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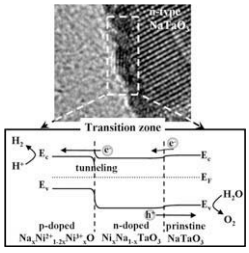
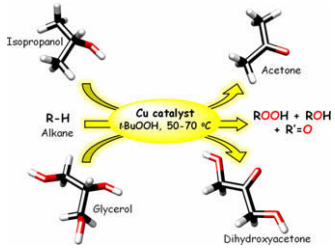
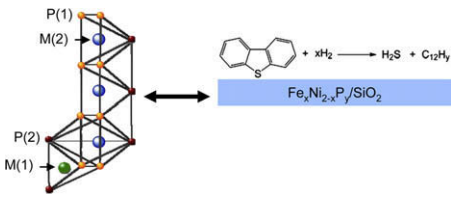


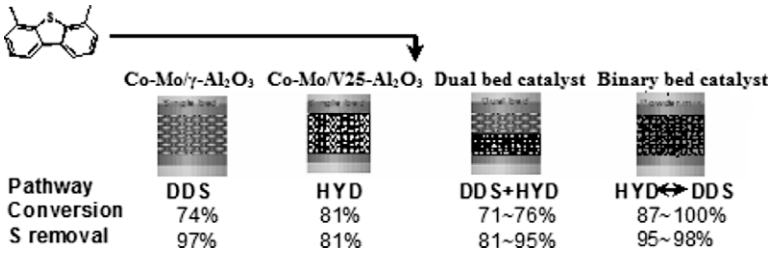
The interdiffusion of Ni^{2+} and Na^{+} can form p-doped NiO (i.e. $Na_xNi^{2+}_{1-2x}Ni^{3+}_xO$) and n-doped $NaTaO_3$ (i.e. $Ni_xNa_{1-x}TaO_3$) at the interface and facilitate charge transport for splitting water.



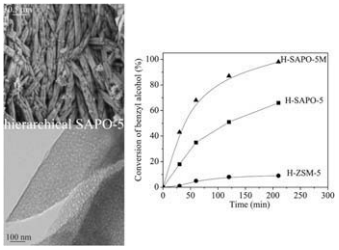
The combination of hydrosoluble tetracopper(II) catalyst with *tert*-butyl hydroperoxide leads to a versatile homogeneous system for the oxidative functionalization, under mild conditions, of various substrates that include alkanes, alcohols and glycerol.



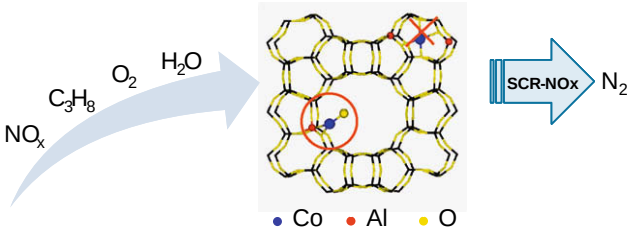
Mössbauer spectroscopy was used to determine that metal atoms are preferentially ordered in $Fe_xNi_{2-x}P_y/SiO_2$ catalysts. The high hydrodesulfurization activity of Ni-rich $Fe_xNi_{2-x}P_y/SiO_2$ catalysts is attributed to Ni atoms in M(2) sites at the surface of the phosphide particles.



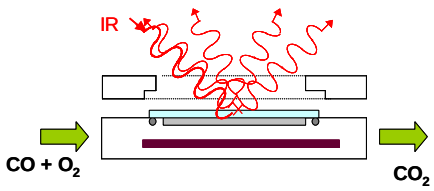
The binary catalyst system Co–Mo/γ-Al_2O_3||Co–Mo/V*x*-Al_2O_3 showed high conversion of refractory sulfur compounds by concerted hydrogenation and direct desulfurization.



