

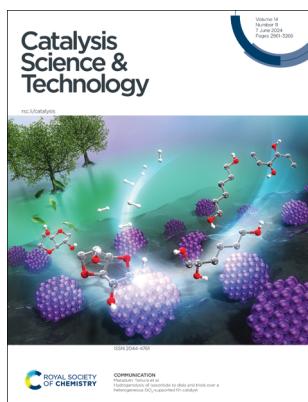
# Catalysis Science & Technology

A multidisciplinary journal focussing on all fundamental science and technological aspects of catalysis  
[rsc.li/catalysis](http://rsc.li/catalysis)

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 2044-4761 CODEN CSTAGD 14(11) 2961–3266 (2024)



### Cover

See Masazumi Tamura et al., pp. 3001–3006.  
Image reproduced by permission of Masazumi Tamura from *Catal. Sci. Technol.*, 2024, 14, 3001.



### Inside cover

See Zhaoyang Fei, Ziqi Tian, Xu Qiao et al., pp. 3012–3020.  
Image reproduced by permission of Zhaoyang Fei from *Catal. Sci. Technol.*, 2024, 14, 3012.

## EDITORIAL

2972

### Introduction to integrated approaches for methane activation

Ken-ichi Shimizu, Wataru Ueda\* and Hua Song

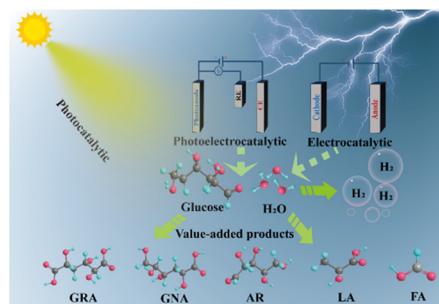


## REVIEWS

2973

### Photo-, electro-, and photoelectro-catalytic conversion of glucose into high value-added products

Kang Lu, Yunfei Zhang, Yi Shen\* and Hongying Li





# EES Catalysis

GOLD  
OPEN  
ACCESS

## Exceptional research on energy and environmental catalysis

Open to everyone. Impactful for all

[rsc.li/EESCatalysis](http://rsc.li/EESCatalysis)

Fundamental questions  
Elemental answers

Registered charity number: 207890

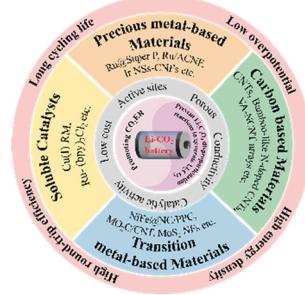


REVIEWS

2991

# Recent advancement in designing catalysts for rechargeable Li–CO<sub>2</sub> batteries

Juan Wang, Senlin Tian, Yang Lin, Haoran Song,  
Ningning Feng,\* Gang Yang and Qun Zhao\*



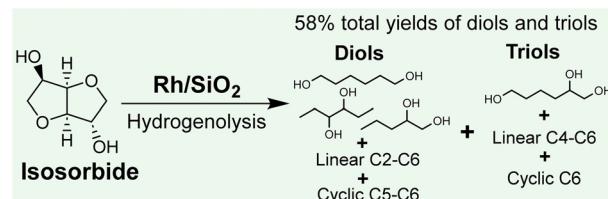
## COMMUNICATIONS

---

3001

## Hydrogenolysis of isosorbide to diols and triols over a heterogeneous $\text{SiO}_2$ -supported Rh catalyst

Pengru Chen, Wataru Onodera, Masato Akatsuka,  
Yusuke Kita and Masazumi Tamura\*

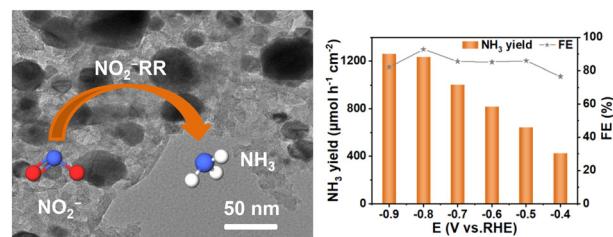


---

3007

# Co nanoparticle-decorated radix cynanchi daniculati-derived carbon for efficient electrocatalytic nitrite reduction to ammonia

Chengliang Ma, Li Bao, Xiaoya Fan, Xun He, Xuwei Liu,  
Wei Chu, Asmaa Farouk, Mohamed S. Hamdy,  
Shengjun Sun, Quan Li,\* Min Wu\* and Xuping Sun\*



