

Catalysis Science & Technology

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

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 15(4) 951-1282 (2025)



Cover

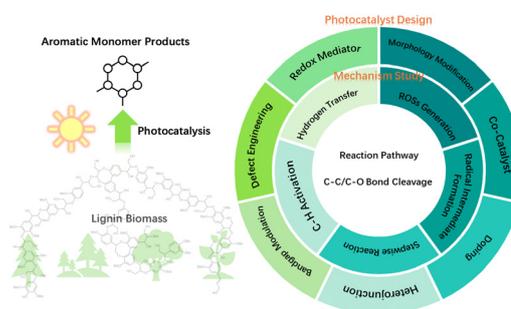
See Lu Shin Wong *et al.*, pp. 1009–1015.
Image reproduced by permission of Lu Shin Wong from *Catal. Sci. Technol.*, 2025, 15, 1009.

REVIEWS

962

A mini review on photocatalytic lignin conversion into monomeric aromatic compounds

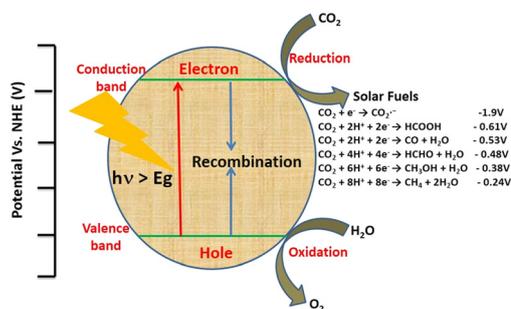
Shibo Shao, Xiangzhou Wang, Wenbing Li,*
Yiming Zhang, Shi Liu, Weisheng Xiao, Zongyang Yue,
Xu Lu* and Xianfeng Fan*



988

Innovations and fundamentals in visible light-driven photocatalysis for CO₂ reduction

Rajesh Sahu,* Tarun Patodia, Sakshi Juyal,
Fateh Singh Gill, Brijesh Prasad and Ankur Jain*



Royal Society of Chemistry approved training courses

Explore your options.
Develop your skills.
Discover learning
that suits you.

**Courses in the classroom,
the lab, or online**

Find something for every
stage of your professional
development. Search our
database by:

- subject area
- location
- event type
- skill level

Members get at least 10% off

Visit rsc.li/cpd-training



**SAVE
10%**

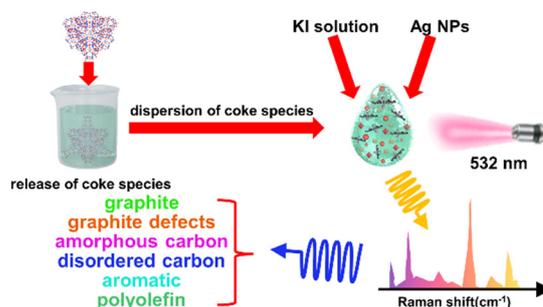


COMMUNICATION

1003

Surface-enhanced Raman scattering technique for comprehensive group-based structural identification of coke deposits on deactivated zeolite catalysts

Guoliang Wu, Qiang Bao,* Jian Zhang, Mingjian Luo, Zhirui Chen, Xue Qiao, Yi Hu, Wenlin Wang and Yunfeng Hu*

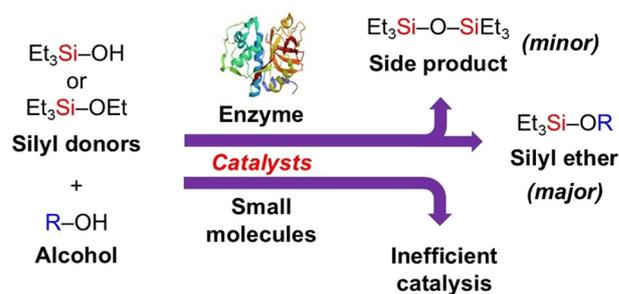


PAPERS

1009

Investigating silicatein selectivity and specificity in silicon–oxygen bond condensation and metathesis

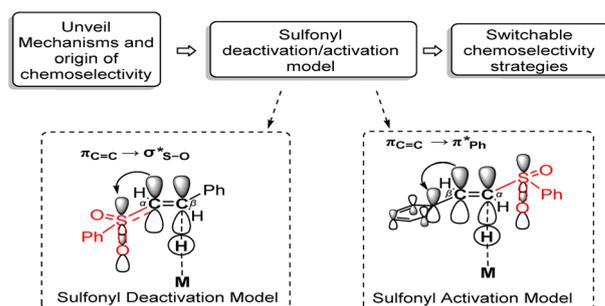
Chisom S. Egedezu, Peter G. Taylor and Lu Shin Wong*



