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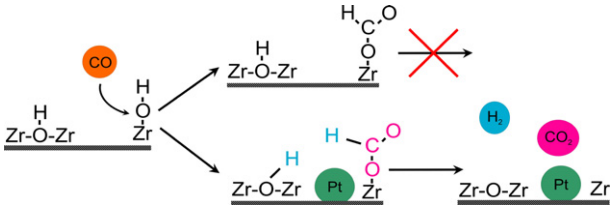
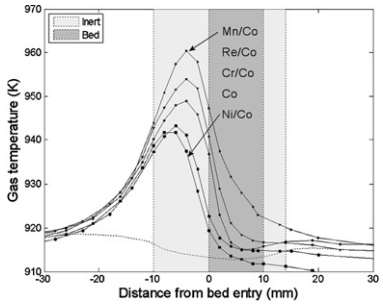
Contents

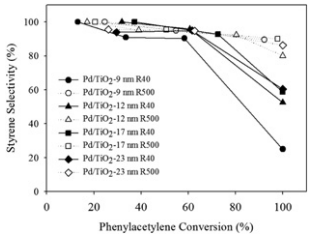
REGULAR ARTICLES



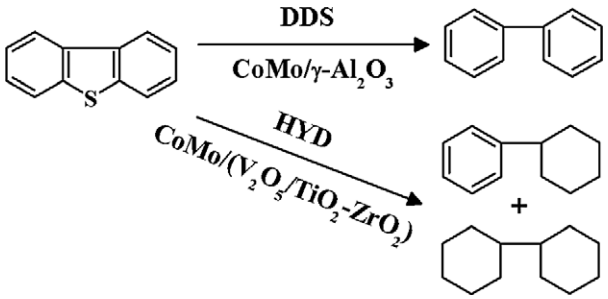
Mono-coordinated OH groups on zirconia convert to formate when exposed to CO. Formate can then decompose to CO_2 and H_2, provided both multi-coordinated OH groups and Pt are available.



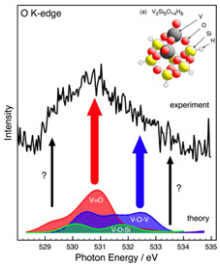
Temperature profiles from the partial oxidation of methane with air ($CH_4/O_2 = 2.0$) at 923 K (oven temperature) and GHSV = 15 Nl CH_4/(g h). Steady state was kept for 2 h before the oven temperature was decreased with 1 K/min. The catalysts are indicated in order of appearance based on the peak maximums.



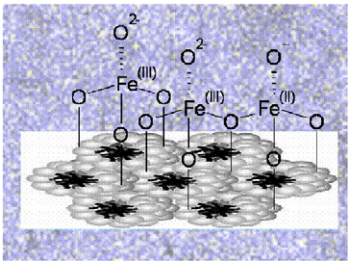
The presence of SMSI on Pd/TiO_2 catalysts when reduced at 500 °C has proven to produce great beneficial effect on both catalytic hydrogenation activities and selectivities to styrene in liquid-phase semihydrogenation of phenylacetylene under mild conditions.



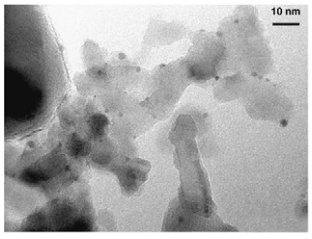
A novel catalyst support by impregnating vanadium on TiO_2–ZrO_2, by shifting direct desulfurization (DDS) pathway to hydrogenation (HYD) pathway for hydrodesulfurization (HDS), shows very high activity of the sterically hindered methylated dibenzothiophenes for the production of ultra low diesel.



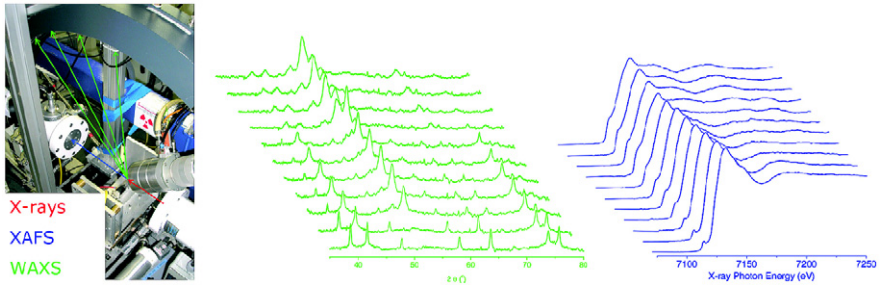
Theoretical/experimental O K-edge NEXAFS spectra for vanadia on SBA-15 show that different non-monomeric vanadia particles exist at the support surface; the presence of only monomeric species is excluded.



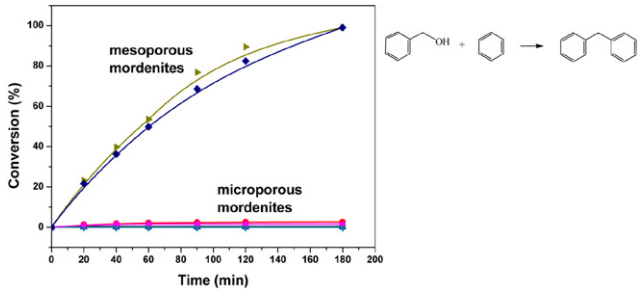
Fe oxide catalysts supported on a mesoporous, high surface area silica, with iron in a wide range of concentration ($4 < Fe_2O_3$ mass% < 17), are presented. A suite of techniques was employed to determine the structural, morphologic, surface, electronic, acidic, and red–ox properties of the samples. The samples maintained good Fe-dispersion and low metal aggregation, independently of Fe-concentration. The test reaction of isomerization of α-pinene oxide revealed the prominent presence of Lewis acid sites on all the samples.



