

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 14(14) 3809-4076 (2024)



Cover
See Robert Raja *et al.*, pp. 3853–3863.
Image reproduced by permission of Robert Raja and Maciej G. Walerowski from *Catal. Sci. Technol.*, 2024, 14, 3853.

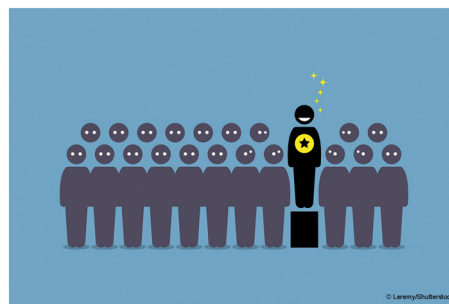


Inside cover
See Michelle Pains Duarte and Rafik Naccache, pp. 3864–3877.
Image reproduced by permission of Rafik Naccache from *Catal. Sci. Technol.*, 2024, 14, 3864.

EDITORIAL

3819

Outstanding Reviewers for *Catalysis Science & Technology* in 2023

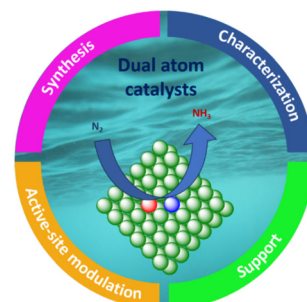


REVIEWS

3820

Electrocatalytic nitrogen reduction reaction: recent advances in dual-atom catalysts for sustainable ammonia production

Ashida P. Hamsa and Sreekuttan M. Unni*



Environmental Science journals

One impactful portfolio for
every exceptional mind

Harnessing the power of interdisciplinary
science to preserve our environment

rsc.li/envsci

Fundamental questions
Elemental answers

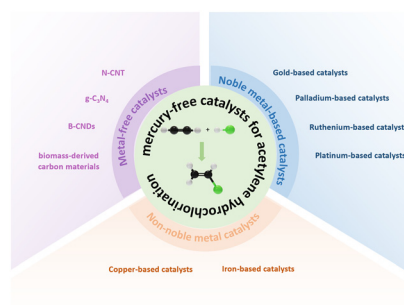


REVIEWS

3838

Progress in mercury-free catalysts for acetylene hydrochlorination

Xingyue Qiao, Zhi-Hao Zhao* and Jian Zhang*

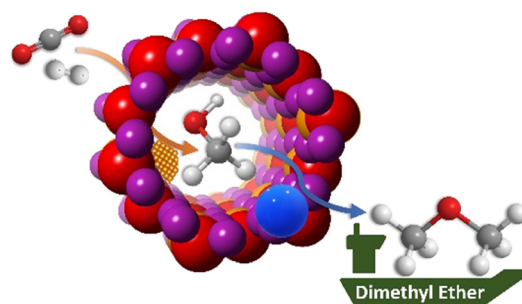


PAPERS

3853

Designing bifunctional catalysts for the one-pot conversion of CO₂ to sustainable marine transportation fuels

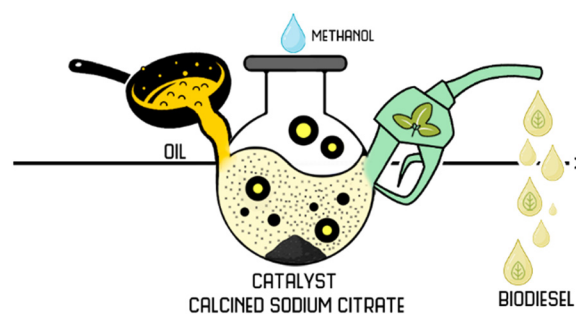
Maciej G. Walerowski, Matthew E. Potter, Elizabeth S. Burke, Stylianos Kyrimis, Lindsay-Marie Armstrong and Robert Raja*



3864

Exploiting the potential of calcined sodium citrate as a novel and efficient heterogeneous catalyst for biodiesel synthesis

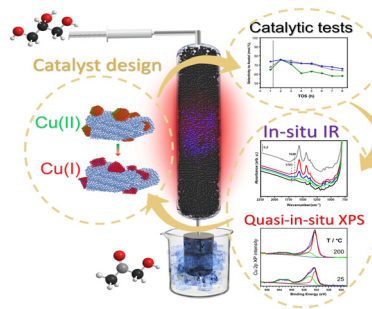
Michelle Pains Duarte and Rafik Naccache*



