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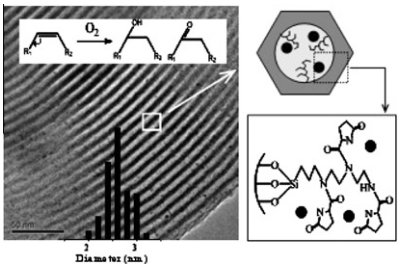
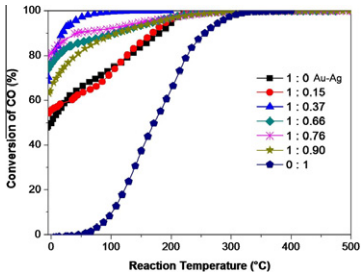
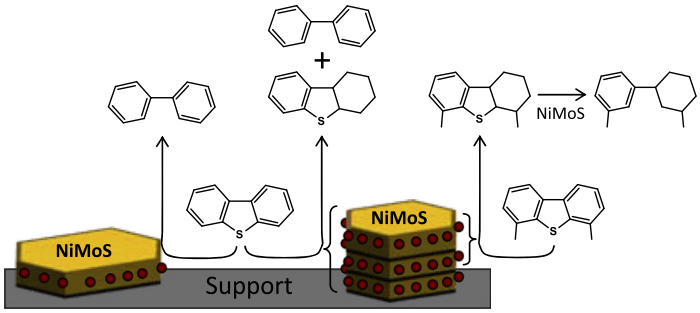


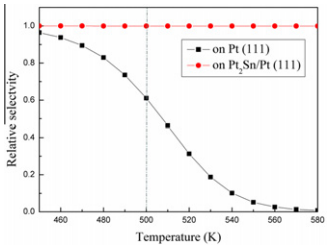
Au nanoparticles highly dispersed in the mesopores of pyrrolidone (Py)-modified SBA-15 (Au/SBA-15-Py) are efficient and stable heterogeneous catalysts for oxidations of cyclohexene and styrene by molecular oxygen at atmospheric pressure. The interaction between Au nanoparticles with Py in Au/SBA-15-Py is supported by XPS characterization, in strong agreement with density-functional theory calculations.



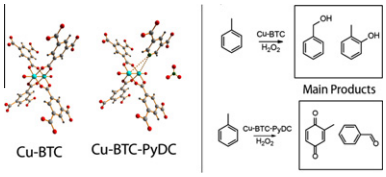
Au–Ag/TiO_2 catalysts exhibit significantly higher activity in CO oxidation at RT and a better temporal stability than monometallic gold catalysts; monometallic silver catalyst is inactive at RT. These results confirm that there is a synergetic effect between gold and silver.



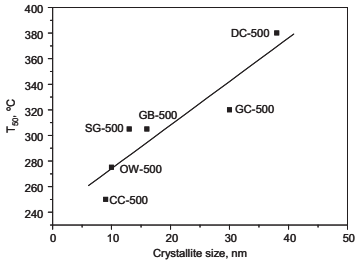
The hydrodesulfurization of dibenzothiophene (DBT) and 4,6-dimethyldibenzothiophene (4,6-DMDBT) on Mo- and NiMo-catalysts supported on pure oxides and ZrO_2–SBA-15 indicated that the active phase morphology was the dominant factor during the reaction. Monolayers of MoS_2 in Mo catalysts had low activity for the HDS of both DBT compounds. On NiMo catalysts, DBT reacted on monolayered and stacked NiMoS clusters, but 4,6-DMDBT was converted only on the latter.