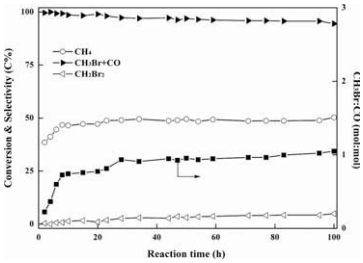
Hierarchical SAPO-5 was synthesized using a soft template with a silicon containing head-group. Its catalytic activity was much higher in space-demanding alkylation compared to the microporous analogue and H-ZSM-5.



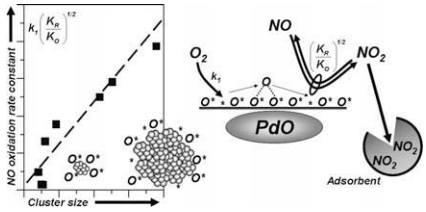
Al distribution in the framework controls the structure and activity of Co species in Co-BEA zeolites. Co-oxo species balanced by Al_{isol} are highly active in C_3H_8–SCR–NO_x at 10% H_2O.



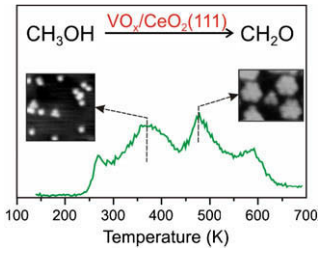
CO oxidation has been studied in a new microstructured DRIFTS cell over platinum catalysts. Modeling of the data shows that addition of ceria changes the rate-controlling step.



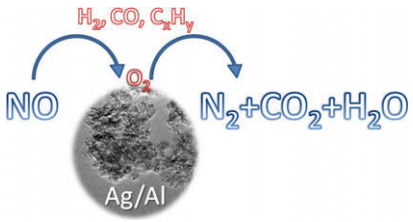
Oxidative bromination of methane over $FePO_4/SiO_2$ catalyst was dominated by a redox route, which gave 50% methane conversion and 96% total selectivity toward CH_3Br/CO ($CH_3Br:CO \approx 1$) at 570 °C.



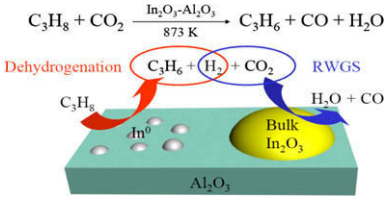
O_2 activation on scarce vacancy sites in PdO clusters limits NO oxidation rates. The kinetic relevance of these vacancies causes turnover rates to increase as oxygen binding weakens with increasing cluster size and as adsorbents deplete NO_2 near active sites.



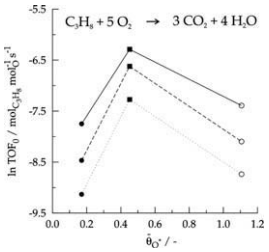
Methanol oxidation to formaldehyde was studied on well-defined VO_x/CeO_2 model catalysts as a function of vanadia coverage. The results revealed a low temperature reaction pathway, which is assigned to isolated vanadyl species surrounded by a reduced ceria surface.



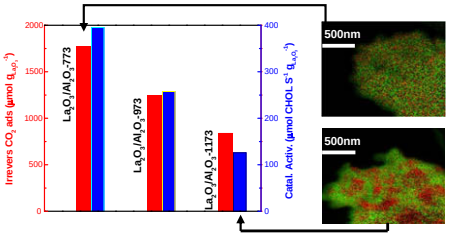
The target reaction is the reduction of NO to nitrogen which competes with the oxidation reaction under lean conditions (excess of oxygen) that may considerably alter the selectivity. Silver colloids prepared by reducing $AgNO_3$ in aqueous solution are embedded in alumina leading to stable nano-catalysts. The activity of the catalysts is influenced by the preparation procedure.



