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Cover

See Mitsuharu Chisaka et al., pp. 5669–5677.
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Inside cover

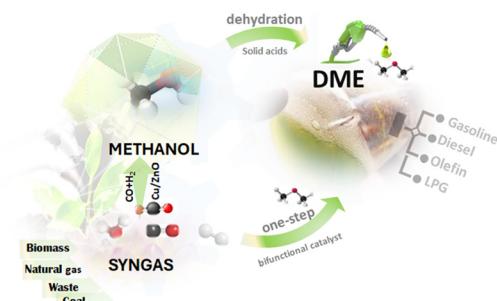
See David Eisenberg et al., pp. 5678–5689.
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The authors would like to acknowledge Efrat (eshkat) Bronstein for the cover design.

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From CO₂ to DME: catalytic advances, challenges, and alternatives to conventional gas-phase routes

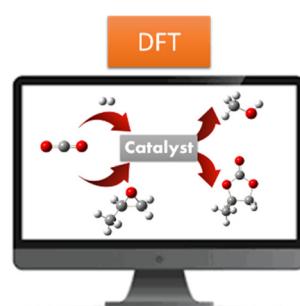
Elka Kraleva,* Udo Armbruster, Maria Luisa Saladino, Francesco Giacalone,* Tomoo Mizugaki and Izabela S. Pieta*



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Advances in CO₂ capture and utilization: the role of DFT in understanding CO₂ activation and its conversion mechanisms for methanol and cyclic carbonates production

Valeria Butera* and Giampaolo Barone





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REVIEWS

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Advanced strategies for plastic upcycling: unlocking sustainable waste valorization pathways for a green and sustainable environment

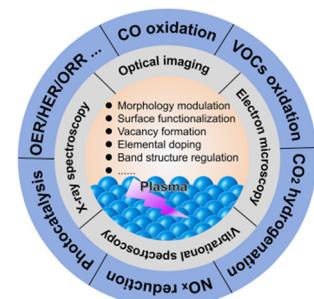
Talaat Hassan Habeeb* and Umar Farooq*



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Plasma-assisted surface modification of heterogeneous catalysts: principles, characterization, and applications

Si Jiang, Yong Yin, Yang Zhang, Zimeng Li, Shuai Guo, Yaogeng Lu, Zhaoxi Zhang, Tianle Zhu, Yifei Sun and Xiang Li*

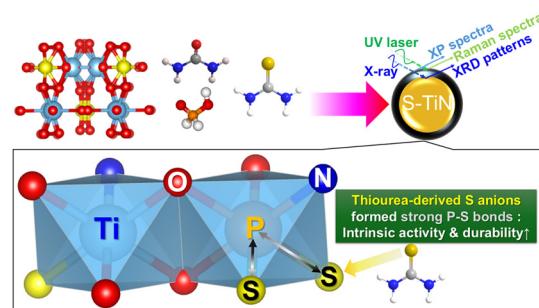


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Strengthening P–S bonding in TiO_2 for enhanced fuel cell startup/shutdown durability with an N, P, S– TiO_2 /S–TiN catalyst

Mitsuharu Chisaka,* Jubair A. Shamim and Hirofumi Daiguchi

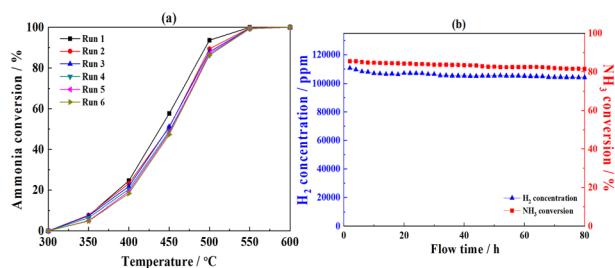


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Biomass or bio-mess: tackling reproducibility in biomass-derived carbon electrocatalysts

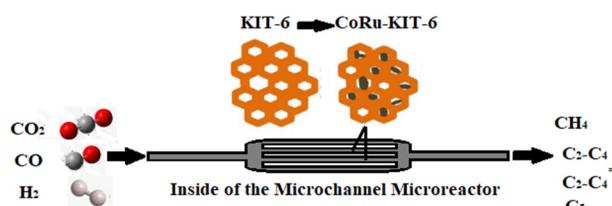
Shir Tabac-Agam, Shelly Burda, Syeda M. Zahan, Dario R. Dekel and David Eisenberg*





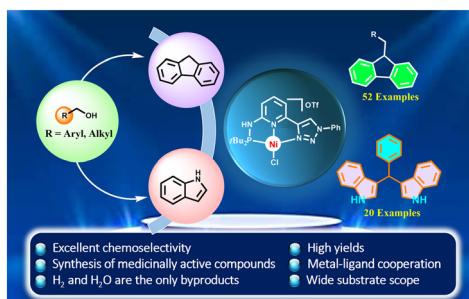
Development of non-noble Ni metal-based $(Yb_{1-x}Co_x)_2O_{3-\delta}$ catalysts for green H₂ production via ammonia decomposition