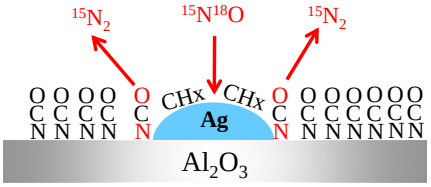
Temperature dependence of the relative selectivity of gas benzene produced by the 1,3-cyclohexadiene dehydrogenation on Pt (1 1 1) and Pt_2Sn/Pt (1 1 1) using the microkinetic modeling technique (P_{C6H8} = 7.4 × 10^{-5} Pa). The dashed line denotes a typical temperature at 500 K.c



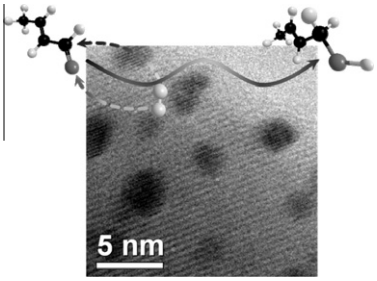
Cu-BTC was modified via partial substitution of benzene-1,3,5-tricarboxylate (BTC) linkers by pyridine-3,5-dicarboxylate (PyDC). The incorporation of PyDC into the regular lattice leads to a defined number of defect sites at the dimeric Cu units. The mixed-linker MOF showed distinct differences in the selectivity of the direct hydroxylation of benzene derivatives.



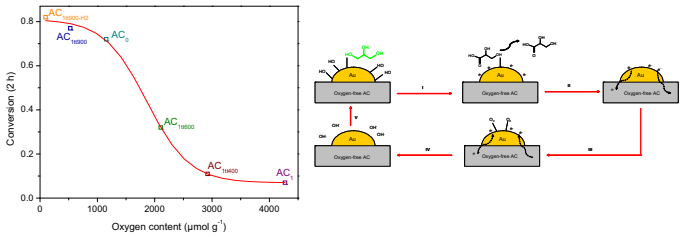
Several nanocrystalline Co3O4 were synthesised and investigated for their activity and selectivity during the gas-phase oxidation of 1,2-dichloroethane, a model chlorinated VOC. Activity was mainly influenced by a small crystallite size which resulted in promoted low-temperature reducibility.



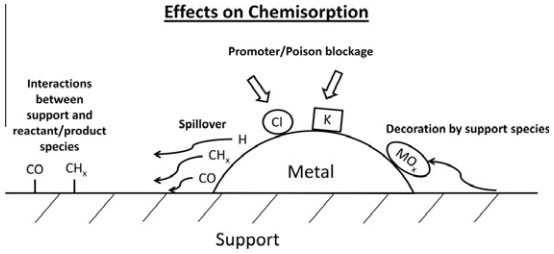
A short time-on-stream SSITKA method can discriminate between active and inactive surface species under conditions where conventional experimental methods fail.



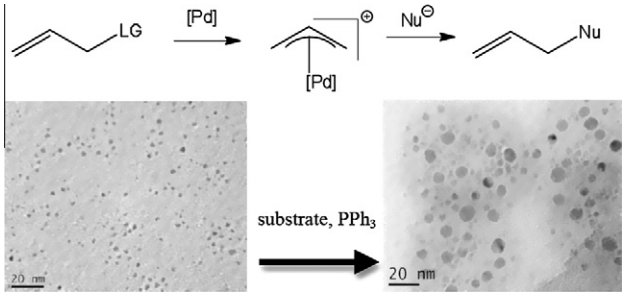
Gold supported on flowerlike magnetite shows excellent catalytic performance in liquid phase hydrogenation of crotonaldehyde to crotyl alcohol. A perimeter interface mechanism is established to account for its superior selectivity.



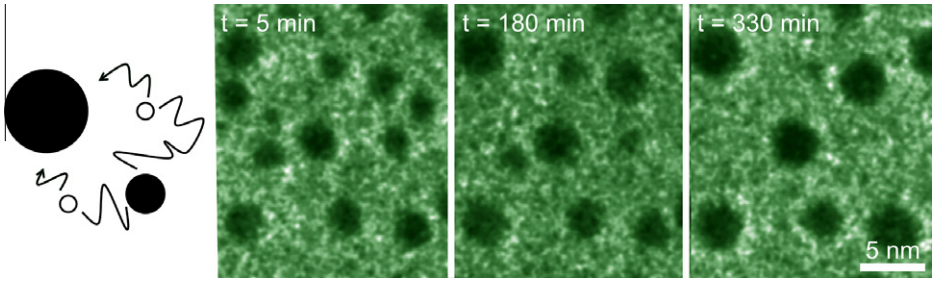
The oxygen content of activated carbon surface plays a key role on the activity of Au/AC catalysts for the oxidation of glycerol. Oxygen-free supports promote electron mobility, which enhances the catalytic performance.



