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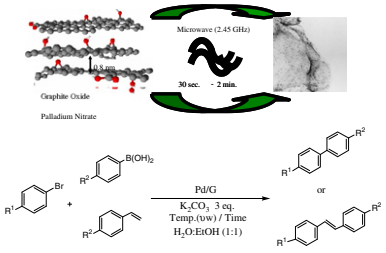
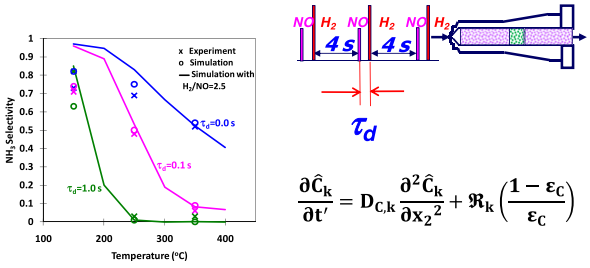
REGULAR ARTICLES

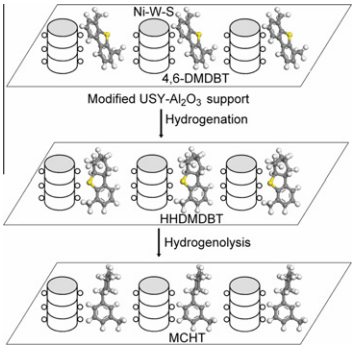


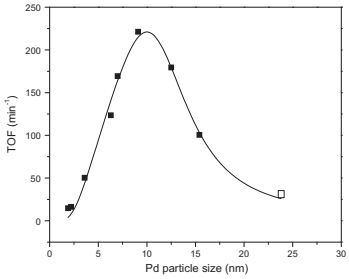
Highly active and recyclable Pd/graphene catalyst for cross-coupling reactions.



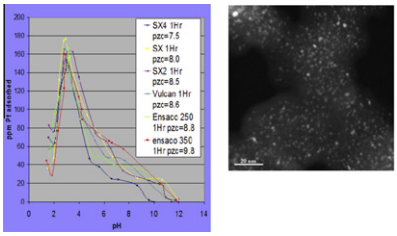
$$\frac{\partial \hat{C}_k}{\partial t'} = D_{C,k}\frac{\partial^2 \hat{C}_k}{\partial x_2{}^2} + \Re_k\left(\frac{1-\varepsilon_C}{\varepsilon_C}\right)$$

Temporal Analysis of Products (TAP) was used to probe the transient kinetics of the NO+H_2 on Pt reaction system. A microkinetic description of the catalytic chemistry was incorporated into a TAP model. The model predicted most of the main features of the data such as the variation in the NH_3 selectivity with the temperature for different delay times (τ_d) between the NO and H_2 pulses.

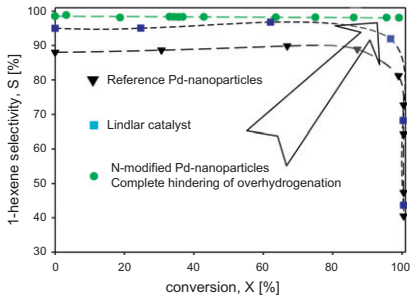




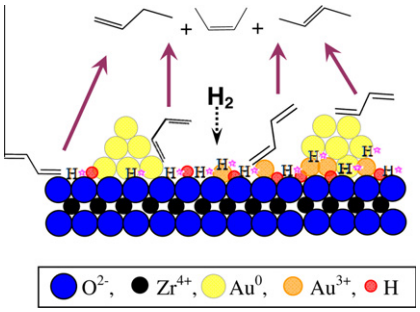
The complete recovery of the H_2 stored on dodecahydro-N-ethylcarbazole is reported at 443 K and 101 kPa using Pd/SiO_2 catalysts prepared by wet impregnation and calcination in He. The dehydrogenation TOF and selectivity to the completely dehydrogenated product, N-ethylcarbazole, were dependent upon Pd particle size. The structure sensitivity of the reaction and the observed product distribution are supported by results from DFT calculations.