Yeon-Bin Choi, Tae Wook Kang, Seo Ra Woo, Do yun Kim, Sun Woog Kim and Byungseo Bae*



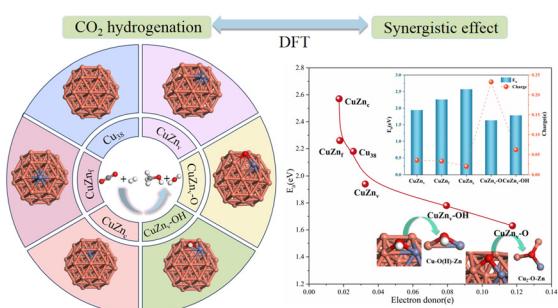
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Efficient C(sp³)-H alkylation of fluorene and bisindolylmethane synthesis catalysed by a PNN-Ni complex using alcohols

Manali A. Mohite and Maravanji S. Balakrishna*



Zn and O/OH synergy in H₂ activation and CO₂ hydrogenation over Cu nanoparticles catalysts

Caixia Song, Xiaojiao Zhang, Xuan Zhao, Yiwei Jia, Dong Duan and Hui Li*



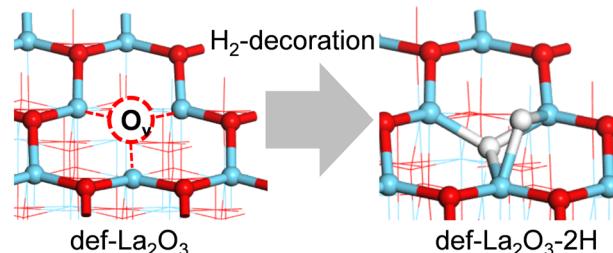
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Bare La_2O_3 in non-oxidative propane dehydrogenation: *in situ* decoration of active sites for enhanced catalyst performance

Tatiana Otroshchenko,* Shanlei Han, Thanh Huyen Vuong, Vita A. Kondratenko, Jabor Rabeah, Stephan Bartling and Evgenii V. Kondratenko*

Active sites for propane dehydrogenation



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Hydrogen production through photocatalytic acceptorless alcohol dehydrogenation with a homogeneous nickel complex

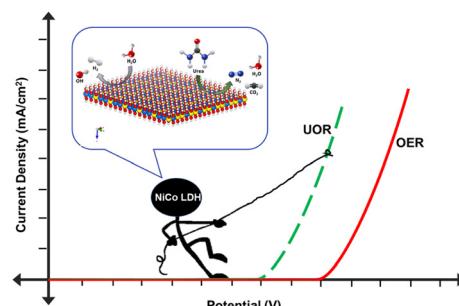
Eman Mohamad and Darrin Richeson*



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Urea-assisted hydrogen production: insights into $\text{Ni}(\text{Co, Mn})$ LDH-based multifunctional electrocatalysts

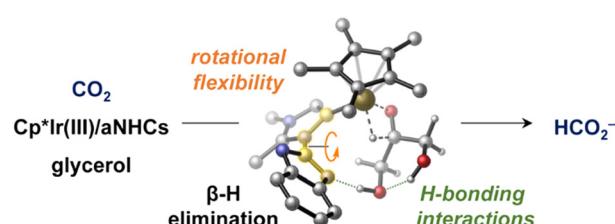
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Computational insights into Ir-catalyzed transfer hydrogenation of CO_2 to formate: critical roles of abnormal NHC ligands and hydrogen donors

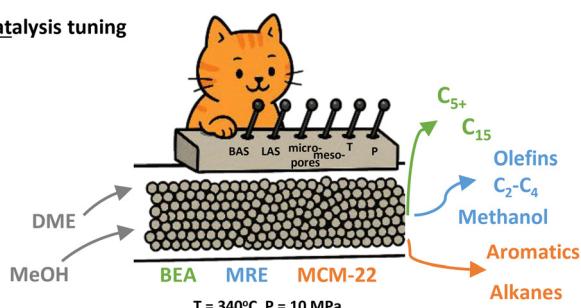
Han Gao, Xiaofang Zhai, Feng Ye, Wujie Wang,* Gang Lu* and Yuliang Li*



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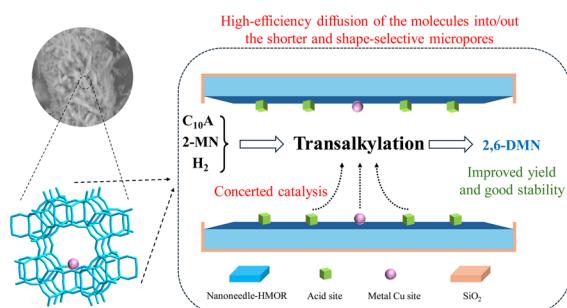
Catalysis tuning



