Journal of Catalysis 276 (2010) iii–viii

Contents lists available at ScienceDirect

Journal of Catalysis

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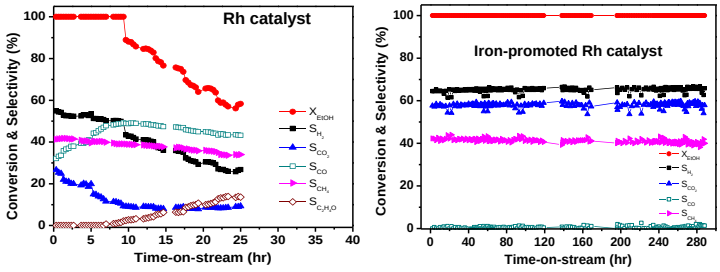
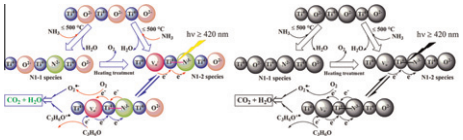
Journal of Catalysis Vol. 276, Issue 2, 2010

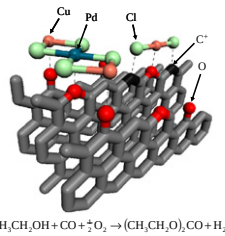
Contents



For the first time, a novel iron-promoted Rh catalyst is found to produce CO-free H_2 through steam reforming of ethanol at a low temperature ranging between 623 and 673 K.

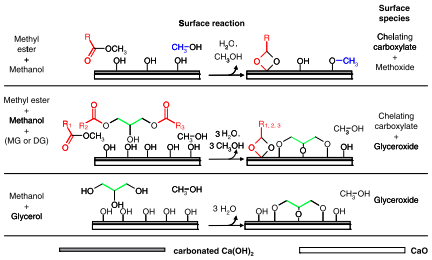


The nitridation of TiO_2 by NH_3-generated substitutional N species with a diamagnetic [O–Ti^{4+}–N^{3-}–Ti^{4+}] core stabilized by a neighboring oxygen vacancy that can work under visible light.

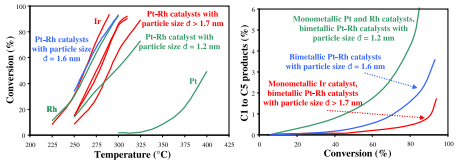


$$2CH_3CH_2OH + CO + \tfrac{1}{2}O_2 \rightarrow (CH_3CH_2O)_2CO + H_2O$$

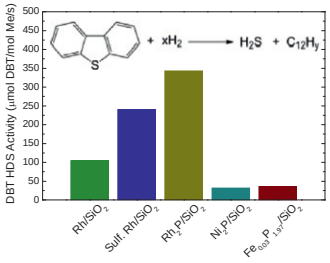
$PdCu_nCl_x$ species dispersed on carbon supports catalyze the oxidative carbonylation of ethanol to diethyl carbonate (DEC). Catalyst activity and selectivity are improved by oxidation of the carbon support before preparation, and catalyst stability can be achieved by the addition of ppm levels of CCl_4 into the feed. It is proposed that the highest activity is exhibited by Cl-bridged $[CuCl_2]Pd[CuCl_2]$ species.



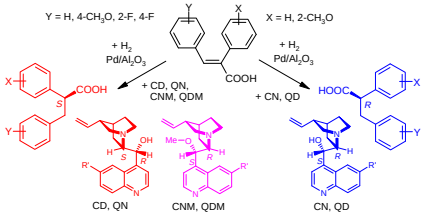
The reaction to produce biodiesel catalysed by Ca oxide can be strongly promoted by the formation of very active surface Ca glyceroxide if in the initial reactant mixture tenths of mg of MG and/or DG and/or glycerol are present.



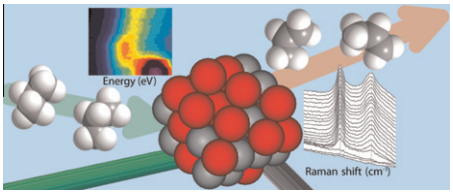
The aim of this study was to characterize in depth supported bimetallic Pt–Rh samples prepared by various routes in order to understand the relationship between their structural properties and their catalytic performances for the methylcyclopentane (MCP) ring opening (RO) under pressure. The largest bimetallic particles (d > 1.7 nm) were the most selective for MCP RO, leading to performances similar to those of iridium-based reference catalysts.