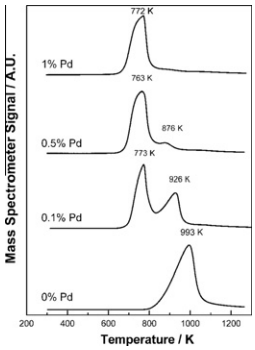
Carbons of like PZC exhibit a similar sharp optimum in adsorption pH, at which 1–2-nm particles can be synthesized at high Pt loading.

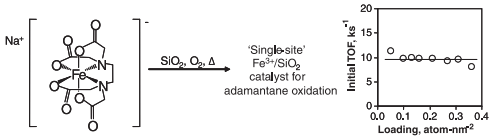


Supported N-modified Pd nanoparticles selectively catalyze 1-hexyne hydrogenation to 1-hexene, demonstrating a remarkable increase in the selectivity through a site-blocking effect and complete hindering of the over-hydrogenation to 1-hexane.

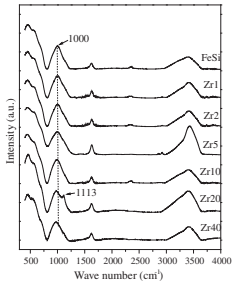


Active Au/ZrO_2 catalysts for 1,3-butadiene hydrogenation are composed of OH-carrying ZrO_2, metallic Au^0 nanoparticles and/or Au^{3+} ions. In the absence of isolated surface Au^{3+} ions, the activation of H_2 in the reaction occurs on ensembles involving metallic Au^0 atoms and OH-groups on ZrO_2 or containing Au^0 atoms and Au^{3+} ions.

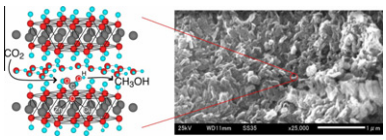




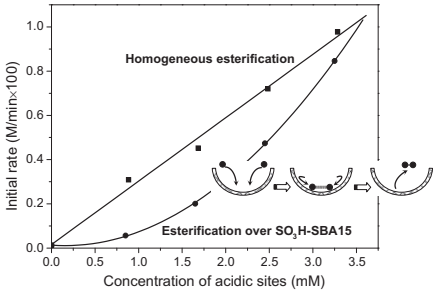
Impregnation of SiO_2 with aqueous NaFeEDTA, followed by oxidative heat treatment to 800 °C, produces highly dispersed Fe^{3+} species. For adamantane oxidation by H_2O_2 to alcohols and ketones, these materials show constant initial TOF with Fe loading – indicating 'single-site' catalysts.



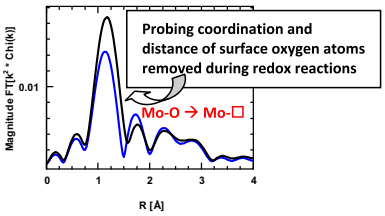
FTIR results show that Fe–SiO_2 interaction could be well explained in terms of the formation of Fe–O–Si bond, and this interaction can be weakened by ZrO_2.



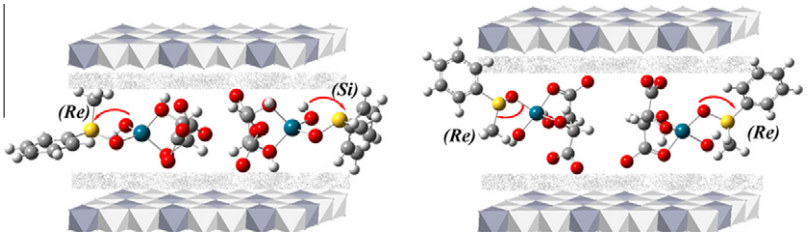
Under the UV–visible light in CO_2 + H_2, Zn—Al layered double hydroxide was most active to mainly form CO and Zn—Cu—Ga LDH was most selective to produce methanol (68 mol%).



Esterification was found to occur via a dual site mechanism over a propylsulfonic acid-functionalized mesoporous silica catalyst in contrast to the Eley-Rideal mechanism with the homogeneous propane sulfonic acid.