Conversion of dimethyl ether and methanol to hydrocarbons over zeolites with BEA, MRE, and MWW structures

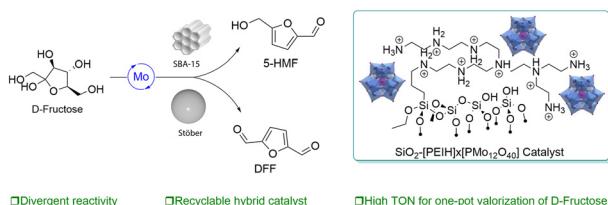
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High-efficiency transalkylation of C_{10} aromatics with 2-methylnaphthalene over shape-selective SiO_2 -Cu-HMOR with nanoneedle crystals

Jiahao Wang, Qihao Yang and Junhui Li*

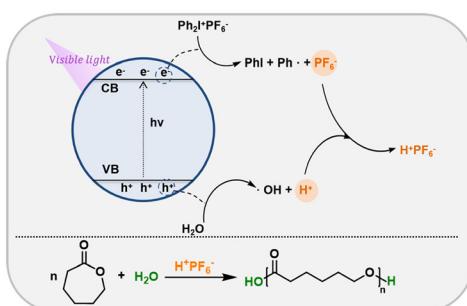
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Catalytic valorisation of D-fructose and alcohols using silica-PEI-polyoxometalate composites

Israel T. Pulido-Díaz, Itzel Guerrero-Ríos* and Dominique Agustin*

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Photocatalyzed ring-opening polymerization of ϵ -caprolactone

Yicheng Fan, Xiuyuan Ni* and Wenbin Fu



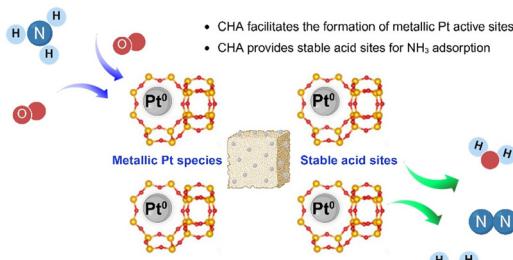
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Unveiling the support effect in Pt-based catalysts for the selective catalytic oxidation of NH₃ under realistic diesel engine conditions

Daekun Kim, Shaohua Xie,* Kailong Ye, Xing Zhang, Matthew T. Caudle, Lu Ma, Steven N. Ehrlich and Fudong Liu*

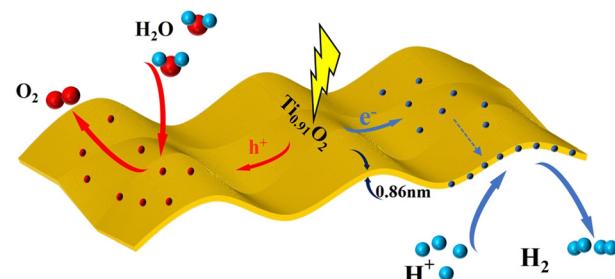
Efficient Pt/CHA Catalyst for the Selective Catalytic Oxidation of Ammonia



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Building monolayer Ti_{0.91}O₂ nanosheets to enhance hydrogen production for photocatalytic water splitting

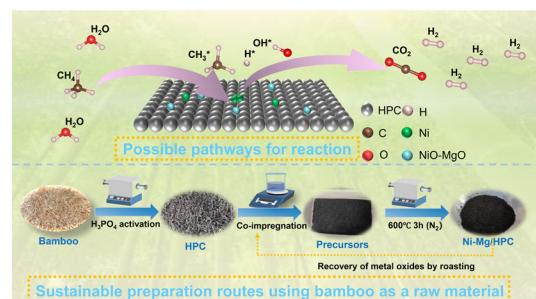
Canyi Qiu, Mukun Xu, Shitong Han,* Liuhan Guo, Hua Zhao, Jinni Shen, Wenxin Dai, Xuxu Wang, Zizhong Zhang* and Hailing Xi*



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Hierarchical porous carbon-supported bimetallic catalyst for enhanced low-temperature steam methane reforming

