

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 13(10) 2867-3194 (2023)



Cover
See Tatsuo Kimura *et al.*, pp. 2927–2936.
Image reproduced by permission of Tatsuo Kimura from *Catal. Sci. Technol.*, 2023, 13, 2927.



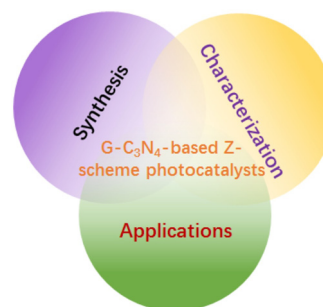
Inside cover
See Peter Deglmann, Alex J. Plajer *et al.*, pp. 2937–2945.
Image reproduced by permission of Alex J. Plajer from *Catal. Sci. Technol.*, 2023, 13, 2937.

MINI REVIEWS

2877

Recent advances on g-C₃N₄-based Z-scheme photocatalysts for organic pollutant removal

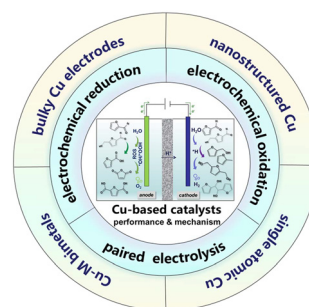
Chunxue Li, Hao Lu,* Guixiang Ding, Qing Li* and Guangfu Liao*



2899

Recent progress of Cu-based electrocatalysts for upgrading biomass-derived furanic compounds

Jingwen Tan, Mei Jiang, Kun Yu, Yuyang Song, Wenbiao Zhang and Qingsheng Gao*



Editorial Staff

Executive Editor

Maria Southall

Deputy Editor

Bianca Provost

Editorial Production Manager

Emily Skinner

Assistant Editors

Sean Browner, Molly Colgate, Paul Scott, Alison Winder

Editorial Assistant

Basita Javeed

Publishing Assistant

Allison Holloway

Publisher

Sam Keltie

For queries about submitted articles please contact

Emily Skinner, Editorial Production Manager, in the first instance.

E-mail catalysis@rsc.org

For pre-submission queries please contact

Maria Southall, Executive Editor.

E-mail catalysis-rsc@rsc.org

Catalysis Science & Technology electronic: ISSN 2044-4761

is published 24 times a year by the Royal Society of Chemistry,

Thomas Graham House, Science Park, Milton Road, Cambridge,

CB4 0WF, UK.

All orders, with cheques made payable to the Royal Society of Chemistry, should be sent to the Royal Society of Chemistry Order Department, Royal Society of Chemistry,

Thomas Graham House, Science Park, Milton Road, Cambridge,

CB4 0WF, UK

Tel +44 (0)1223 432398; E-mail orders@rsc.org

2023 Annual electronic subscription price: £2552; US\$4214.

Customers in Canada will be subject to a surcharge to cover GST.

Customers in the EU subscribing to the electronic version only will be charged VAT.

If you take an institutional subscription to any Royal Society of Chemistry journal you are entitled to free, site-wide web access to that journal. You can arrange access via Internet Protocol (IP) address at www.rsc.org/ip

Customers should make payments by cheque in sterling payable on a UK clearing bank or in US dollars payable on a US clearing bank.

Whilst this material has been produced with all due care, the Royal Society of Chemistry cannot be held responsible or liable for its accuracy and completeness, nor for any consequences arising from any errors or the use of the information contained in this publication. The publication of advertisements does not constitute any endorsement by the Royal Society of Chemistry or Authors of any products advertised. The views and opinions advanced by contributors do not necessarily reflect those of the Royal Society of Chemistry which shall not be liable for any resulting loss or damage arising as a result of reliance upon this material. The Royal Society of Chemistry is a charity, registered in England and Wales, Number 207890, and a company incorporated in England by Royal Charter (Registered No. RC000524), registered office:

Burlington House, Piccadilly, London W1J 0BA, UK,
Telephone: +44 (0) 207 4378 6556.