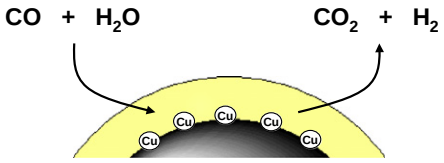
5 wt% Rh_2P/SiO_2 catalysts were observed to have higher dibenzothiophene hydrodesulfurization activities than Rh/SiO_2 and sulfided Rh/SiO_2 catalysts. The Rh_2P/SiO_2 catalysts exhibit excellent stability and are more S tolerant than Rh/SiO_2 catalysts.



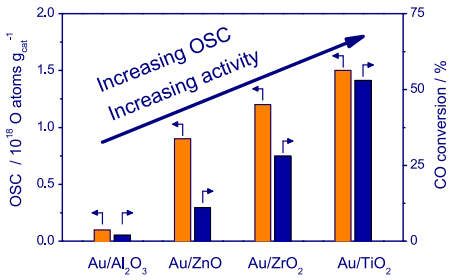
The enantioselective hydrogenation of (*E*)-2,3-diphenylpropenoic acids over Pd/Al_2O_3 modified by (*R*)C^8—(*S*)C^9 cinchona methyl ethers resulted in the inversion of the sense of the enantioselectivity. The phenomenon was interpreted by reshaping of the surface chiral sites coupled with a weak and flexible monodentate acid–cinchona ether interaction.



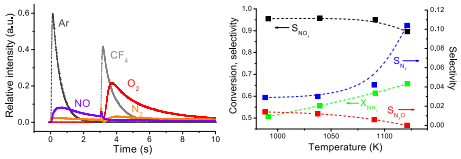
XANES and Raman reveal new information on the properties of supported Pt—Sn nanoparticles during propane dehydrogenation–regeneration cycles leading to insight into the dynamics of Pt—Sn alloy formation at elevated temperatures.



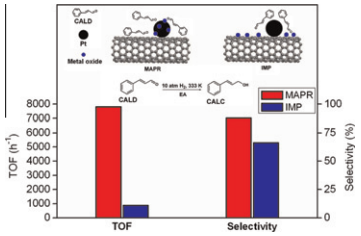
Catalysts coated with suitable ionic liquids show exceptionally high activities for water–gas shift at low temperatures due to weakened interactions with the reactants and products.



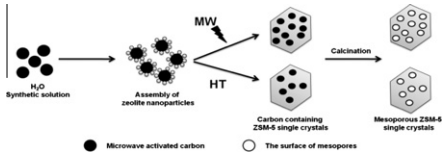
We demonstrate a clear correlation between the oxygen storage capacity (OSC) and the activity for CO oxidation for four different oxide-supported gold catalysts, which differ in the reducibility of the oxide but have similar Au loadings and Au particle sizes. This points to a direct participation of the support in the reaction, confirming the earlier qualitative concept of 'active' and 'inert' oxides.



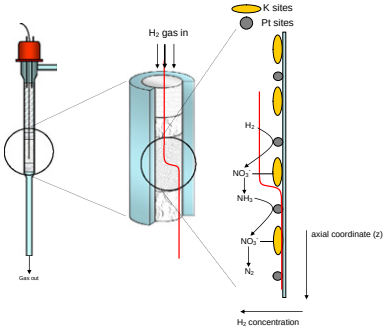
By combining different transient (TAP, oxygen exchange) and steady-state techniques, a reaction mechanism for ammonia oxidation over $LaCoO_3$ has been proposed.



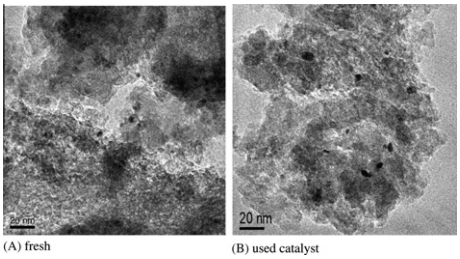
CNT-supported Pt bimetallic catalysts synthesized by microwave-assisted polyol reduction method outperform the corresponding impregnated catalysts in cinnamaldehyde hydrogenation, which is attributed to the close contact between Pt and promoter.



