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(23) 6915-7252 (2025)



Cover See Kevin M. Van Geem. Georgios D. Stefanidis et al., pp. 7014-7029. Image reproduced by permission of Victor Rosa from Catal. Sci. Technol., 2025, 15, 7014.

EDITORIAL

6925

Introduction to Digital Catalysis

Evgeny A. Pidko* and Núria López*

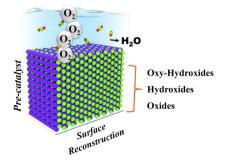


REVIEWS

6928

Design and engineering of phosphide, sulfide, selenide, oxide and LDH based pre-catalysts for electrocatalytic oxygen evolution reaction: recent advances and perspectives

Rajini Murugesan, N. Clament Sagaya Selvam* and Arthanareeswari Maruthapillai*





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



Registered charity number: 207890

REVIEWS

6976

A review on MXene modified quantum dot photocatalysts for sustainable energy generation and environmental remediation

Prativa Das, Liiarani Biswal and Kulamani Parida*

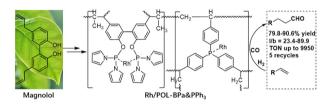


COMMUNICATIONS

7004

Efficient synthesis of π -acidic phosphoruscontaining porous polymer supported catalysts for hydroformylation of olefins

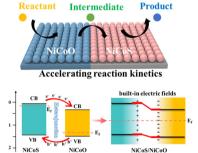
Weiyue Qu, Jinhao Hu, Hanzi Xu, Canyuan Chen,* Qiwen Sun,* Jianbin Chen and Xiaofei Jia*



7009

Ir-modulated NiCoS/NiCoO p-n heterojunction nanocages with intensified built-in electric field for the accelerated oxygen evolution reaction

Dong Li, Xu Pu, Li Deng, Minglei Wang, Qilin Wu* and Anqi Ju*

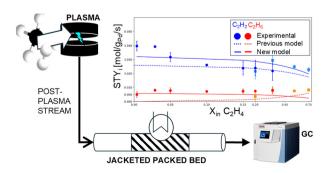


PAPERS

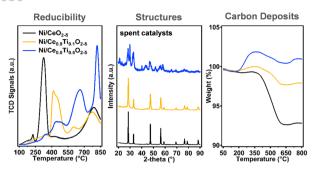
7014

A kinetic model for Pd-based hydrogenation of acetylene-rich streams typical of post-plasma applications

Victor Rosa, Fabio Cameli, Yves Schuurman, Kevin M. Van Geem* and Georgios D. Stefanidis*



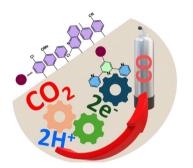
7030



Effect of Ti dopants in Ce_{1-x}Ti_xO_{2-δ}-supported Ni catalysts: structure, redox properties, and carbon resistance in DRM

Jintao Miao, Nishan Paudyal, Rosa V. Melinda and Jing Zhou*

7043



Manoeuvring organo-electrocatalytic selective CO₂ reduction to CO by terpyridine derivatives: DFT mechanistic exploration

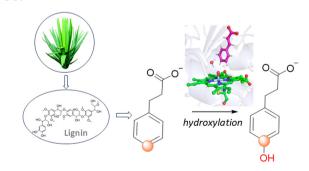
Sk Samim Akhter, Koushik Makhal, Dev Raj, Thillai Natarajan M., Palak Kumari Jaiswal, Arun Biswas, Bhabani S. Mallik, Pankaj Kumar and Sumanta Kumar Padhi*

7059 (Homogeneous: only 23 % of $\beta(Z)$) B(E)

SCILL: 67 % of B(Z)

Confinement-induced Z-selectivity in the rhodium N-heterocyclic carbene-catalyzed hydroboration of terminal alkynes

Boshra Atwi, Dongren Wang, Johanna R. Bruckner, Wolfgang Frey and Michael R. Buchmeiser*



Hydroxylation mechanism of lignin-derived aromatic substrates catalyzed by plant P450 cinnamate 4-hydroxylase

Sónia F. G. Santos, Paul James, Rajesh Reddy Bommareddy, Yunhong Jiang, Jun Li, Chun Li, Warispreet Singh* and Meilan Huang*

7079

Tailoring selective hydrogenation of cinnamaldehyde with MoOx-functionalized Ni nanocrystals

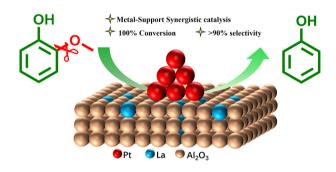
Lei Wang,* Fengyu Jin, Xiaoge Li, Lin-Wei Chen, Yilin Dong* and Yu Gu



7087

Selective hydrodeoxygenation of aromatics to phenols by Pt nanoparticles supported on Lamodified Al₂O₃

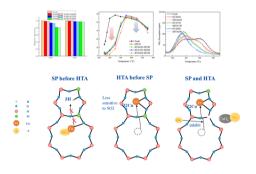
Kaili Zhang,* Hongyi Yao, Jiawei Zhang, Ran Tao, Hao Xu, Haitao Yu, Jing Yang, Ning Zhang, Kui Wang and Jianchun Jiang*



7098

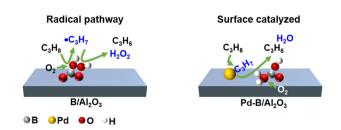
Experimental investigation on the coupling mechanism between sulfur poisoning and hydrothermal aging of the Cu-SSZ-13 SCR catalyst