1016

Nature of sulfonyl deactivation/activation by metal catalysts

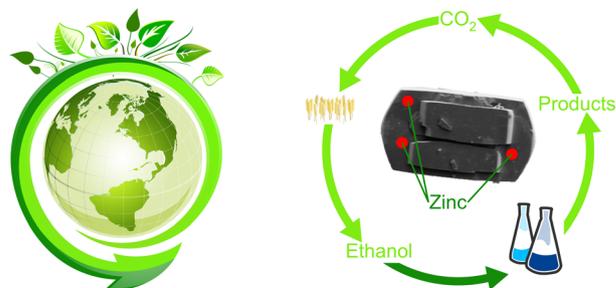
Zhihui Li, Lanbo Liu, Wan Li, Xueqing Song,* Zheng Wang* and Longfei Li*



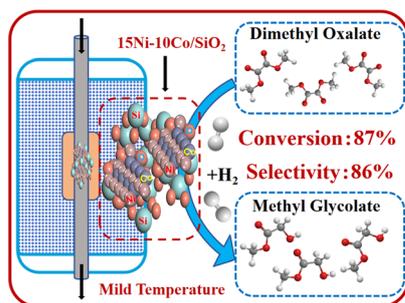
1028

Higher BTEX aromatic yield from ethanol over desilicated H,Zn-[Al]ZSM-5 catalysts

Daniel Dittmann, Alime Ileri, Dennis Strassheim and Michael Dyballa*



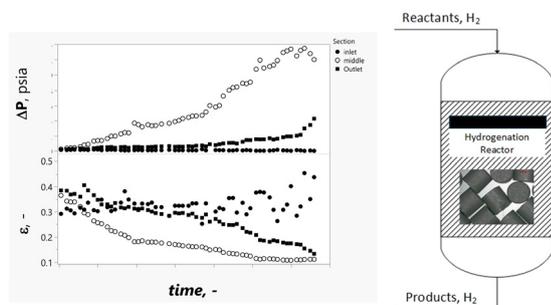
1041



An examination of dimethyl oxalate hydrogenation to methyl glycolate on silica-supported Ni-Co alloy catalysts

Donghui Xiao, Shilong Xie, Xin Gao,* Riguang Zhang and Chun-Ran Chang*

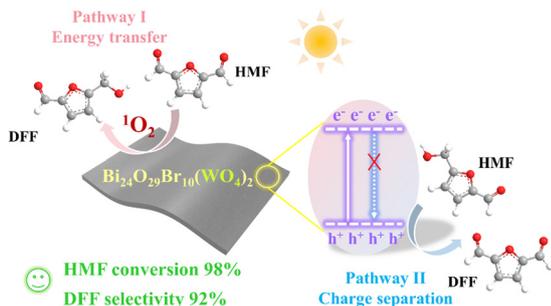
1055



Unravelling the deactivation of CuZnO-based catalysts at the industrial scale: a micro to macro scale perspective

Vera P. Santos,* Ewa Tocha, Jin Yang, Mark McAdon, Carla Schmidt, Stuart Leadley, David Yancey, Stefan van Bloois, Joost Depicker, Swati Naik, Linh Bui, Saurabh Bhandari, Daniel Grohol and David G. Barton

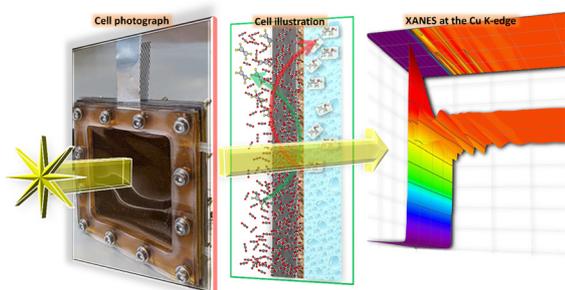
1061



Efficient photocatalytic selective oxidation of 5-hydroxymethylfurfural on Bi₂₄O₂₉Br₁₀(WO₄)₂ solid solution *via* enhanced charge separation

Yingxin Guo, Ming Gong, Xin Xu, Yuming Dong* and Guangli Wang

1070



Operando X-ray absorption spectroscopic flow cell for electrochemical CO₂ reduction: new insight into the role of copper species

Santhosh K. Matam,* P. K. Sharma, E. H. Yu,* C. Drivas, M. D. Khan, M. Wilding, N. Ramanan, D. Gianolio, M. A. Isaacs, S. Guan, P. R. Davies and C. Richard A. Catlow