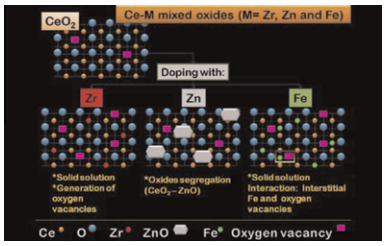
Carbon-templated mesoporous ZSM-5 have been synthesized by microwave irradiation. The nature of acid sites both in the micropores and on the surface of mesopores was investigated by in situ FTIR.



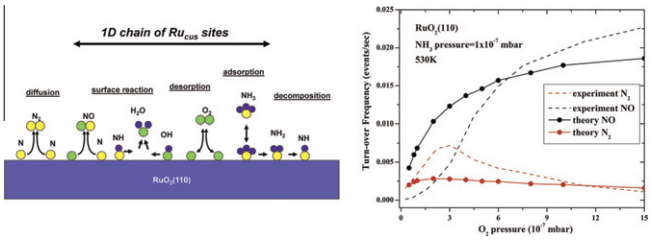
The "H_2 front" model for the reduction of the stored NO_x over Pt—K/Al_2O_3 catalyst.



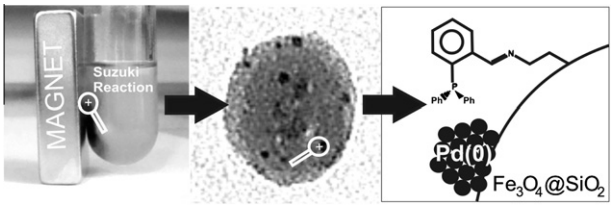
Catalyst synthesized from Pt nanoparticles of uniform size (Pt-NPs) well dispersed on CeO_2–Al_2O_3 supports shows high stability under methane oxyforming reactions.



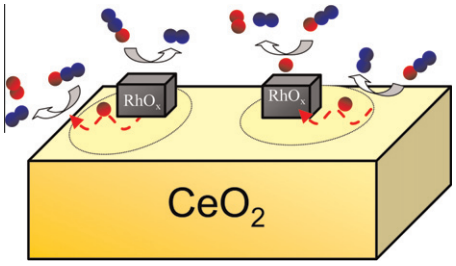
The doping CeO_2 with Zr, Zn and Fe was studied. Doping with Zr or Fe resulted in solid solution, while doping with Zn resulted in the surface segregation of ZnO. The formation of oxygen vacancies is enhanced with Zr, remains constant with Zn and disappears on doping with Fe.



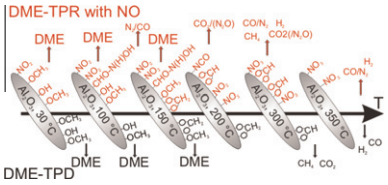
Ab initio Kinetic Monte Carlo (KMC) simulations of 18 reactions for the selective oxidation of ammonia on RuO_2(1 1 0) show 93% selectivity for NO, in close agreement with experiment (~95%).



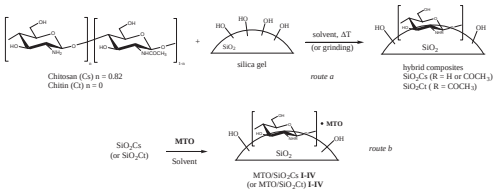
Magnetically recoverable supported Pd nanoparticles stabilized by pendant phosphine groups exhibited good activity and high selectivity in Suzuki cross-coupling reaction.



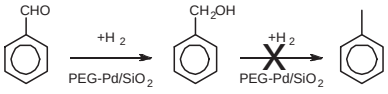
The higher catalytic activity for N_2O decomposition of Rh/CeO_2 in comparison to Rh/γ-Al_2O_3 is related to the Rh–CeO_2 interaction and to the participation of the CeO_2 support in the N_2O decomposition mechanism, γ-Al_2O_3 being an inert carrier.



Alumina is a promising catalyst for the selective catalytic reduction of NO_x with dimethyl ether (DME), an energy effective alternative fuel. A correlation of the surface species with the gas composition allows proposing the relevant surface reactions during DME-SCR.



Novel complexes between methyltrioxorhenium (MTO) and natural polysaccharides like chitin, chitosan, modified chitosan, and silica-polysaccharide hybrid composites were synthesized and used as efficient heterogeneous catalysts for the selective oxidation of alkenes, with urea hydrogen peroxide complex (UHP) as primary oxidant.



Modification of a supported palladium metal catalyst with polyethylene glycol as a novel modifier improved catalytic activity and selectivity for partial hydrogenated products in vapor-phase hydrogenations of benzaldehyde and isoprene.