Dongwei Yao,* Jiadong Hu, Xiaohan Hu, Yuxi Li, Weiyang Jin and Feng Wu

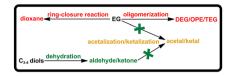


Tuning the oxidative dehydrogenation of propane mechanism by Pd-B/Al₂O₃ bifunctional catalysis through suppression of gas-phase radicals and enhancement of surface-mediated pathways

Chunyan Ma, Cheng Chen, Zhenhao Hou, Zilin Yan, Fengbang Wang, Lei Bi, Maoyong Song* and Guibin Jiang



7120



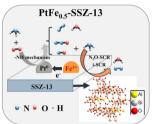


Modification of zeolite via acid-etching and cokedeposition for the selective transformation of propylene glycol and butylene glycol in ethylene glycol

Shuo Ai,* Yihan Yang, Linghui Liu and Wanguo Yu







Revealing the effects of introducing Fe on the N₂ selectivity of Pt-SSZ-13 catalyst for ammonia selective catalytic oxidation

Jiayi Li, Pan Yao, Yan Huang, Yan Li, Jianli Wang, Yaoqiang Chen and Haidi Xu*

7139



Unraveling the C₃H₆ poisoning mechanism of Z₂Cu and ZCuOH sites over Cu-SSZ-13 during NH₃-SCR

Miaomiao Jin, Chengcheng Ao, Yuankai Shao, Kaixiang Li, Zhenguo Li, Ntini Nhlakanipho Versatile, Jing Yi, Lidong Zhang and Pan Wang*

7151



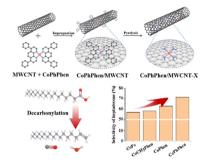
Ambient condition imine formation from the homocoupling of benzylamine using copper catalysis and dialkylphosphite as a substoichiometric additive

Luke H. Park, Malachy M. Gilbert, Cameron C. Weber* and Erin M. Leitao*

7163

Decarbonylation of fatty acids to alkenes over Co-N-C catalysts derived from Co complexes

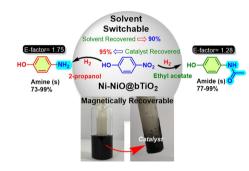
Canyang Zhang, Yin Liang, Chao Chen, Wei Zhao, Bolong Li,* Jianghao Wang, Zhenyu Zhang, Huiping Ji, Feng Zhou,* Kaige Wang, Reinout Meijboom and Jie Fu*



7173

Magnetically recoverable Ni-NiO-bTiO₂ heterojunction catalyst for solvent switchable synthesis of amides and amines from nitroarenes

Jyotiranjan Mishra, Padariya Mrugesh, Palani S. Subramanian and Sanjay Pratihar*



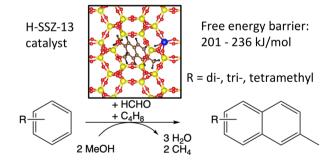
7190

Degradation and post-treatment reaction cascade of acetaminophen after electro-Fenton treatment on heterogeneous catalyst active sites

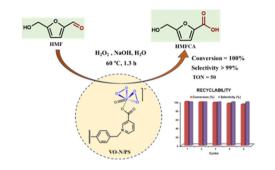
Fee Käufer* and Heike Kahlert

A computational study on the formation mechanism of naphthalenic species under MTO conditions in H-**SSZ-13**

Annika E. Enss, Philipp N. Plessow* and Felix Studt

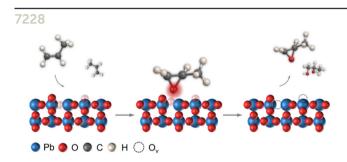


7209



Supported vanadium- and tungsten-based catalysts for selective and sustainable oxidation of 5-hydroxymethylfurfural to 5-hydroxymethyl-2furancarboxylic acid with H2O2 in water

Sazida Yasmin Sultana, Kabirun Ahmed, Jumana Ishrat, Pratyasha Borthakur, Hiya Talukdar and Nashreen S. Islam*



Probing the reactivity of in situ formed oxygen vacancies of non-noble lead oxides for anodic propylene oxidation

Jia Ge, Tian-Yi Wang, Xiao-Long Zhang, Hongyu Sun, Renying Wang, Peng-Cheng Yu, Xiandi Sun, Shu-Ping Sun, Hang Liu, Yu Liu, Chuan-Ling Zhang, Bo Da, Ya-Rong Zheng,* Min-Rui Gao* and Hao Li*

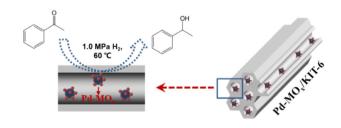
7236



An efficient Li-modified heterogeneous Pd-Cu/ Al₂O₃ Wacker catalyst for selective oxidation of 1-butene to 2-butanone

Xiaofei Qin, Gaolei Qin, Xiangjie Zhang, Nengfeng Gong, Xiaodong Sun,* Hongying Chang, Guo Sun and Jianguo Wang*

7244



Enhanced selective hydrogenation of acetophenone over KIT-6 supported Pd-MO_x (M = Fe, Co, Ni) hybrid nanostructures

Yifan Zhang, Jiaying Liu, Shiwei Wang, Zhihao Yu, Haojian Zhang, Dong Wang,* Lin Zhu,* Chunzheng Wu and Hongbo Yu*