PAPERS

---

3012

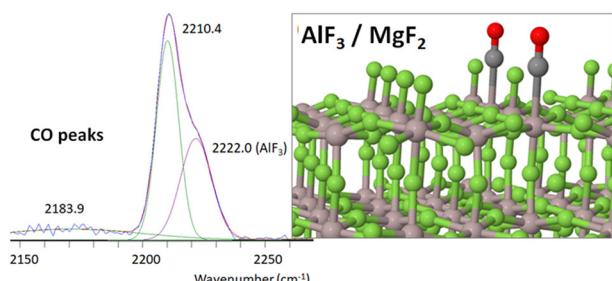
## Highly-selective oxidation of benzyl alcohol to benzaldehyde over Co<sub>1</sub>/NC catalysts

Fan Xue, Yanle Li, Jingyue Bi, Shangpu Zhuang,  
Mifen Cui, Zhaoyang Fei,\* Ziqi Tian\* and Xu Qiao\*



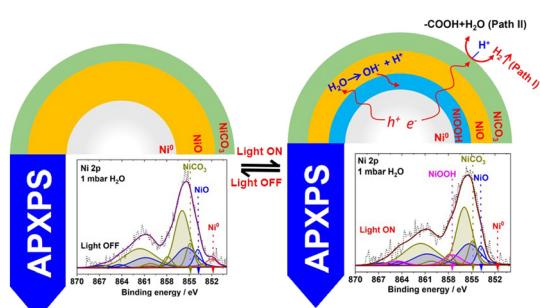
## PAPERS

3021

**CO adsorption on pure, defective and mixed composition  $\text{AlF}_3$  and  $\text{MgF}_2$  surfaces**

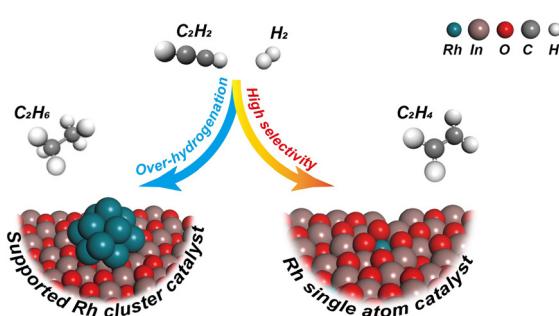
A. Impellizzeri, J. Dieu, J. Rousseau, S. Brunet\* and C. P. Ewels\*

3029

**Solar light driven atomic and electronic transformations in a plasmonic  $\text{Ni}@\text{NiO}/\text{NiCO}_3$  photocatalyst revealed by ambient pressure X-ray photoelectron spectroscopy**

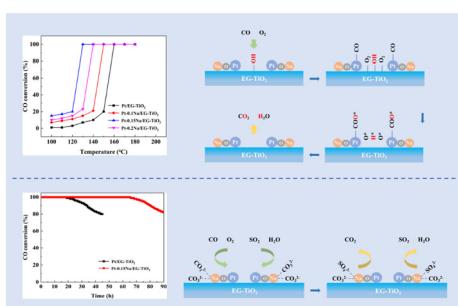
Manoj Kumar Ghosalya,\* Parisa Talebi, Harishchandra Singh,\* Alexander Klyushin, Esko Kokkonen, Mohammed Alaoui Mansouri, Marko Huttula, Wei Cao and Samuli Urpelainen\*

3041

**Exploration of the active sites on a  $\text{Rh}-\text{In}_2\text{O}_3$  catalyst for the semi-hydrogenation of acetylene: a theoretical study**

Kaihang Sun, Rui Zou, Chenyang Shen and Chang-jun Liu\*

3050

**Alkali metal modified Pt/EG-TiO<sub>2</sub> catalysts for CO oxidation with efficient resistance to SO<sub>2</sub> and H<sub>2</sub>O**

Hongtai Zhu, Wenge Qiu,\* Rui Wu, Kai Li and Hong He\*

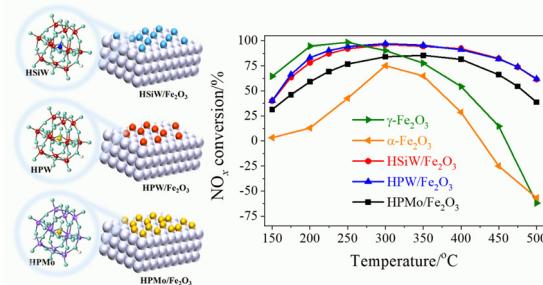


## PAPERS

3064

**Heteropoly acid-grafted iron oxide catalysts for efficient selective catalytic reduction of NO<sub>x</sub> with NH<sub>3</sub>**