Advertisement sales:

Tel +44 (0) 1223 432246; Fax +44 (0) 1223 426017;

E-mail advertising@rsc.org

For marketing opportunities relating to this journal,

contact marketing@rsc.org

Catalysis Science & Technology

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

rsc.li/catalysis

Editorial Board

Editor-in-Chief

Bert Weckhuysen,

Utrecht University, The Netherlands

Associate Editors

Dirk De Vos, KU Leuven, Belgium

Shaojun Guo, Peking University, China

Mélanie Hall, University of Graz, Austria

Bin Liu, Nanyang Technological University, Singapore

Núria López, Institut Català d'Investigació Química, Spain

Will Medlin, University of Colorado Boulder, USA

Regina Palkovits, RWTH Aachen, Germany

Xiulian Pan, Chinese Academy of Sciences, China

Kenichi Shimizu, Hokkaido University, Japan

Andrew Weller, University of York, UK

Chris Williams, University of South Carolina, USA

Yong Zhou, Nanjing University, China

Advisory Board

Isabel Arends, Utrecht University, The Netherlands
Xinhe Bao, Dalian Institute of Chemical Physics, CAS, China

Bhachandra Bhanage, Institute of Chemical Technology, Mumbai, India

George Britovsek, Imperial College London, UK

Christian Bruneau, Institut des Sciences Chimiques de Rennes, France

Yong Cao, Fudan University, China

Matt Clarke, University of St Andrews, UK

Christophe Coperey, ETH Zürich, Switzerland

Avelino Corma, Valencia University, Spain

Johannes de Vries, Leibniz-Institut für Katalyse, Germany

Chris Hardacre, University of Manchester, UK

Graham Hutchings, University of Cardiff, UK

David Jackson, University of Glasgow, UK

Axel Knop-Gericke, Fritz-Haber Institute of the Max Planck Society, Germany

Can Li, Dalian Institute of Chemical Physics, Chinese Academy of Sciences, China

Wei-Xue Li, University of Science and Technology of China, China

Antonio Llobet, Institut Català d'Investigació Química, Spain

Jennifer Love, University of Calgary, Canada

Ding Ma, Peking University, China

Debabrata Maiti, IIT Bombay, India

Noritaka Mizuno, University of Tokyo, Japan

Francesca Paradisi, University of Bern, Switzerland

Evgeny Pidko, Delft University of Technology, The Netherlands

Robert M. Rioux, The Pennsylvania State University, USA

Tito Scaiano, University of Ottawa, Canada

Tetsuya Shishido, Tokyo Metropolitan University, Japan

Tsunehiro Tanaka, Kyoto University, Japan

Nick Turner, University of Manchester, UK

Piet van Leeuwen, University of Toulouse, France

Ning Yan, National University of Singapore, Singapore

Jinhua Ye, National Institute for Materials Science, Japan

Information for Authors

Full details on how to submit material for publication in Catalysis Science & Technology are given in the Instructions for Authors (available from <http://www.rsc.org/authors>). Submissions should be made via the journal's homepage: rsc.li/catalysis

Authors may reproduce/republish portions of their published contribution without seeking permission from the Royal Society of Chemistry, provided that any such republication is accompanied by an acknowledgement in the form of: (Original Citation)–Reproduced by permission of the Royal Society of Chemistry.

This journal is © The Royal Society of Chemistry 2023.

Apart from fair dealing for the purposes of research or private study for non-commercial purposes, or criticism or review, as permitted under the Copyright, Designs and Patents Act 1988 and the Copyright and Related Rights Regulation 2003, this publication may only be reproduced, stored or transmitted, in any form or by any means, with the prior permission in writing of the Publishers or in the case of reprographic reproduction in accordance with the terms of licences issued by the Copyright Licensing Agency in the UK. US copyright law is applicable to users in the USA.

Registered charity number: 207890

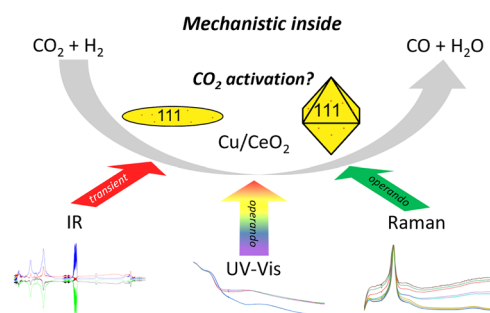


COMMUNICATION

2922

Unravelling the mechanism of CO₂ activation over low-loaded Cu/CeO₂(111) catalysts using *operando* and transient spectroscopies