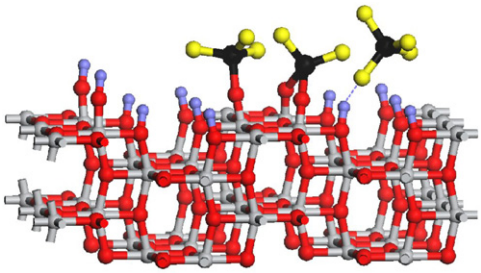
Nano-scale Au particles supported on Al_2O_3 promote 100% selective gas phase hydrogenation of *p*-chloronitrobenzene to commercially important *p*-chloroaniline; we have established that the incorporation of Pd (Au/Pd $\geqslant$ 20, see TEM image) serves to elevate rate while retaining reaction exclusivity, an effect that we associate with bimetallic particle formation.



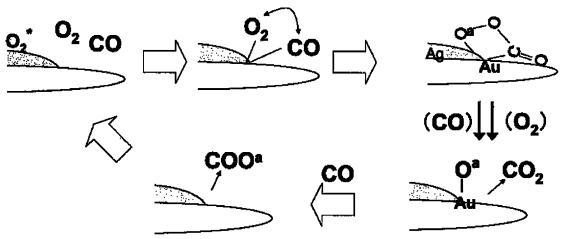
A combined *in situ* X-ray absorption and diffraction study provided new insights into the local and long range structure of iron-based Fischer–Tropsch catalysts after pretreatment and during synthesis.



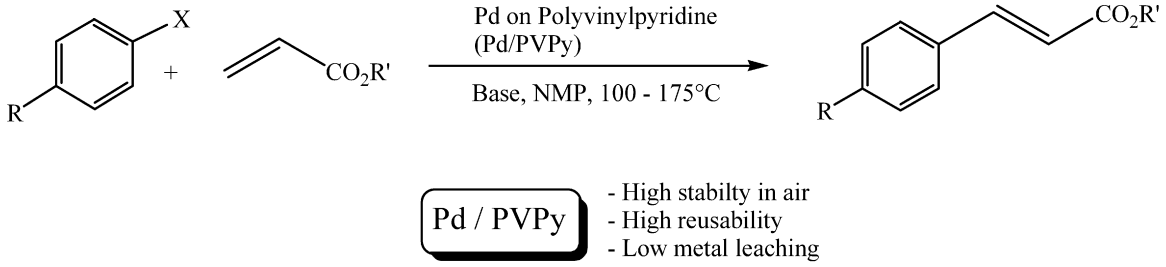
Mesoporous mordenite obtained by acid and base leaching exhibited a much higher catalytic activity in the benzylation of benzene with benzyl alcohol than conventional mordenite.



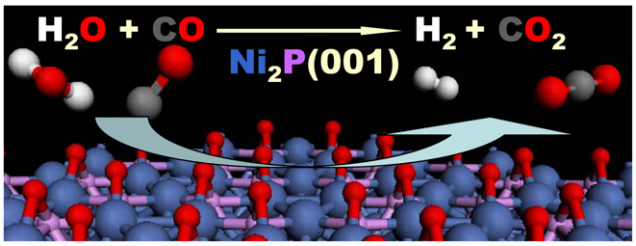
Local structures of the adsorbed W(VI) monomer oxo-species on the (1 0 0) crystal termination of anatase.



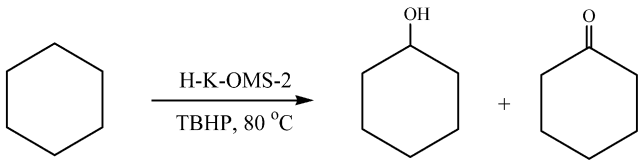
The oxidation proceeds through co-adsorption of CO and O_2 to form CO3 succeeded by decomposition by CO and/or O_2 to produce CO_2 at contact interface of Ag and Au support.



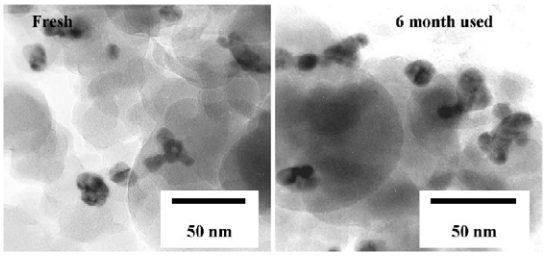
The Pd/PVPy system is very active in the Heck C–C coupling reaction. The catalyst is stable in air, can be reused several times without loss of activity and the leaching of metal in solution is negligible.



$Ni_2P(001)$ displays a superior water–gas-shift activity. The good behavior of Ni_2P is associated with the Ni oxy-phosphides formed as a result of strong O ↔ P interactions.



An efficient process for cyclohexane oxidation to cyclohexanol and cyclohexanone using H^+-exchanged K-OMS-2 is reported. A dual active site mechanism has been proposed where both Lewis and Brønsted acid sites play an important role in the oxidation process.



$PdAu/SiO_2$ vinyl acetate synthesis catalysts deactivate without any noticeable sintering for up to six months of use but do undergo considerable restructuring of the alloyed noble metal particles with time on stream.