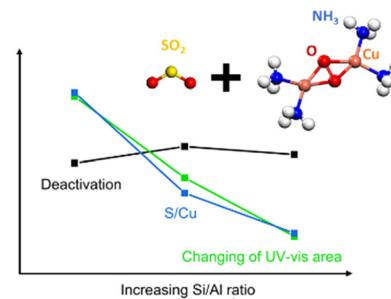
Yang Geng,\* Zhihua Lian, Yan Zhang, Janqi Liu, Dongliang Jin and Wenpo Shan\*



3076

**Probing the effect of the Si/Al ratio in Cu-CHA zeolite catalysts on SO<sub>2</sub> exposure: *in situ* DR UV-vis spectroscopy and deactivation measurements**

Reza K. Abasabadi, Ton V. W. Janssens,\* Silvia Bordiga and Gloria Berlier\*



3086

**Synthesis of a new 1,2,3-triazoles scaffold using a heterogeneous multifunctional copper photocatalyst for *in vitro* investigation via click reaction**

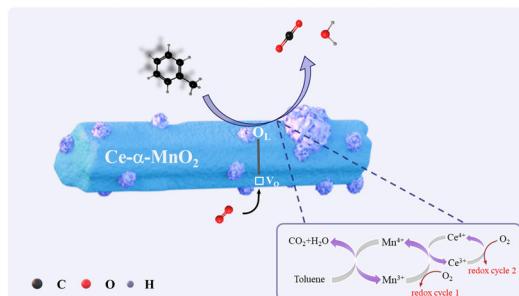
Abolfazl Mohammadkhani, Samanesadat Hosseini, Seied Ali Pourmousavi,\* Akbar Heydari\* and Mohammad Mahdavi



3098

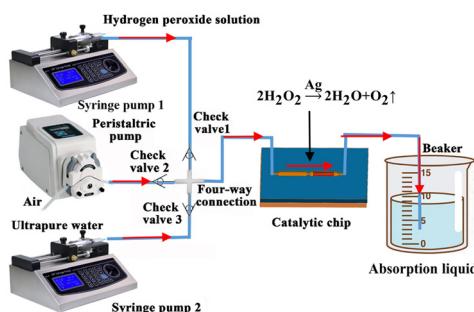
**Enhanced catalytic performance for toluene combustion via Ce-doped α-MnO<sub>2</sub>: efficient balance between toluene adsorption and activation oxidation**

Yongli Dong, Shuo Li, Chaoqun Chen, Weinan Song,\* Xinglong Li, Fan Wang, Lina Ma, Xiaotong Wang and Wei Li\*



## PAPERS

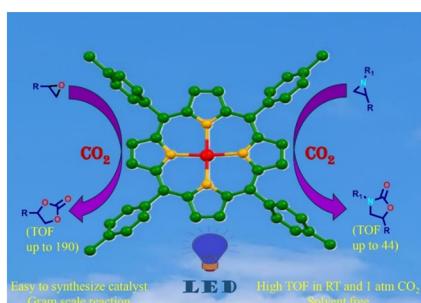
3113



### Reaction rate and thermal effects of hydrogen peroxide decomposition in microfluidic chips containing channel-type silver catalysts

Yong Yang, Yinghua Ye, Peng Zhu, Wei Zhang and Ruiqi Shen\*

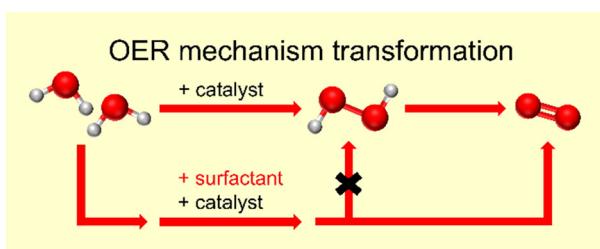
3125



### Magnesium-porphyrin as an efficient photocatalyst for the transformation of $\text{CO}_2$ to cyclic carbonates and oxazolidinones under ambient conditions

Sushanta Kumar Meher, Prakash Nayak, Sasmita Dhala, Swetapadma Tripathy and Krishnan Venkatasubbaiah\*