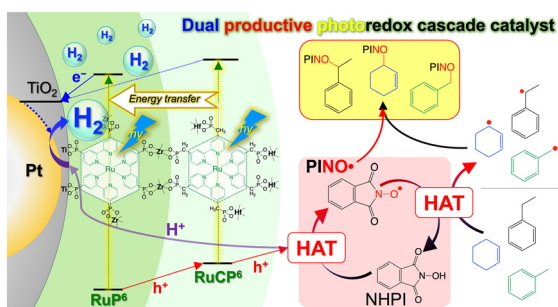
3878

Structure–reactivity relations in Cu/ZrO₂ catalysed glycerol dehydration to acetol in continuous flow

Jaime Mazarío, Deshetti Jampaiah, Patricia Concepción, Pablo Villasante-Iturria, Karen Wilson, Adam Lee and Marcelo E. Domine*



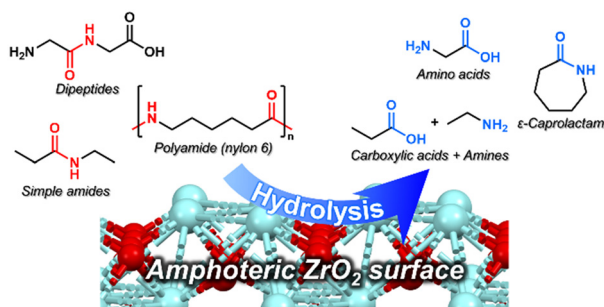
3893



Dual-productive photoredox cascade catalyst for solar hydrogen production and methylarene oxidation

Atsushi Kobayashi*

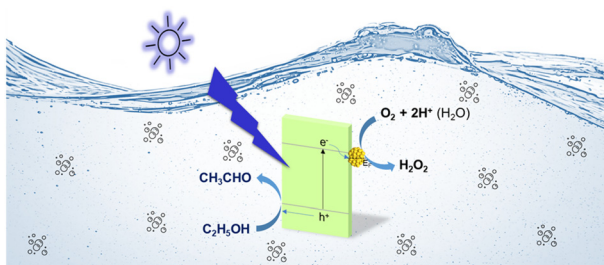
3898



Hydrolysis of amide bonds in dipeptides and nylon 6 over a ZrO₂ catalyst

Satoshi Tomita, Mizuho Yabushita,* Yoshinao Nakagawa and Keiichi Tomishige*

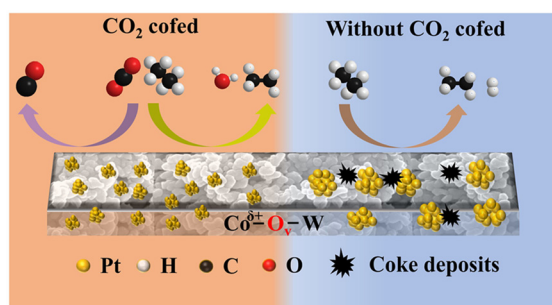
3909



Photocatalytic H₂O₂ production over photocatalysts prepared by phosphine-protected Au₁₀₁ nanoparticles on WO₃

Imran Hakim Abd Rahim, Xuan Yin Lee, Abdulrahman S. Alotabi, D. J. Osborn, Sunita Gautam Adhikari, Gunther G. Andersson, Gregory F. Metha and Rohul H. Adnan*

3924



A stable Pt modified cobalt tungstate catalyst for CO₂-assisted oxidative dehydrogenation of ethane

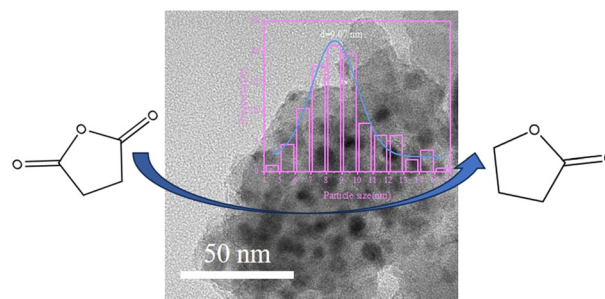
Yakun Zhang, Miao Chen, Wen Wang* and Yi Zhang*



3936

Influence of the preparation method on Ni/SiO₂ catalysts for selective hydrogenation of succinic anhydride to γ -butyrolactone

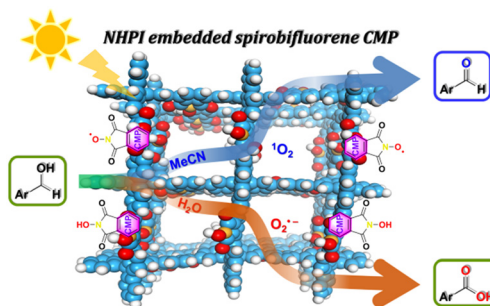
An Bao, Chenju Chen,* Huiqin Tao, Baigang Yang, Huirong Lai and Chunlei Zhang*