Marc Ziemba and Christian Hess*

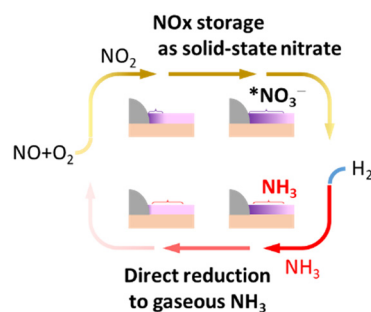


PAPERS

2927

Catalytic conversion to ammonia through solid-state nitrate as a proposal for the emerging usage of nitrogen oxides

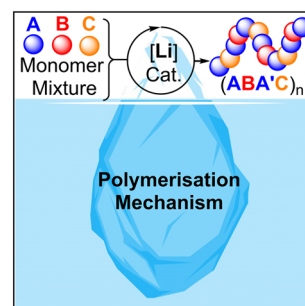
Atsuko Tomita, Ryutaro Wakabayashi and Tatsuo Kimura*



2937

Lithium catalysed sequence selective ring opening terpolymerisation: a mechanistic study

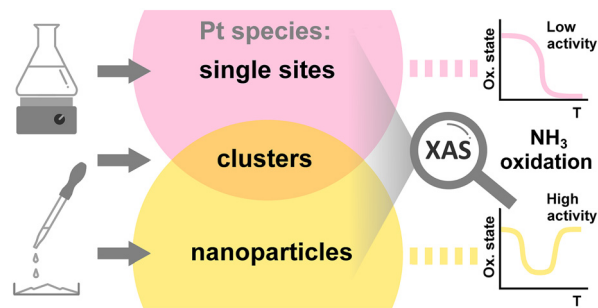
Peter Deglmann,* Sara Machleit, Cesare Gallizioli, Susanne M. Rupf and Alex J. Plajer*



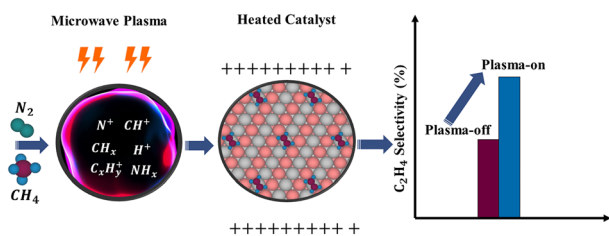
2946

Structure sensitivity of alumina- and zeolite-supported platinum ammonia slip catalysts

Vasyl Marchuk, Xiaohui Huang, Jan-Dierk Grunwaldt and Dmitry E. Doronkin*



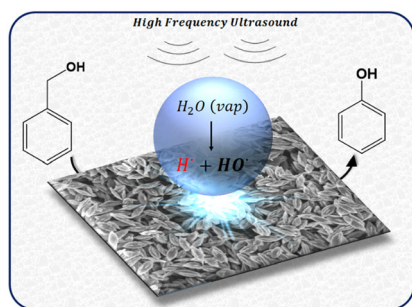
2966



Post-plasma catalysis: charge effect on product selectivity in conversion of methane and nitrogen plasma to ethylene and ammonia

Sarojini Tiwari, Saleh Ahmat Ibrahim, Brandon Robinson, Siobhan Brown, Qiang Wang, Fanglin Che* and Jianli Hu*

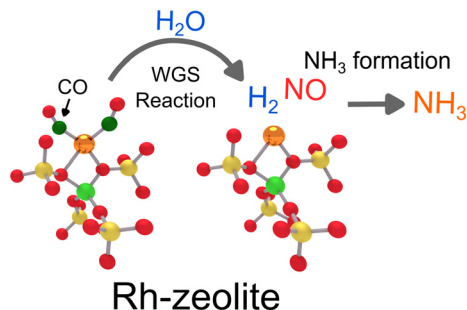
2982



Water-assisted sonochemically-induced demethylenation of benzyl alcohol to phenol over a structurally stable cupric oxide catalyst

Teseer Bahry, Shang Jiang, Umesh Jonnalagadda, Wen Liu, Benoit Teychene, Francois Jerome, Samir H. Mushrif* and Prince N. Amaniampong*

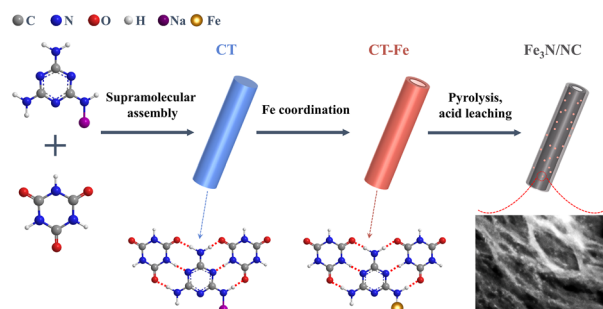
2994



Multi-functionality of rhodium-loaded MOR zeolite: production of H₂ via the water gas shift reaction and its use in the formation of NH₃