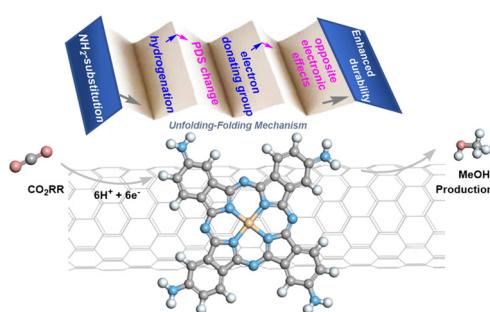
3131



### Blocking the bimolecular pathway of water oxidation electrocatalyzed by copper porphyrin with a surfactant

Luna Yang, Shujiao Yang, Jiafan Kong, Wenjie Yuan, Sisi Li, Xiaohan Liu, Rui Cao and Wei Zhang\*

3137



### New insights into the enhanced $\text{CO}_2\text{RR}$ durability caused by electron-donating substitution of heterogeneous CoPc

Qi Zhang,\* Pingao Hu, Chao Ma, Zhiyuan Xu and Beibei Tang

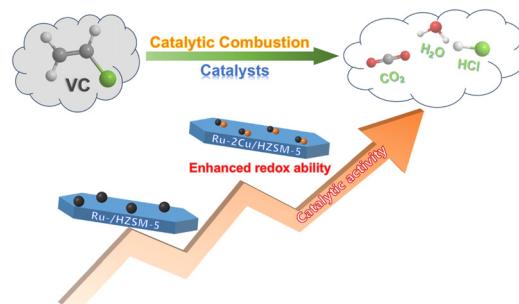


## PAPERS

3150

**Effect of Cu modification to Ru/HZSM-5 catalysts on the catalytic combustion of vinyl chloride**

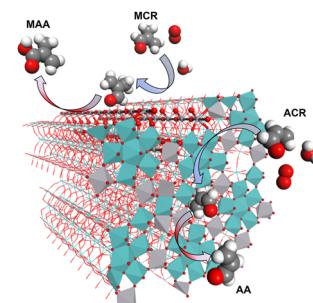
Mingqi Li, Yunyun Wang, Min Ding, Wangcheng Zhan, Li Wang, Qiguang Dai, Yun Guo, Aiyong Wang\* and Yanglong Guo\*



3160

**Role of the heptagonal channel of crystalline Mo<sub>3</sub>VO<sub>x</sub> catalyst for the selective oxidation of acrolein and methacrolein**

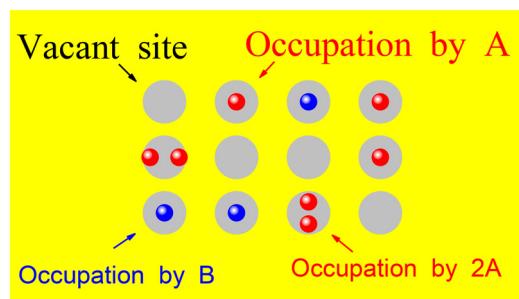
Satoshi Ishikawa,\* Nagisa Noda, Kosuke Shimoda, Toru Murayama and Wataru Ueda\*



3167

**Heterogeneous catalytic reactions with double occupation of binding sites**

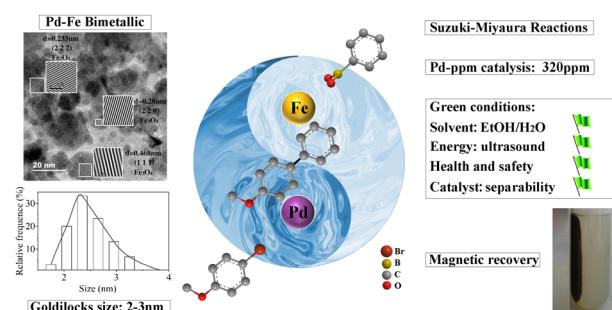
Vladimir P. Zhdanov\*



3176

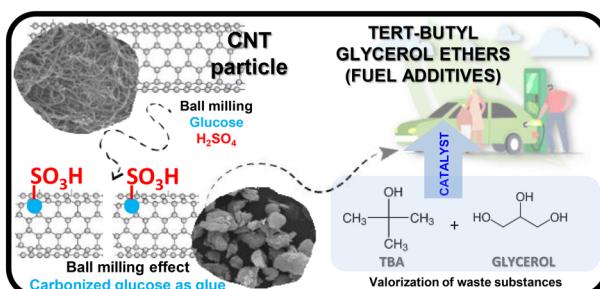
**Magnetic Pd–Fe nanoparticles for sustainable Suzuki–Miyaura cross-coupling reactions**

