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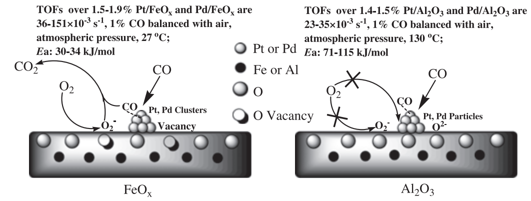
Contents

Low-temperature CO oxidation over supported Pt, Pd catalysts: Particular role of FeO_x support for oxygen supply during reactions **pp 1–10**

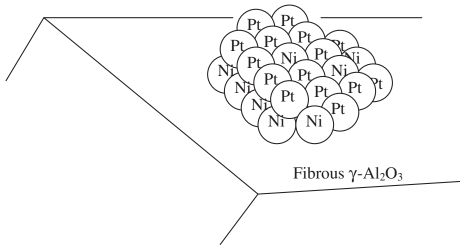
Lequan Liu, Feng Zhou, Liguo Wang, Xiujuan Qi, Feng Shi, Youquan Deng*



A Pt/FeO_x catalyst exhibited high CO oxidation activity (TOF of 151 × 10^{-3} s^{-1}, 1% CO balanced with air, atmospheric pressure, 27 °C) was reported. Clear evidence form characterizations show that FeO_x acting as an oxygen supply is involved in the reaction.

Characterization of alumina-supported Pt, Ni and PtNi alloy catalysts for the dry reforming of methane **pp 11–20**

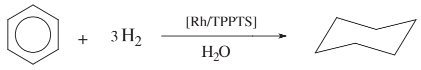
Mónica García-Diéguez, Elisabetta Finocchio, María Ángeles Larrubia, Luis J. Alemany, Guido Busca*



Surface Pt-enriched Pt–Ni alloy nanoparticles supported on fibrous alumina are excellent catalysts for methane dry reforming.

Catalytic conversions in green aqueous media: Highly efficient biphasic hydrogenation of benzene to cyclohexane catalyzed by Rh/TPPTS complexes **pp 21–28**

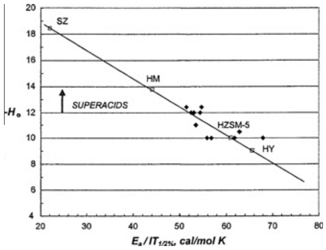
Constantinos Vangelis, Achilleas Bouriazos, Sotiris Sotiriou, Markus Samorski, Bernhard Gutsche, Georgios Papadogianakis*



Exceptionally, high catalytic activities (TOF > 204,000 h^{-1}) have been achieved in the hydrogenation of benzene to cyclohexane catalyzed by water-soluble Rh/TPPTS complexes [TPPTS = $P(C_6H_4\text{-}m\text{-}SO_3Na)_3$] in green aqueous/organic two-phase systems.

Acid strength of solids probed by catalytic isobutane conversion pp 29–51

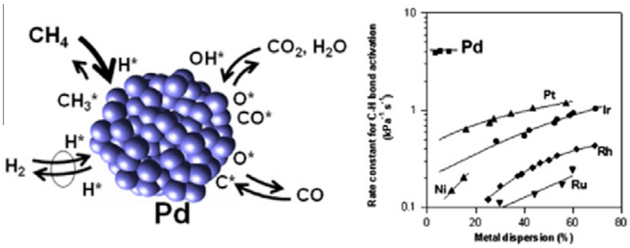
Dan Fraenkel*, Nicholas R. Jentzsch, Christopher A. Starr, Pandurang V. Nikrad



Sulfated zirconia (SZ) is a stronger solid acid than zeolites, having $H_0 \sim -18$; this conclusion is based on the 1/2% isobutane conversion test.

Catalytic activation and reforming of methane on supported palladium clusters pp 52–63

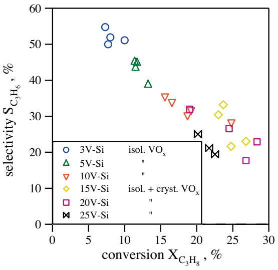
Aritomo Yamaguchi, Enrique Iglesia*



Pd cluster surfaces show much higher reactivity and rate constants for C–H bond activation than other Group VIII metals, irrespective of support or metal cluster size. This high reactivity leads to reversible C–H and C–O dissociation steps and to concomitant inhibition effects of H_2 and CO on CH_4 reactions with H_2O and CO_2.