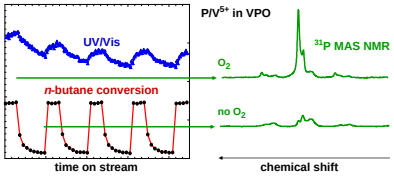
In_2O_3–Al_2O_3 mixed oxides were found to be active and stable for propane dehydrogenation with CO_2, in which a unique bifunctional character of the indium component has been established.



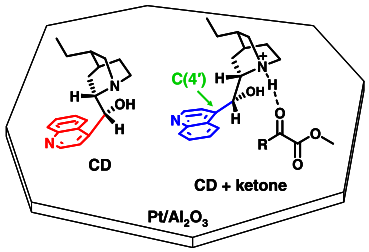
The reduction and reoxidation characteristics of single metal oxides, CuO/θ-Al_2O_3 (○) and CeO_2/γ-Al_2O_3 (●), are combined in a synergistic way: initial turnover frequencies are highest on the binary metal oxide catalyst, CuO–CeO_2/γ-Al_2O_3 (■).



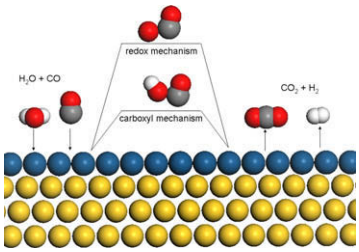
The influence of the calcination temperature on the lanthana distribution, surface basicity, and catalytic properties of a La_2O_3/Al_2O_3 sample, with lanthana loading close to the theoretical monolayer, is discussed. The resulting materials represent an advantageous alternative to pure lanthana as highly basic catalysts.



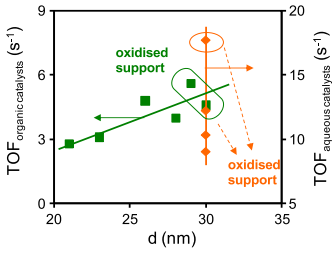
Assignment and quantification of active V^{5+} species of VPO catalysts applied for the selective oxidation of *n*-butane to maleic anhydride were performed by *on-line* UV/Vis and ^{31}P MAS NMR spectroscopy.



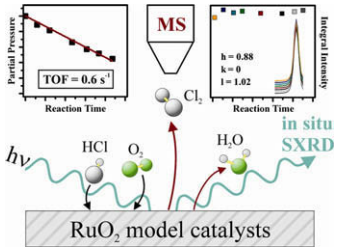
The dominant adsorption mode of cinchonidine on Pt/Al_2O_3 inverts from pro-(*S*) at C(4′) to pro-(*R*) upon interaction with the ketone substrate, as concluded from the product distribution of the hydrogenation of its anchoring quinoline ring.



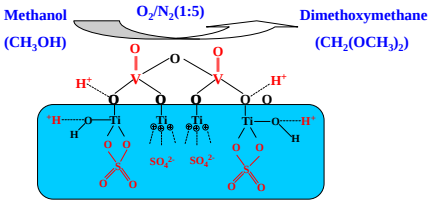
The carboxyl mechanism was found to be favored for water gas shift over Pt-based pseudomorphic monolayer systems.



The activity and deactivation of different CNF-supported palladium catalysts (using different precursors and surface treatments) for tetrachloroethylene hydrodechlorination have been studied in this work. It was observed that the behaviour of the catalysts changes markedly with the treatment of the surface and, more markedly, with the impregnation procedure (using organic or aqueous solutions). Characterisation of the fresh and aged samples by different techniques allows to explain this behaviour.



In situ surface X-ray diffraction reveals that RuO_2-model catalysts are long-term stable for the HCl oxidation reaction by oxygen with a mean TOF of 0.6 s^{-1} for Cl_2 using a batch reactor.



Catalytic activity of sulfated vanadia–titania catalysts measured in selective methanol oxidation to dimethoxymethane was found to depend on the nature of surface sites, calcination temperature, and sulfate concentration.