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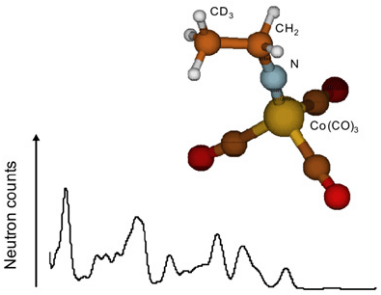
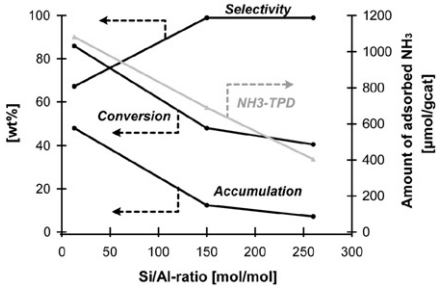
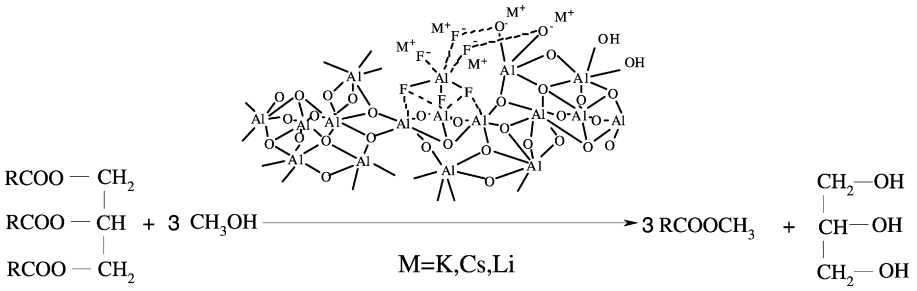
Contents



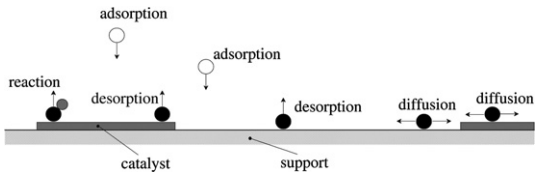
By inelastic neutron scattering (INS), a nitrene was identified as likely reaction intermediate formed on the surface of Raney-Co after co-adsorption of acetonitrile and hydrogen.



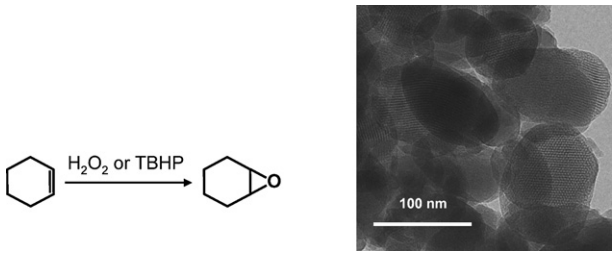
This paper investigates the heterogeneously catalysed Beckmann-rearrangement of cyclododecanone oxime to ω-laurolactam in the gas phase. Using an acid treated [Al,B]-BEA zeolite at a temperature of approx. 320 °C and reduced pressures, complete conversion and a selectivity of 98% were achieved.



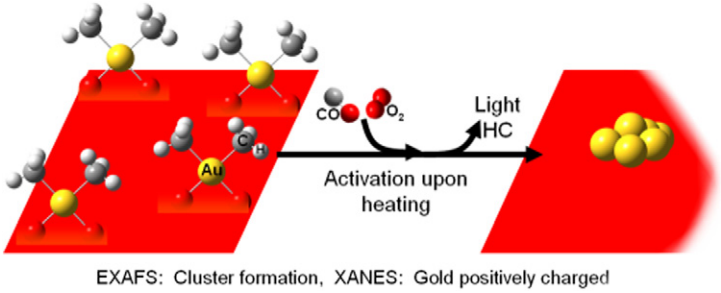
Transesterification of vegetable oils on KF, LiF and CsF/Al_2O_3 catalysts under thermal, microwave and ultrasounds activation.



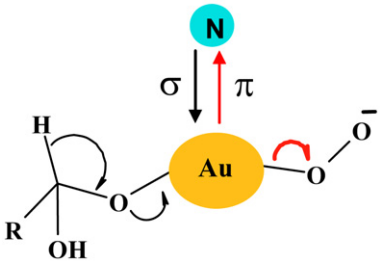
In a simple model of reaction, diffusion, adsorption and desorption, the conditions for a net flux of reactants from the support to the catalyst are determined, with significant increase of the turnover frequency for small particles.