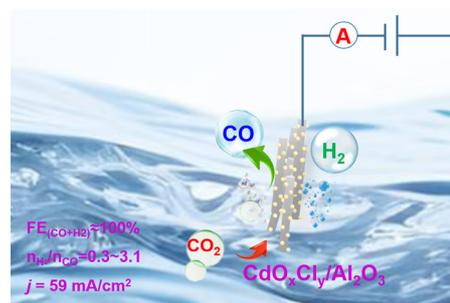


PAPERS

1082

Chlorine tailored $\text{CdO}_x\text{Cl}_y/\text{Al}_2\text{O}_3$ for syngas formation in electrochemical CO_2 reduction

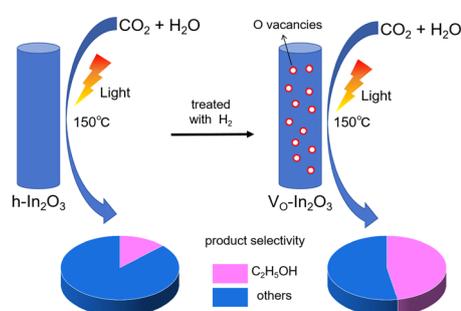
Xin Wang, Zhen-Hong He,* Hui-Hui Cao, Yu-Xuan Ji, Xuan-Lu Fan, Rui-Peng Yan, Kuan Wang, Weitao Wang, Lu Li and Zhao-Tie Liu*



1090

Hexagonal In_2O_3 short nanorods rich in O vacancy-defects toward promoting highly efficient photothermal CO_2 reduction into $\text{C}_2\text{H}_5\text{OH}$

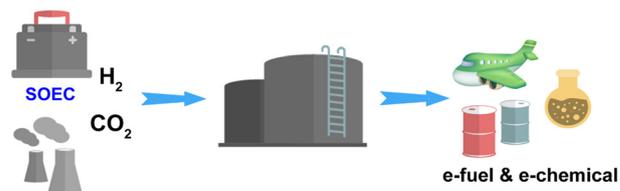
Kai Zhao, Qiutong Han,* Zhe Lu, Yubin Zheng, Boye Zhou, Haoqiang Chi, Dawei Liu, Lu Wang, Zhigang Zou and Yong Zhou*



1096

Towards superior efficiency of the CO_2 -derived Fischer-Tropsch synthesis process over iron-based metal-organic framework-derived multifunctional catalytic materials

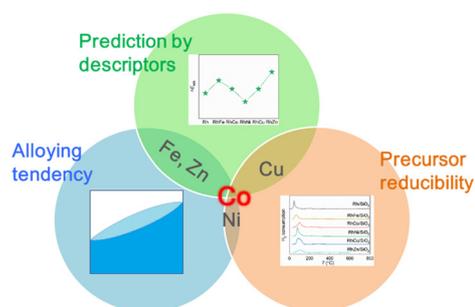
Shican Jiang, Zuozheng Liu and Abhishek Dutta Chowdhury*



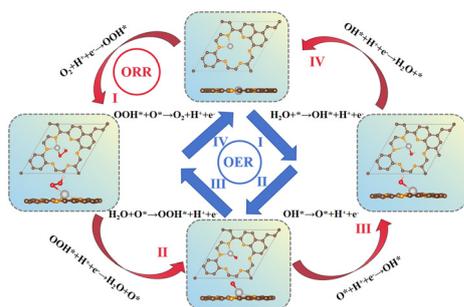
1113

Designing a Rh-based bimetallic catalyst for heterogeneous ethylene hydroformylation: combining theoretical predictions and experimental screening

Ning Huang, Yue Ma, Boyang Liu, Letong Yang, Xiaocheng Lan, Xiaodong Wu* and Tiefeng Wang*



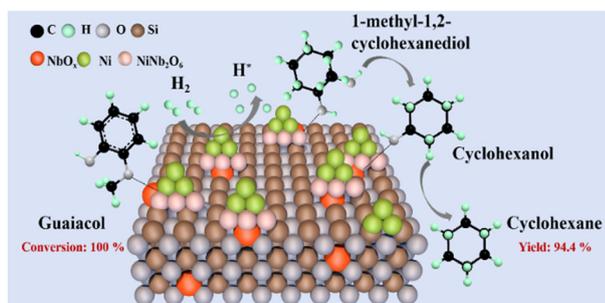
1122



Transition metal atoms embedded in monolayer C₁₃N₃ as OER/ORR bifunctional electrocatalysts

