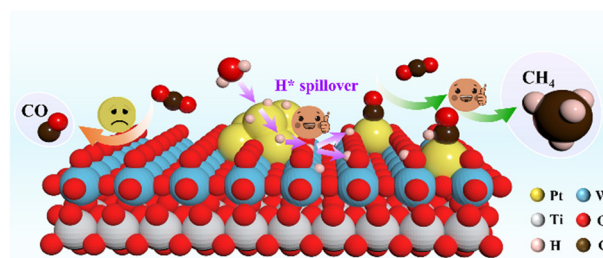
Tianzeng Zhao, Zhongpeng Zhu,\* Xinxin Peng, Weiping Zheng, Dandan Jia, Zhaolin Fu, Wenzheng Gao, Ge Wang,\* Zhiping Tao\* and Xingtian Shu



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### Regulating protonation paths for enhanced photocatalytic CO<sub>2</sub> methanation by coupling Pt sites on WO<sub>2.9</sub>/TiO<sub>2</sub>

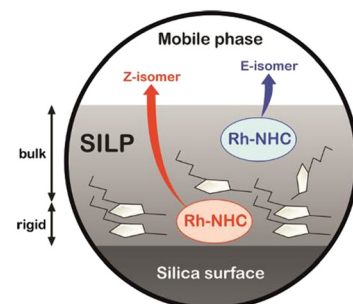
Jiajun Du, Jun Deng, ChangAn Zhou, Hairong Yue, Chong Liu, Patrik Schmuki, Štěpán Kment and Xuemei Zhou\*



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### Influence of the supported ionic-liquid layer thickness on Z-selectivity in 1-alkyne hydrosilylation under continuous flow

André Böth, Florian Kaltwasser, Christian Friedigkeit, Boshra Atwi, Wolfgang Frey, Michael R. Buchmeiser\* and Ulrich Tallarek\*



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### Minimizing radiative and nonradiative energy leakage in red-light-absorbing supramolecular nanoassemblies to boost oxidative photocatalytic activity in water

Aditya Singh, Manoj Kumar and Vandana Bhalla\*