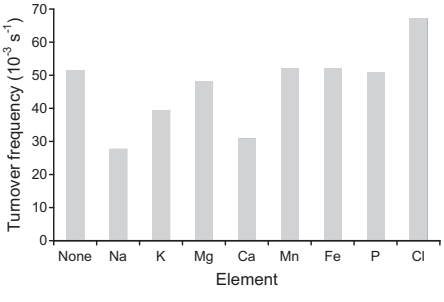


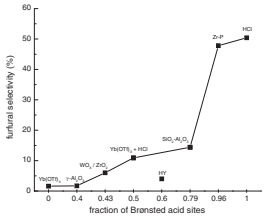
Mechanisms for ethanol oxidative dehydrogenation to acetaldehyde and condensation to diethyl ether over supported metal oxides of molybdenum, tungsten and vanadium have been proposed. Through the use of spectroscopy and kinetic studies, it is shown that the oxygen linking the active metal atom to the support is the active oxygen for acetaldehyde formation.



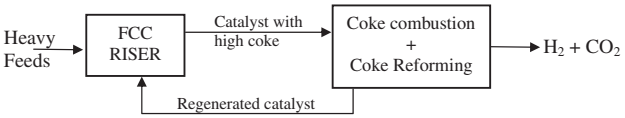
The tartrate orientation in the interlayer region of LDHs influences the coordination modes of tartrate as ligand to Ti (IV) centers and the asymmetric catalysis in the heterogeneous sulfoxidation of pro-chiral methyl phenyl sulfide.

The effect of typical biomass-derived synthesis gas impurities on the cobalt Fischer–Tropsch (FT) performance was investigated at industrially relevant conditions. Significant variations in turnover frequency and product selectivity were observed.

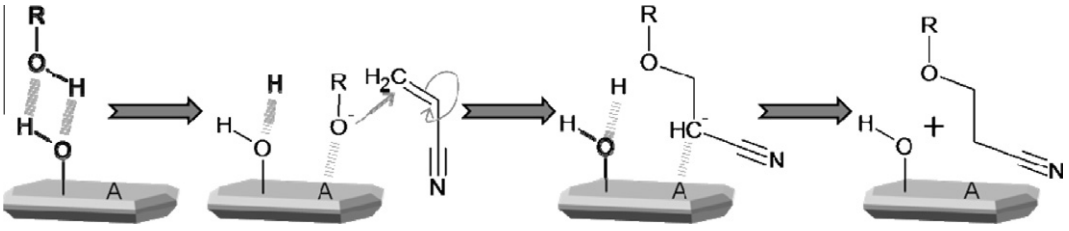




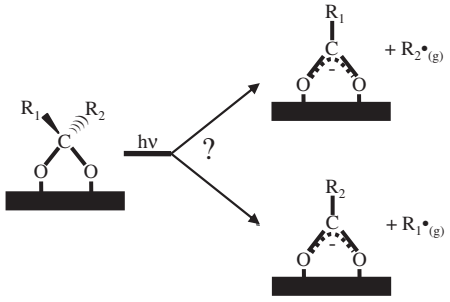
Furfural selectivity increases with an increase in the Brønsted to Lewis acid site ratio of the catalyst. Lewis acid sites decrease furfural selectivity by catalyzing a side reaction between xylose and furfural to form humins. A low furfural selectivity was observed with HY zeolite due to strong irreversible adsorption of the furfural in the micropores, causing an increase in the rate of humin formation.



FCC catalysts with high coke-on-catalyst can be regenerated without temperature constraints by combining coke combustion (exothermic) and coke reforming (endothermic), while producing hydrogen.



Proposed mechanism by which activated MgAl LDHs catalyze the cyanoethylation of alcohols.



Ejection of organic radicals from TiO_2 surfaces during photocatalysis under applied conditions is prevalent based on model studies. In the case of organic carbonyl photodecomposition on TiO_2, preferred pathways for ejection of gas-phase organic radicals are predicted using DFT calculations and demonstrated using photodesorption.