Xiaoxue Yu, Junkai Xu, Yunhao Wang, Jianjun Fang,*
Xianfang Yue,* Breno R. L. Galvão* and Jing Li*

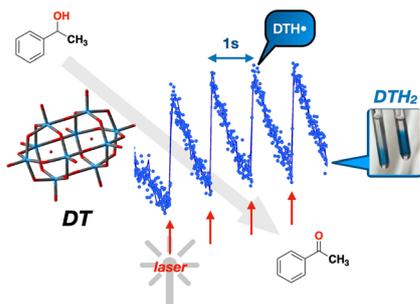
1134



The promoting effect of Nb on Ni/SiO₂ in the hydrodeoxygenation of lignin derivatives to cycloalkanes

Xiyue Lu, Hui Wang, Wei Liu, Moeez ur Rehman,
Lu Wang, Yan Xu, Shengnian Wang and Yujun Zhao*

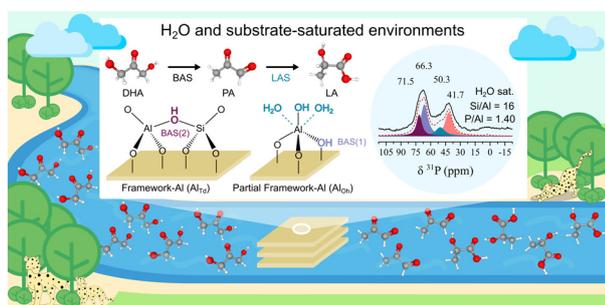
1149



Kinetics, quantum yield and mechanism of the decatungstate-catalyzed photooxidation of C–H hydrogen donors: role of the persistent radical effect

Saba Didarataee, Julia Ong, Anastasiia Suprun,
Neeraj Joshi and Juan C. Scaiano*

1157



Partial framework-Al in lamellar H-[Al]-RUB-18: acidity by probe TMPO adsorption and catalytic study in the presence and absence of water

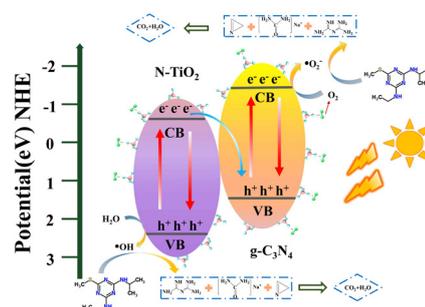
Paulla B. F. Sousa, Elise M. Albuquerque, Marco A. Fraga*
and Heloise O. Pastore*



1174

Phosphate modulated nitrogen-doped titanium dioxide/carbon nitride heterogeneous photocatalysts with efficient O₂ activation for ametryn degradation

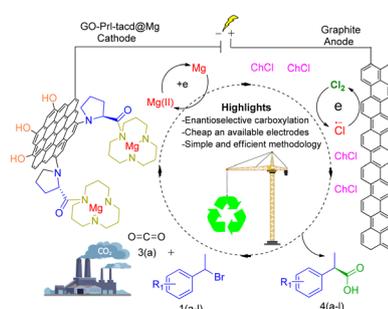
Xingyang Feng, Changmei Zhao, Junjie Zhou, Fangzhu Shi, Rui Yan* and Zhiqiang Wang*



1185

Designing a reusable chiral SPE electrode with Mg nanoparticles on graphene oxide for efficient enantioselective Grignard carboxylation of (1-bromoethyl)benzenes in a deep eutectic solvent

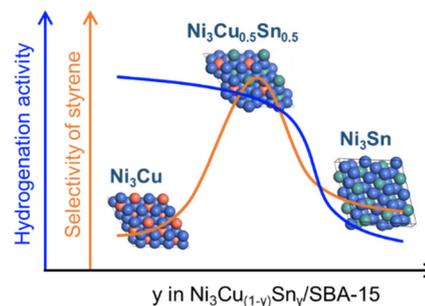
Amer Alhaj Zen, Zaman Abdalhussein Ibadi Alaridhee, Rafid Kamal Jameel, Morug Salih Mahdi, Aseel Salah Mansoor, Usama Kadem Radi, Ameer Hassan Idan, Hala Bahai, Elyor Berdimurodov, Ilyos Eliboev and Abdulrahman A. Almehezia*



1203

Unraveling the synergistic mechanism of multimetals in Ni₃Cu–Sn catalysts for selective hydrogenation of phenylacetylene