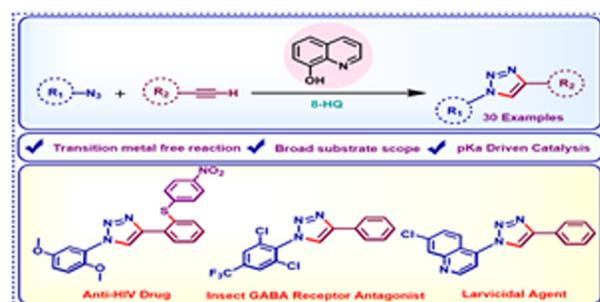
Yu-e Zhao, Jinxiao Li,* Ao Xu, Yulong Liu, Minghui Lian, Jing Zhang, Hexiang Zhong, Chunhua Yang, Rensheng Song and Liwei Pan*



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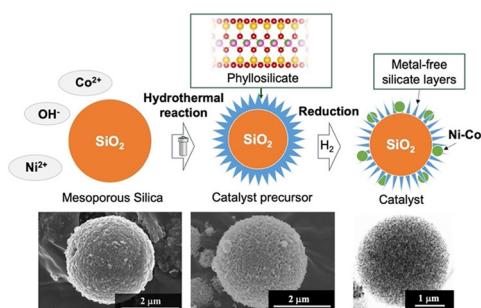
8-Hydroxyquinoline catalysed regioselective synthesis of 1,4-disubstituted-1,2,3-triazoles: realizing Cu-free click chemistry

Surbhi Bansal, Gopika R. Sreerekha, Ayanangshu Biswas, Alisha Sharma, Devika Girish, Debasish Adhikari* and Sanjay Singh*



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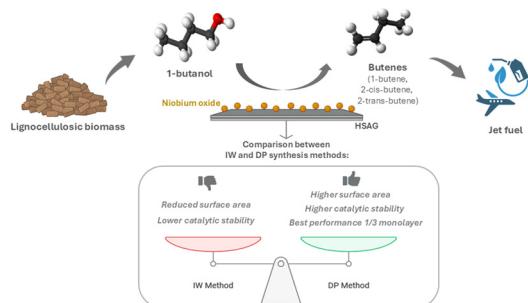
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Fabrication of a highly stable Ni–Co bimetallic catalyst for the steam reforming of methane *via in situ* crystallization of phyllosilicate on porous spherical silica

Ryunosuke Nakamura, Hikari Minamisawa and Tomohiko Okada*

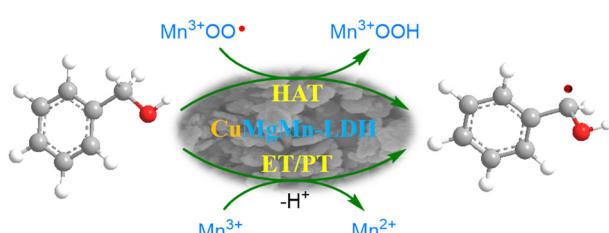
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Niobium oxide deposited on high surface area graphite as a stable catalyst in the 1-butanol dehydration reaction

J. M. Conesa,* A. Guerrero-Ruiz, I. Rodríguez-Ramos and M. V. Morales*

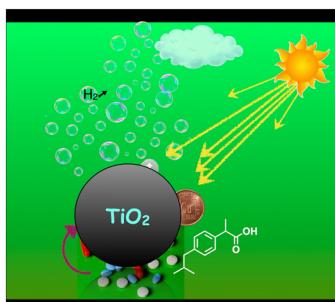
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Effects of doping metal on the catalytic performance of manganese-based layered double hydroxides in the aerobic oxidation of alcohols

Deqin Liang, Jiaqi Yan, Xiaojing Yin, Yu Wang, Jizhou Du, Junfeng Qian, Mingyang He* and Weiyou Zhou*

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Scavenging of photogenerated holes in TiO₂-based catalysts uniquely controls pollutant degradation and hydrogen formation under UVA or visible irradiation

Nelson Rutajoga, Valerie Velez and Juan C. Scaiano*

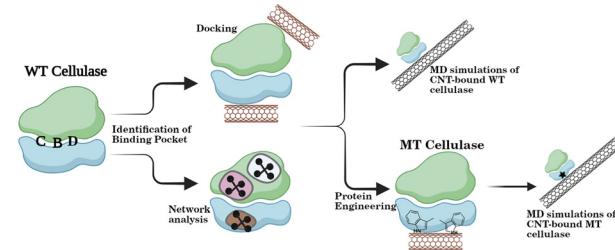


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Protein engineering of cellulase enzymes for enhanced binding to single-walled carbon nanotubes: a computational approach to enzyme recycling in biofuel applications

Shubhashree Barik, Supriyo Mukherjee and Moumita Saharay*



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Enhanced ethanol reforming with catalytic active ruthenium species derived from solid solution in lanthanum chromite

Tamara S. Moraes, Victor B. Tinti, Daniel Z. de Florio, Andre S. Ferlauto, Fernando Piazzolla, Yohei Miura, David P. Dean, Hien N. Pham, Jeffrey T. Miller, Abhaya K. Datye and Fabio C. Fonseca*