3945

Spirobifluorene-based conjugated microporous polymer embedded with *N*-hydroxyphthalimide as a synergistic photocatalyst for selective solvent-dependent aerobic oxidations

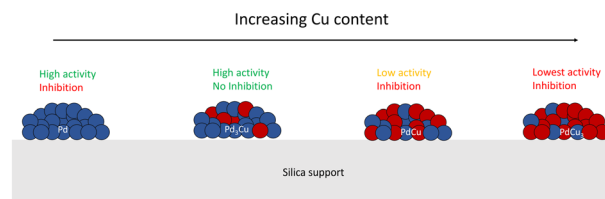
Tao Fan, Lei Fang, Ying Yin, Guocai Wu, Hui Xu and Liangchun Li*



3956

Site requirements for inhibition-free CO oxidation over silica-supported bimetallic PdCu alloys

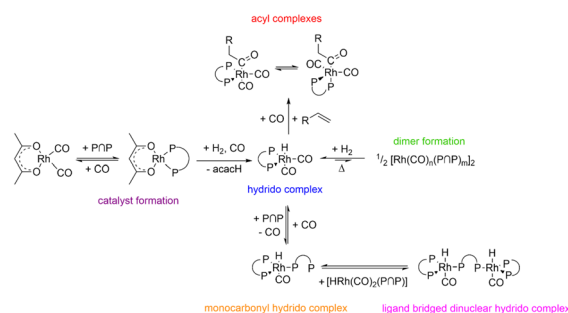
Stephen Kristy, Scott Svadlenak, Adam S. Hoffmann, Simon R. Bare and Konstantinos A. Goulas*



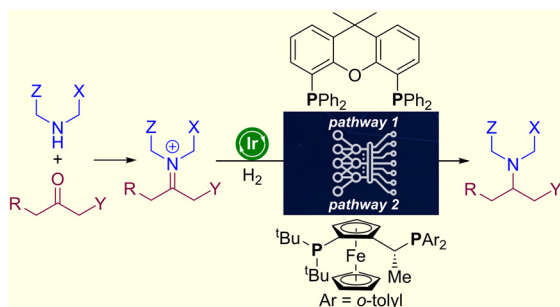
3966

In situ spectroscopic investigations on BiPhePhos modified rhodium complexes in alkene hydroformylation

Benedict N. Leidecker, Dilver Peña Fuentes, Matthias König, Jiali Liu, Wolfgang Baumann, Mathias Sawall, Klaus Neymeyr, Haijun Jiao, Robert Franke, Armin Börner and Christoph Kubis*



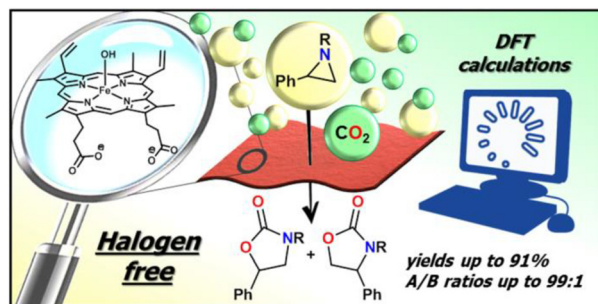
3984



Penta- versus hexa-coordinated iridium catalysts control the reactivity of the direct reductive amination between aliphatic amines and aliphatic ketones: a DFT-guided mechanism

Hao Lin, Longfei Li,* Lanbo Liu, Zhihui Li, Thi-Mo Nguyen, Matthieu Jouffroy and Rafael Gramage-Doria*

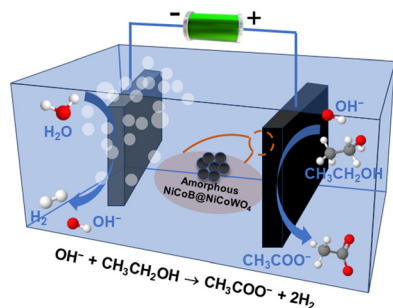
3996



Hematin supported on Colour Catcher®: a biodegradable heterogeneous catalyst for halogen-free CO₂ cycloadditions

Caterina Damiano, Alessia Fata, Matteo Cavalleri, Gabriele Manca* and Emma Gallo*

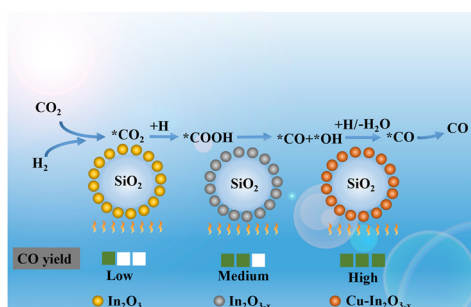
4007



Amorphous cobalt–nickel borides boost electrocatalytic ethanol oxidation coupled with energy-saving hydrogen production