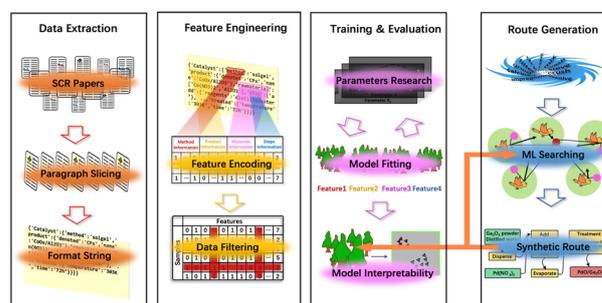
Aohui Xiao, Kehang Ruan, Yuqi Zhou, Hongjie Cui and Zhiming Zhou*



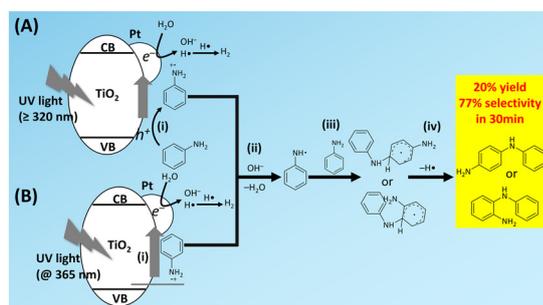
1217

Machine learning and text mining approaches to design selective catalyst reduction synthesis routes

Shuyuan Li, Chenyu Huang, Yunjiang Zhang, Jing Li and Shaorui Sun*



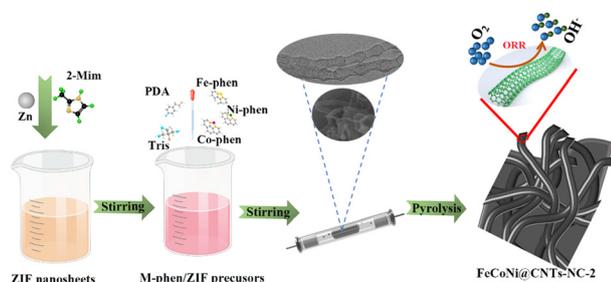
1228



Direct C–N coupling of aniline to aminodiphenylamines with a platinum-loaded titanium oxide photocatalyst

Kexin Zou, Akira Yamamoto and Hisao Yoshida*

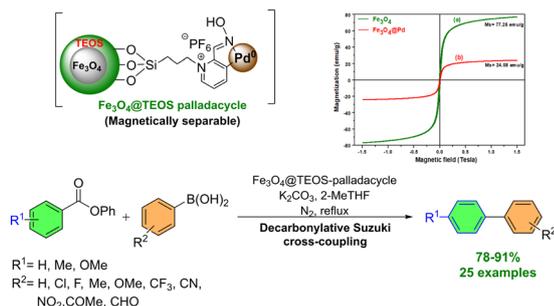
1238



Fe, Co, and Ni co-doped nitrogen-doped carbon nanotubes for the electrocatalytic oxygen reduction reaction

Haitao Huang, Zhijie Chen, Haijin Li,* Yongtao Li* and Xiaolong Deng

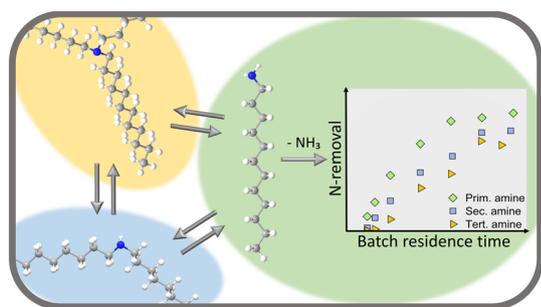
1247



Oxime-palladacycle complex supported on magnetic nanoparticles: a recyclable catalyst for Suzuki-type decarbonylative cross-coupling of esters with aryl boronic acid

Tahshina Begum,* Sazida Yasmin Sultana, Hasmita Hasin Mou and Nashreen S. Islam*

1259



Catalytic hydrodenitrogenation of primary, secondary, and tertiary C12-alkyl amines over a platinum on zirconia catalyst

Leoni-Franziska Klingelhöfer, Joakim Kattelus,* Emma Verkama, Jorge A. Velasco, Leonhard Iser, Marcus Rose, Reetta Karinen and Riikka L. Puurunen



1272

Tungsten-dioxo single-site heterogeneous catalyst on carbon: synthesis, structure, and catalysis

Amol Agarwal, Yiqi Liu, Miyuki Hanazawa, Jiaqi Li, Takayuki Nakamuro, Eiichi Nakamura, Yosi Kratish* and Tobin J. Marks*

