

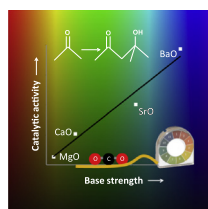


Contents

Influence of base strength on the catalytic performance of nano-sized alkaline earth metal oxides supported on carbon nanofibers

pp 1–6

A.M. Frey, J. Yang, C. Feche, N. Essayem, D.R. Stellwagen, F. Figueras, K.P. de Jong*, J.H. Bitter*

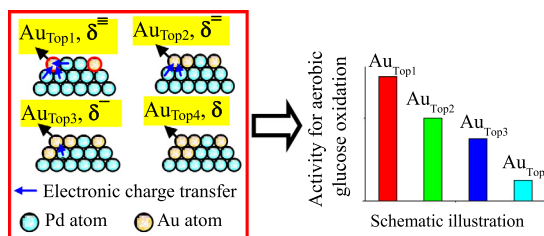


Nano-sized alkaline earth metal oxide nanoparticles (~ 3 nm) supported on carbon nanofibers have been prepared. A positive correlation between base strength and catalytic activity of the supported nano-sized alkaline earth metal in base-catalyzed reactions (acetone self-condensation, transesterification) has been established.

Crown Jewel catalyst: How neighboring atoms affect the catalytic activity of top Au atoms?

pp 7–18

Haijun Zhang, Tatsuya Watanabe, Mitsutaka Okumura, Masatake Haruta, Naoki Toshima*

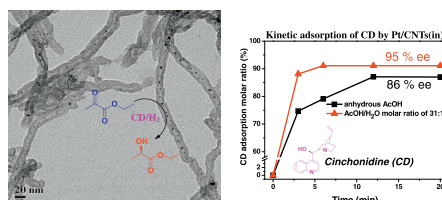


1. The catalytic activity for glucose oxidation of the top Au atoms decorating the Pd NCs was 20–30 times more active than the Au NCs with a size of 1.4-nm diameter. 2. The highest catalytic activity of the top Au atoms could be associated with its high negative charge and its unique structure. 3. The activity as well as the electronegativity of top Au atoms might decrease with the increasing number of the neighboring coordinated Au atoms.

An unexpected effect of water on the asymmetric hydrogenation of α -ketoesters on platinum nanoparticles confined in carbon nanotubes

pp 19–26

Zaihong Guan, Shengmei Lu, Zhijian Chen, Can Li*

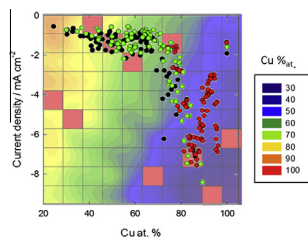


The influence of water on asymmetric hydrogenation of α -ketoesters on platinum nanoparticles confined in the channels of carbon nanotubes was investigated. It is found that water enriches the chiral modifier (cinchonidine) in the channels and 95% ee is acquired, higher than the 86% ee obtained in anhydrous acetic acid.

High throughput optimisation of PdCu alloy electrocatalysts for the reduction of nitrate ions

pp 27–35

Alexandros Anastasopoulos, Louise Hannah, Brian E. Hayden*

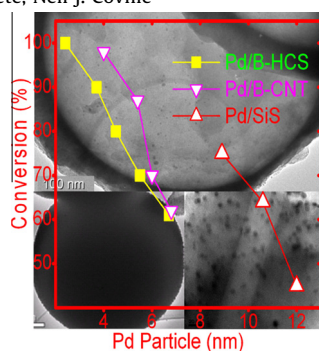


PdCu alloy catalysts are optimal for nitrate reduction in alkali media in a small compositional range with a maximum in activity at 84% Cu. This optimum is a result of a combination of a bi-functional and an electronic effect of Pd addition to Cu.

Pd on boron-doped hollow carbon spheres – PdO particle size and support effects

pp 36–45

Vilas Ravat, Isaac Nongwe, Reinout Meijboom, George Bepete, Neil J. Coville*

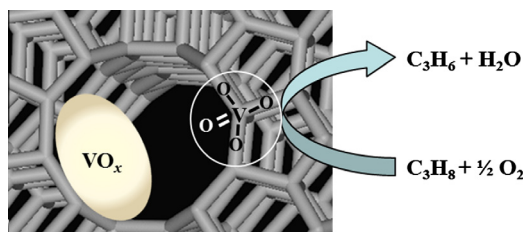


Pd was supported on boron-doped hollow carbon spheres and carbon nanotubes and the Pd-supported catalyst showed activity controlled by Pd particle size.

Mononuclear pseudo-tetrahedral V species of VSiBEA zeolite as the active sites of the selective oxidative dehydrogenation of propane

pp 46–55

Karolina Chalupka, Cyril Thomas*, Yannick Millot, Frederic Averseng, Stanislaw Dzwigaj*

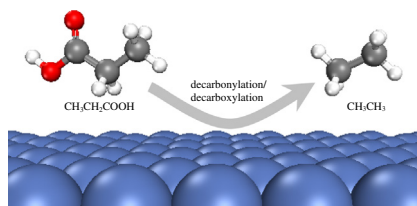


C₃H₈ ODH was studied on VSiBEA catalysts for which the Td/Oh V species ratio was tuned via the two-step synthesis method. It was found that framework Td V species were much more active in the formation of C₃H₆ than VO_x species on a TOF basis.

Microkinetic modeling of the decarboxylation and decarbonylation of propanoic acid over Pd(111) model surfaces based on parameters obtained from first principles

pp 56–66

Jianmin Lu, Sina Behtash, Muhammad Faheem, Andreas Heyden*



The reaction mechanism of the decarboxylation and decarbonylation of propanoic acid to alkanes has been investigated over Pd(111) model surfaces by a combination of microkinetic modeling and density functional theory calculations. The decarbonylation mechanism is preferred over the decarboxylation mechanism at various H₂ partial pressures.

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