Shunsaku Yasumura, Ken Nagai, Yucheng Qian, Takashi Toyao, Zen Maeno and Ken-ichi Shimizu*

3001



Supramolecular confinement synthesis of ultrafine iron nitride nanocrystals for the oxygen reduction reaction in Zn-air batteries

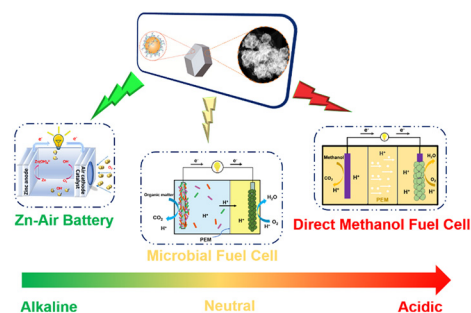
Fanglei Yao, Jiabao Bi, Lei Yu, Liming Dai, Wenkang Xue, Jingyao Deng, Zhihui Yao, Yunyan Wu, Jingwen Sun* and Junwu Zhu



3009

Metal–organic framework-loaded carbon-encapsulated nano-catalyst as a pH-universal oxygen reduction reaction electrocatalyst for various fuel cell devices

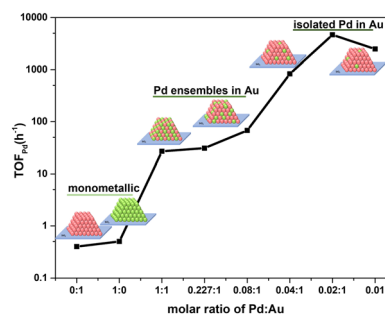
Xintao Zhou, Mingyang Wu, Kai Chen, Suqin Ci* and Zhenhai Wen*



3020

The preparation of silica supported, dilute limit PdAu alloys via simultaneous strong electrostatic adsorption

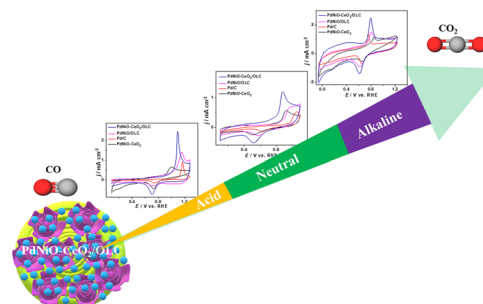
Anhua Dong, Abolfazl Shakouri, Stavros Karakalos, Doug Blom, Christopher T. Williams and John R. Regalbuto*



3035

Ternary PdNiO nanocrystals-ornamented porous CeO₂/onion-like carbon for electrooxidation of carbon monoxide: unveiling the effect of supports and electrolytes

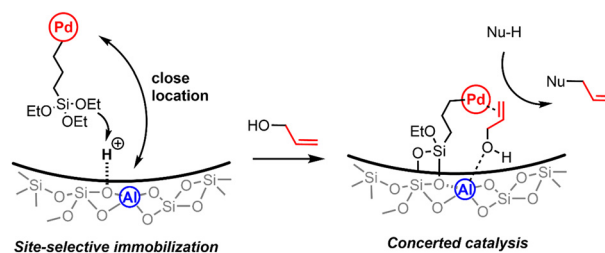
Adewale K. Ipadeola, Aderemi B. Haruna, Aboubakr M. Abdullah,* Rashid S. Al-Hajri, Roman Viter, Kenneth I. Ozoemena* and Kamel Eid*



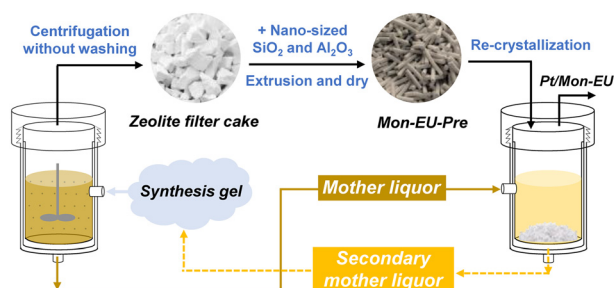
3047

A heterogeneous Pd complex catalyst for allylation with allylic alcohols enhanced by an aluminum-doped mesoporous silica support