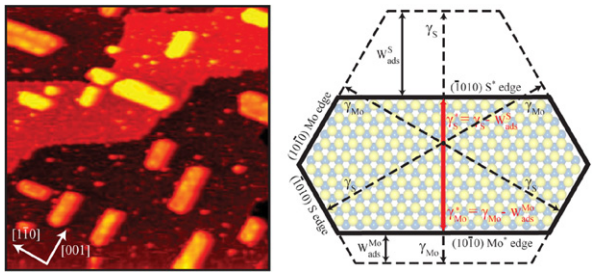
Methyl-functionalized Ti-MCM-41 nanoparticles display improved catalytic performance in the epoxidation of cyclohexene.



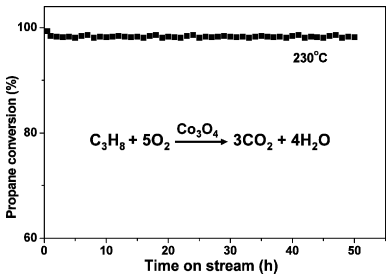
EXAFS: Cluster formation. XANES: Gold positively charged.



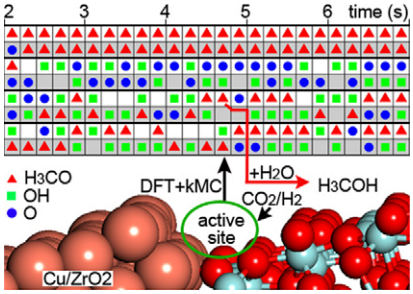
The progressive poisoning effect of different molecules on carbon supported gold catalysts has been evaluated during the aerobic oxidation of glucose. The kinetics of catalyst deactivation has been interpreted by considering the important contribute of electronic factors which overlap the space shielding of active sites, due to long range poison–catalyst interaction influencing the entire metal particle.



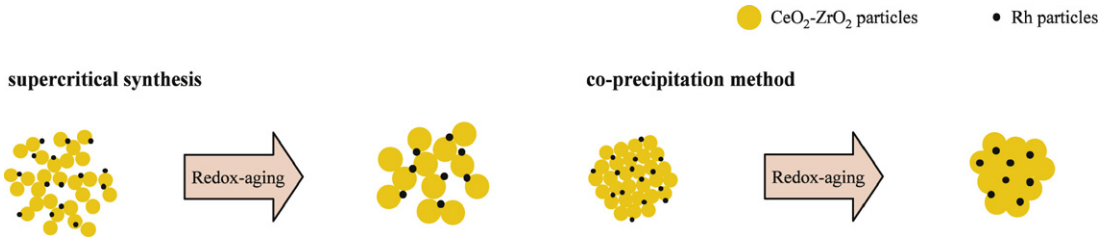
Using high-resolution scanning tunneling microscopy, the role of distinct particle–support interactions present only at the particle edges is investigated for titania-supported MoS_2 nanoparticles, which are used as hydrotreating catalyst.



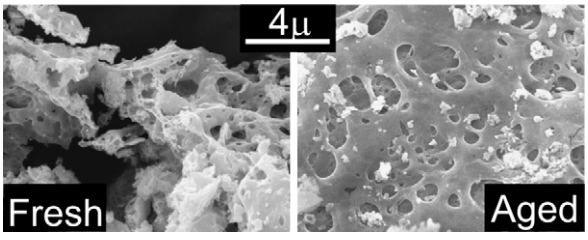
Nanocrystalline Co_3O_4 prepared by soft reactive grinding exhibited excellent activity and high stability for propane combustion. Complete conversion has been achieved at reaction temperatures as low as 230 °C.



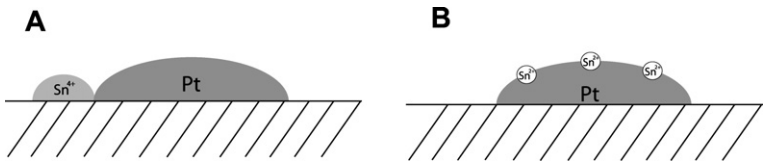
DFT based kinetic Monte Carlo simulation of CO_2 fixation to methanol over Cu/ZrO_2 reveals that hydrolysis is a key step in producing methanol and that the interfacial Cu is partially oxidized during reaction.



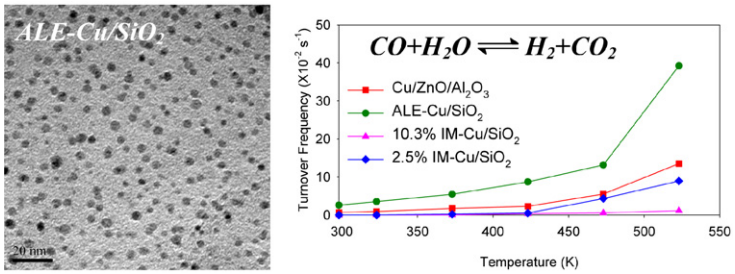
Ceria–zirconia mixed oxide supports prepared in supercritical water show superior thermal stability.