Zhuangli Zhu,\* Sanqi Liang, Huaming Sun, Weiqiang Zhang,\* Jianming Yang\* and Ziwei Gao\*



## PAPERS

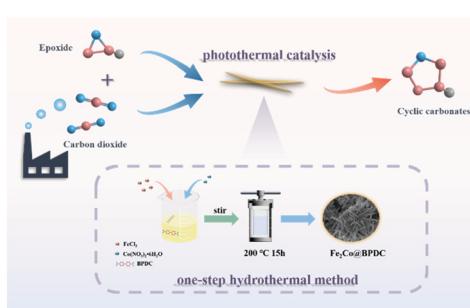
3184



## The role of mechanochemical treatment of carbon nanotubes in promoting glycerol etherification

Karolina Ptaszyńska,\* Katarzyna Morawa Eblagon,\* Anna Malaika, José Luís Figueiredo and Mieczysław Kozłowski

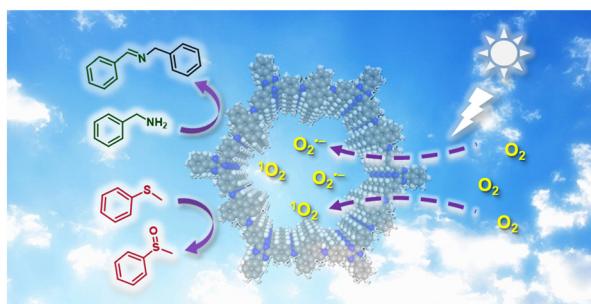
3201



## Bimetallic Fe/Co photothermal catalyst for fixing $CO_2$ to cyclic carbonates under atmospheric pressure

Xuewei Tu, Can Sun, Yang Hu, Yutong Chen, Shouxin Zhu, Jingyi Qu, Zhexiao Zhu, Xiang Zhang\* and Hui Zheng\*

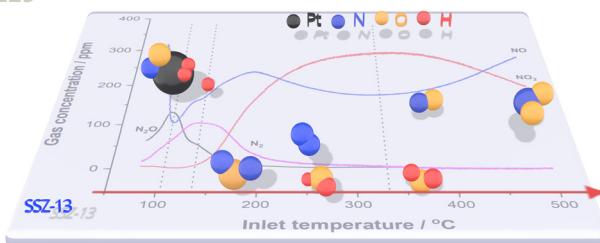
3211



## Extending 2D covalent organic frameworks by inserting anthracene for promoted white-light-mediated photocatalysis

Yiqiong Liu, Zehao Zhao, Wenshuo Xu and Weitao Gong\*

3219



## Pt-based catalysts for $NO_x$ reduction from $H_2$ combustion engines

Jieling Shao, Phuoc Hoang Ho, Wei Di, Derek Creaser and Louise Olsson\*

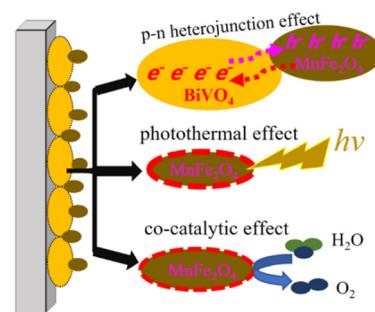


## PAPERS

3235

**A MnFe<sub>2</sub>O<sub>4</sub>/BiVO<sub>4</sub> film photoanode with heterojunction, co-catalytic and photothermal effects for effective solar water oxidation**

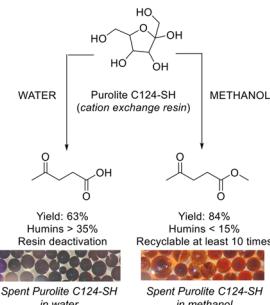
Guoqiang Shen, Haijiao Lu\* and Hao Chen\*



3243

**Mitigation of cation exchange resin deactivation in the one-pot conversion of fructose to methyl levulinate**

Aymerick Beaurepaire, Justine Bodin, Delphine Dufour, Quentin Blancart Remaury, Stanislas Baudouin, Karine de Oliveira Vigier and François Jérôme\*



3253

**Active site for syngas production by direct partial oxidation of CH<sub>4</sub> over ZrO<sub>2</sub>**

Kazumasa Murata,\* Keita Arai, Nao Kondo, Ryo Manabe, Takashi Yumura and Saburo Hosokawa\*