Siming Ding, Yuichi Manaka, Masayuki Nambo, Wang-Jae Chun, Ikuyoshi Tomita and Ken Motokura*



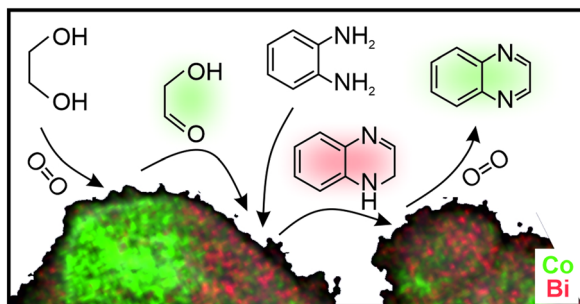
3060



Full-crystalline monolithic EU-1 zeolite: sustainable synthesis and its applications in the hydroisomerization of ethylbenzene with *meta*-xylene

Guanghua Liang, Jianyi Chen,* Tao Dou, Zhijie Wu, Xiaofeng Li and Yuanshuai Liu*

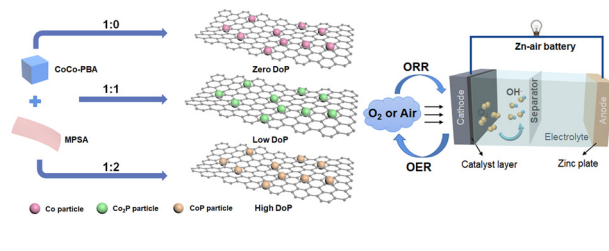
3069



Sustainable synthesis of azobenzenes, quinolines and quinoxalines *via* oxidative dehydrogenative couplings catalysed by reusable transition metal oxide–Bi(III) cooperative catalysts

Marianna Kocsis, Kornélia Baán, Sándor B. Ötvös, Ákos Kukovecz, Zoltán Kónya, Pál Sipos, István Pálinkó and Gábor Varga*

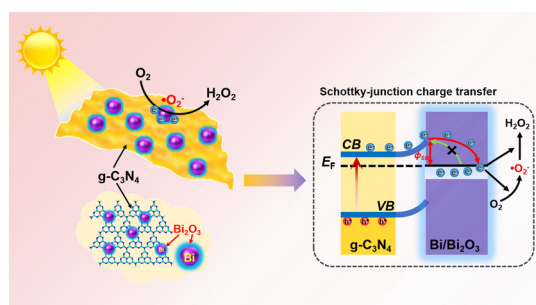
3084



Tunable phosphorization degree of $\text{Co}_x\text{P}_y@N,P$ -doped carbon as a highly-active bifunctional electrocatalyst for rechargeable zinc–air batteries

Yang Liu, Chen Li, Min Yuan, Xinghao Zhang, Haikuo Lan, Yuting Chen, Mingde Tian, Kang Liu* and Lei Wang*

3094



Schottky junction with Bi/Bi₂O₃ core–shell nanoparticle modified g-C₃N₄ for boosting photocatalytic H₂O₂ evolution from pure water

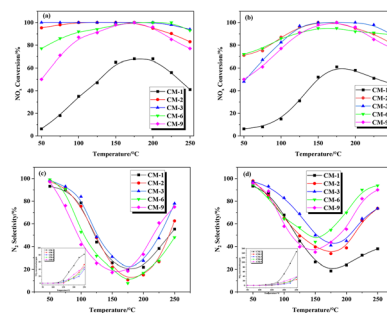
Xinyue Yan, Guiyang Yu,* Chuanwang Xing, Yujia Hu, Heyuan Liu and Xiyou Li*



3106

Mechanism of NO reduction by NH₃ over CuMnO_x catalysts and the influence mechanism of CO

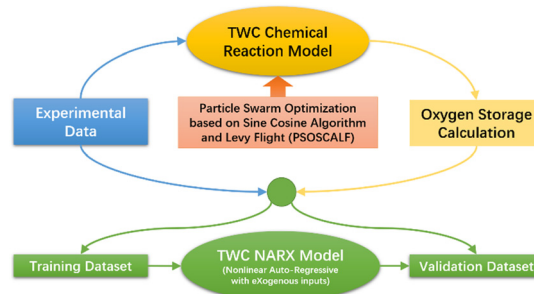
Chengbo Xuan, Shiwang Han, Luyuan Wang,*
Xingyu Zhang,* Rongfeng Sun, Xingxing Cheng,
Zhiqiang Wang, Chunyuan Ma, Tiantian Zhao
and Xukai Hou