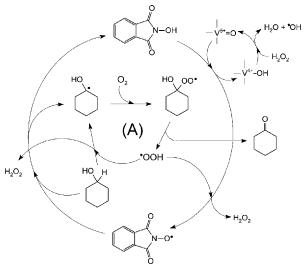
The deactivation 2% Pd/CeO_2–ZrO_2 catalyst upon severe sulfur-hydrothermal ageing is due to the progressive oxidation of highly dispersed Pd nanoparticles to PdO_x, as well as their coalescence.



Platinum–tin catalysts were prepared via (A) impregnation and (B) reductive deposition precipitation. Via (A), a Pt–Sn interaction was absent while via (B) close interaction was observed, thereby enhancing catalytic selectivity.



An ALE-Cu/SiO_2 catalyst (Cu/SiO_2 prepared by an atomic layer epitaxy method) has higher activity than an impregnated Cu catalysts (IM-Cu/SiO_2) in the water–gas shift reaction.

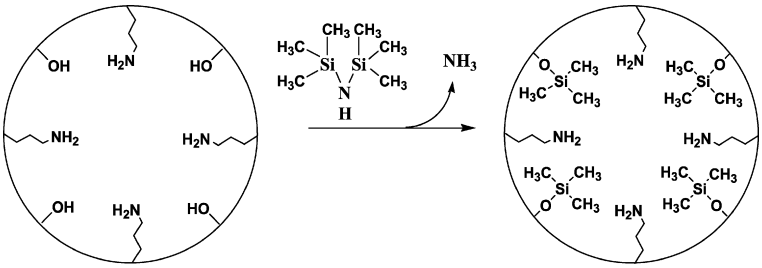


A mechanism for the aerobic oxidation of alcohols with dioxygen catalyzed by NHPI and vanadium complexes is proposed. Its essential step is generation of a phthalimide-*N*-oxyl (PINO•) radicals as result of reaction of NHPI with oxovanadium(V) compounds. The oxidation of alcohols concerns both radical and molecular pathways.

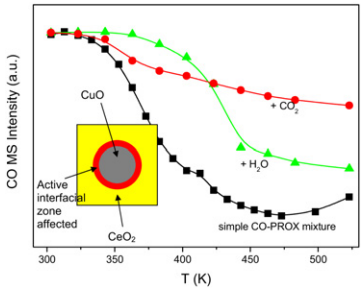
$$^{18}O_2 + {}^{16}O^-(Fe^{III})_\alpha \rightleftharpoons \left[{}^{18}O\text{---}{}^{18}O^-,\ {}^{16}O(Fe^{III})_\alpha \right] \rightleftharpoons {}^{18}O^-(Fe^{III})_\alpha + {}^{16}O^{18}O$$

Mechanism R_o: E = 0.8 kJ/mol (198-298 K)
Mechanism R_1: E = 15 kJ/mol (223-448 K)

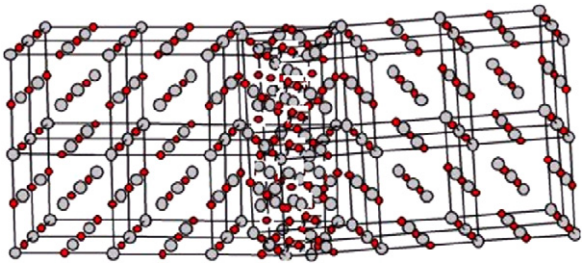
High reactivity of O^-/FeZSM-5 species (α-oxygen) in the oxidation of methane, benzene and other substrates at room temperature is well known. This work reveals high reactivity of α-oxygen in isotopic exchange with O_2 at 198–448 K.



Acid–base cooperativity in the Knoevenagel condensation reaction was found for amine-functionalized mesoporous silica catalysts operating through either an imine intermediate or ion-pair mechanism. The role of silanols as weak acids rather than through hydrogen bonding was demonstrated using different solvents.

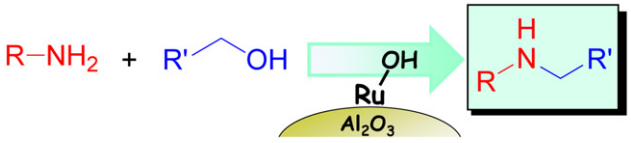


The deactivating effects of CO_2 and H_2O on CO-PROX performance of a CuO/CeO_2 catalyst are examined by *operando*-DRIFTS.



Atomic disorder formed at grain boundaries between jointed nanocrystals in MgO material as a result of precursor densification is a source of coordinative unsaturated ions associated with surface basic sites.

RESEARCH NOTE



The *N*-alkylation of various aromatic and heteroaromatic amines with alcohols could efficiently be promoted by an easily prepared supported ruthenium hydroxide catalyst $Ru(OH)_x/Al_2O_3$.