Anqi Hong, Xiangbowen Du, Kaicheng Qian, Zheng Fang, Yu Duan, Jing Sui, Tong Wei* and Renhong Li*

4019



Metal-doped black In₂O₃ for atmospheric-pressure photothermal CO₂ reduction with high efficiency and selectivity

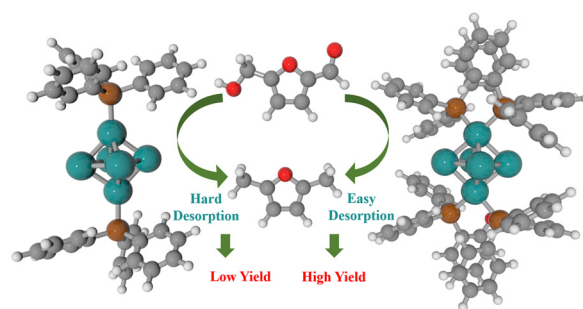
Yang Yang,* Liqiang Zhang, Jiaben Wang, Hao Song, Xiao Zhang and Xiang Gao*



4029

Selective hydrogenation of 5-hydroxymethylfurfural over bidentate phosphine protected Pd_n nanoclusters

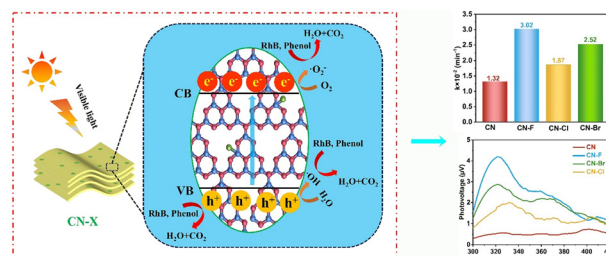
Jie Tang, Chao Liu,* Xiaorui Liu, Yaning Han, Tingting Ge, Cuiping Yu, Daxin Liang, Jing Xu* and Jiahui Huang*



4036

Halogen anions (F⁻, Cl⁻, Br⁻) modulated the localized microstructure of g-C₃N₄ to facilitate charge separation and transport and enhance photocatalytic activities

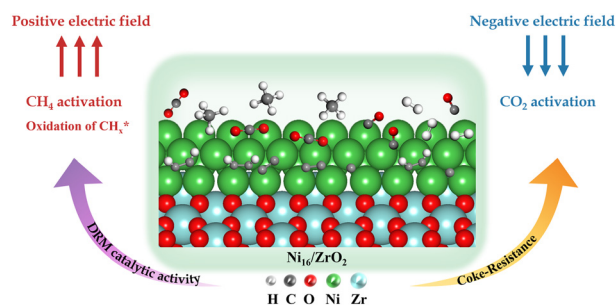
Xiaogang Liu,* Mengyu Chen and Xin Zhang



4045

Mechanistic study of a coke-resistance Ni/ZrO₂ catalyst for dry reforming of methane under external electric fields: a combined first-principles and microkinetic modeling study

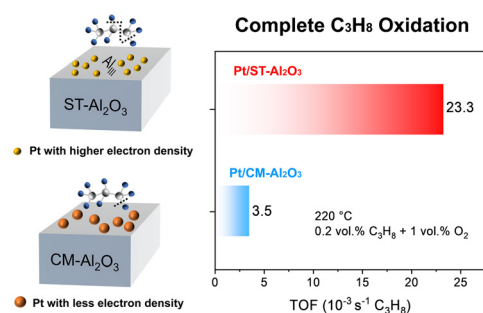
Hui Jiao and Gui-Chang Wang*

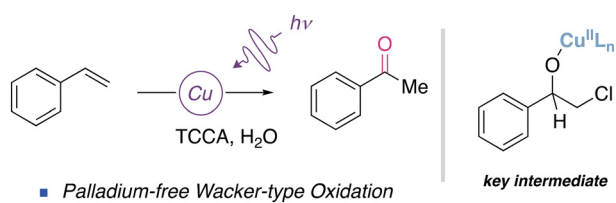


4058

Constructing tri-coordinated Al (Al_{III}) sites to boost complete propane oxidation of the Pt/Al₂O₃ catalyst

Yang You, Aijie Xu, Yao Lv, Lide Yang, Xuan Tang,* Jie Tang, Yanglong Guo, Yao Cui, Wangcheng Zhan, Li Wang, Yun Guo* and Sheng Dai*





Wacker-type oxidation of styrenes with Markovnikov selectivity using copper as a site-selective sequential photooxidant–photoreductant

Youssef Abderrazak, Anurag Chinchole and Oliver Reiser*