3125

Oxygen storage modeling of a three-way catalyst based on a NARX network

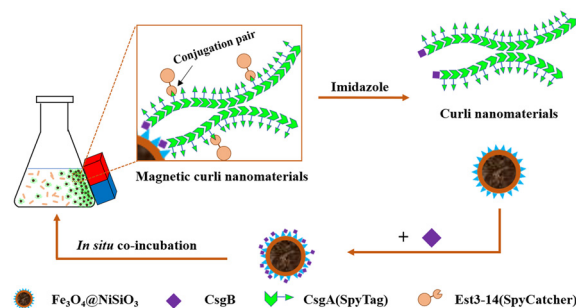
Zhuoxiao Yao, Tao Chen,* Weipeng Lin, Yifang Feng,
Ran Xia, Le Li and Tao Song



3139

In situ preparation of programmable curli nanomaterials as fine-tuned sustainable supports enabling selective and oriented incorporation of enzymes

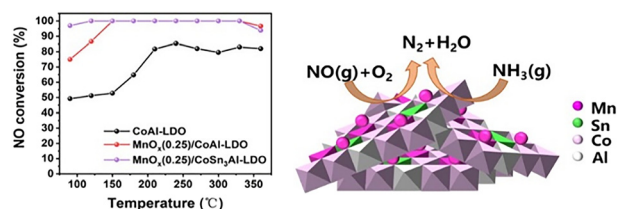
Hao Dong, Wenxue Zhang, Chao Chen* and Ping Wang*



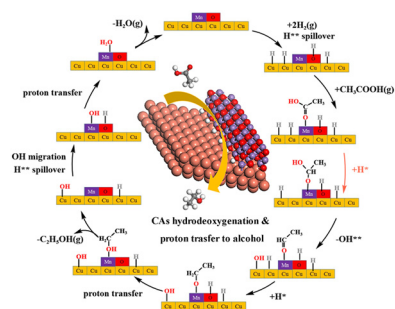
3147

Mn mixed oxide catalysts supported on Sn-doped CoAl-LDO for low-temperature NH₃-SCR

Hange Wang, Wen Chen, Wei Jin and Yueli Liu*



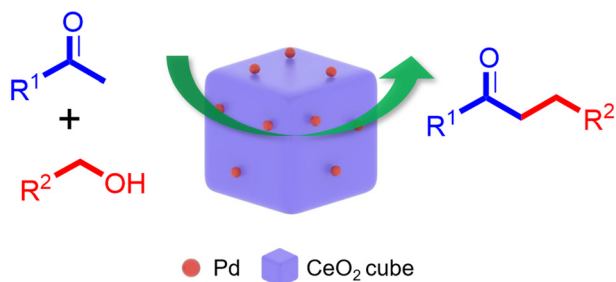
3158



Insights into the mechanism of carboxylic acid hydrogenation into alcohols at the MnO/Cu (111) interface: a combined DFT and kinetic study

Jingbo Du, Yifei Chen, Lingtao Wang and Minhua Zhang*

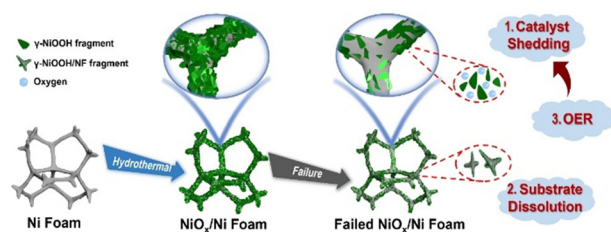
3174



Palladium single-atom catalyst supported on ceria for α -alkylation of ketones with primary alcohols

Dongyuan Yang, Hongli Wang,* Ce Liu and Chun-Ran Chang*

3182



Insights into the deactivation mechanism of a self-supported nickel electrode for 5-hydroxymethyl furfural electrooxidation: focus on the stability of the electrode as a whole

Fangbing Liu, Nan Lin,* Deyuan Xin, Xinxin Li, Linchuan Cong, Fuyun Han and Haibo Lin