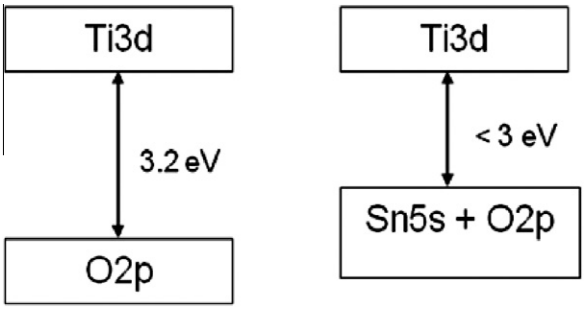
Static chemisorption measured at low temperature may overestimate metal dispersion as a result of spillover or underestimate it due to slow kinetics of adsorption, strong metal–support effects (SMSI), and/or the presence of promoters or poisons.



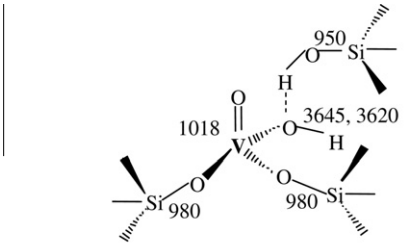
Pd nanoparticles catalyze Tsuji–Trost reaction for Pd fluorometric detection in the presence of PPh_3 *via* atomic dissolution.



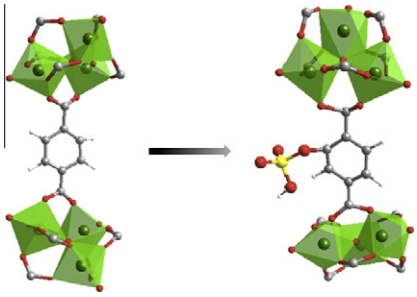
Sintering of Pt nanoparticles on SiO_2 support was studied by *in situ* transmission electron microscopy (TEM) under oxidizing conditions. Time-lapsed TEM images reveal that the sintering is governed by Ostwald ripening and is better described by kinetic models, including local correlations between the Pt particles.



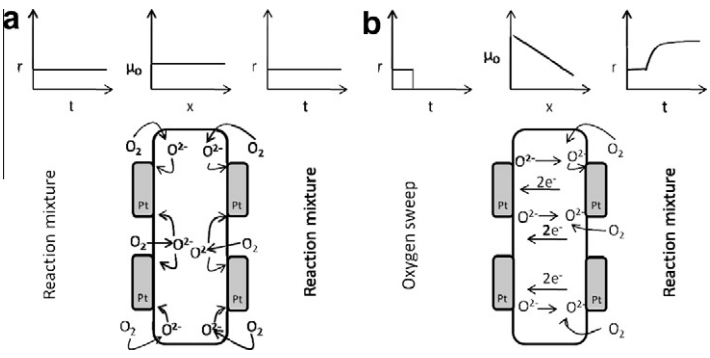
Visible-light-active valence band-hybridized Sn(II)–TiO_2 materials were synthesized possessing unique electronic properties and photocatalytic activities dependent on the hydrothermal synthesis conditions.



Pseudo-tetrahedral hydroxylated $(SiO)_2(HO)V{=}O$ species



A new post-functionalization method to incorporate sulfoxy acid moieties in different MOFs has been developed. The sulfated frameworks show outstanding catalytic activity in esterification and a high proton conductivity.



The effect of spillover processes on the activity of a catalyst system consisting of a mixed oxygen ion and electron conducting support ($La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O_{3-\delta}$) and a metal catalyst (Pt) were investigated. Driving forces for promoter migration were controlled through the manipulation of the oxygen chemical potential difference across the catalyst which was in the form of a pellet membrane. It was found that there is a complex relationship between the rate modification through spillover, the driving forces for spillover and the geometrical arrangement of the catalyst on the support (i.e. catalyst dispersion).