Structure of flame-made vanadia/silica and catalytic behavior in the oxidative dehydrogenation of propane pp 64–75

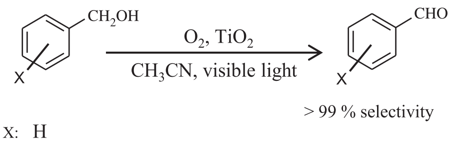
Bjoern Schimmoeller, Yijiao Jiang, Sotiris E. Pratsinis, Alfons Baiker*



Flame spray pyrolysis affords vanadia/silica catalysts with well-dispersed and stable VO_x species up to high loadings which show promising potential for the oxidative dehydrogenation of propane.

Efficient and selective oxidation of benzylic alcohol by O_2 into corresponding aldehydes on a TiO_2 photocatalyst under visible light irradiation: Effect of phenyl-ring substitution on the photocatalytic activity pp 76–83

Shinya Higashimoto*, Nobuaki Suetsugu, Masashi Azuma, Hiroyoshi Ohue, Yoshihisa Sakata

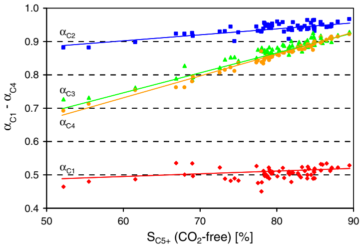


X: H
OCH$_3$, CH$_3$, *ter*-butyl (electron releasing group)
Cl, NO$_2$, CF$_3$ (electron withdrawing group)

The effect of the substituents (-X) and their orientation on the photocatalytic performance of selective oxidation of benzylic alcohol into corresponding aldehydes on TiO_2 under visible light irradiation are discussed in this paper.

On the selectivity of cobalt-based Fischer–Tropsch catalysts: Evidence for a common precursor for methane and long-chain hydrocarbons pp 84–98

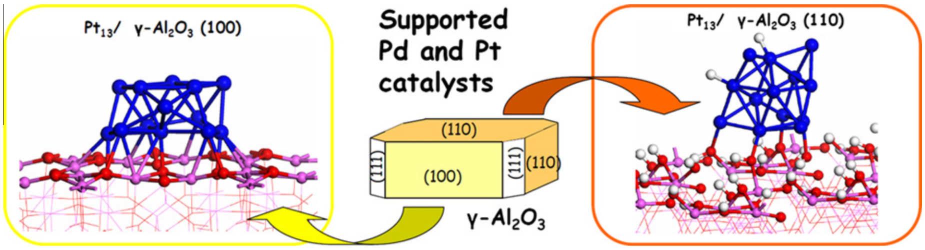
Sara Lögdberg, Matteo Lualdi, Sven Järås, John C. Walmsley, Edd A. Blekkan, Erling Rytter, Anders Holmen*



The following interdependency between the chain-growth probabilities (α_{Cn} values) of C_1–C_4 hydrocarbon intermediates and the selectivity to C_{5+} hydrocarbons was obtained from Fischer–Tropsch synthesis experiments (20 bar, 483 K, $H_2/CO = 2.1$) with 36 cobalt-based supported catalysts with varying physical and chemical properties.

Modulation of catalyst particle structure upon support hydroxylation: *Ab initio* insights into Pd_{13} and Pt_{13}/γ-Al_2O_3 pp 99–110

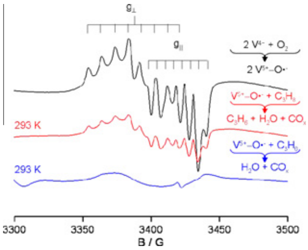
Chao Hao Hu, Céline Chizallet, Christophe Mager-Maury, Manuel Corral-Valero, Philippe Sautet, Hervé Toulhoat, Pascal Raybaud*



An atomic picture of nanometer size palladium and platinum particles supported on gamma-alumina is provided. It is found that the hydroxylation state of the support's surface weakens the metal adhesion and influences the cluster morphologies.

On the nature and reactivity of active oxygen species formed from O_2 and N_2O on VO_x/MCM-41 used for oxidative dehydrogenation of propane pp 111–116

E.V. Kondratenko, A. Brückner*



$V^{n+}\cdots O^-$ (n = 4, 5) species, able to oxidize CO, C_3H_6, and C_3H_8 even at room temperature, are formed on prereduced highly dispersed VO_x/MCM-41 upon reaction with O_2 but not with N_2O. They are considered to be responsible for the higher activity but lower selectivity of VO_x/MCM-41 in the oxidative dehydrogenation of propane by O_2 in comparison with N_2O.