



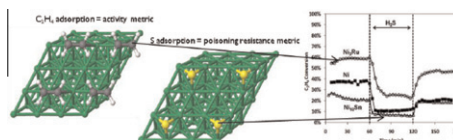
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Contents

Experimental and computational investigations of sulfur-resistant bimetallic catalysts for reforming of biomass gasification products

pp 249–257

Meghana Rangan, Matthew M. Yung, J. William Medlin*

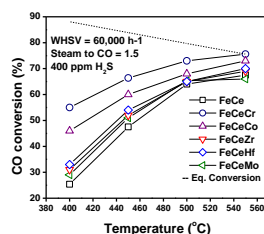


Density functional theory calculations were used to screen ethylene and sulfur adsorption energies of model Ni bimetallic surfaces. These calculations were used to successfully identify Ni-based sulfur-resistant ethylene reforming catalysts. NiRu catalysts were found to exhibit improved activity, both in the presence and in the absence of sulfur, compared with pure Ni both for ethylene reforming and for the reforming of tars in biomass-derived synthesis gas.

Sulfur tolerant metal doped Fe/Ce catalysts for high temperature WGS reaction at low steam to CO ratios – XPS and Mössbauer spectroscopic study

pp 258–269

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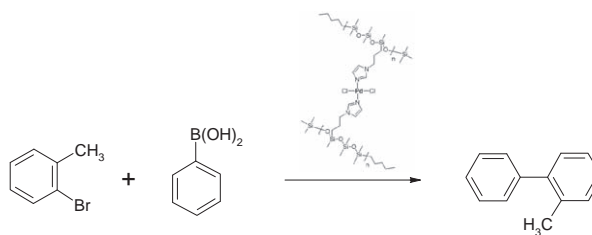


High temperature water gas shift reaction (WGS) at low steam to CO ratios has been investigated over $\text{Fe}_{2.4}\text{Ce}_{0.3}\text{M}_{0.3}\text{O}_4$ ($M = \text{Cr, Co, Zr, Hf, and Mo}$) type of spinels. Remarkably, both Cr- and Co-doped Fe/Ce catalysts show excellent activity at steam to CO ratio as low as 1.5. Other dopants namely Zr, Hf, and Mo have little or no effect on the WGS activity of Fe/Ce.

Reusable functionalized polysiloxane-supported palladium catalyst for Suzuki–Miyaura cross-coupling

pp 270–277

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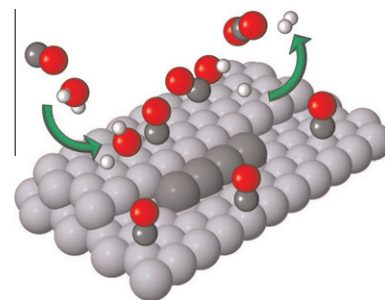


Palladium supported on siloxane polymer functionalized with imidazole groups efficiently catalyzes Suzuki–Miyaura reaction under mild conditions in environmentally friendly solvents such as water or a 2-propanol/water mixture. The catalyst is transformed to Pd(0) nanoparticles bonded to the polymer and showed very good recyclability.

Mechanism for the water–gas shift reaction on monofunctional platinum and cause of catalyst deactivation

pp 278–288

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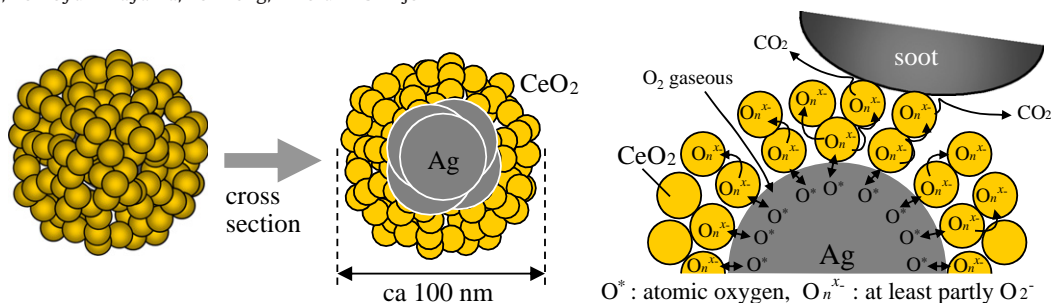


Kinetic and isotopic measurements suggest that the water–gas shift reaction proceeds by an associative mechanism on Pt(111). The kinetically relevant step consists of unimolecular decomposition of adsorbed carboxylate intermediates. The surface loses activity over time due to the formation of carbonaceous deposits which nucleate at step-edges and subsequently oligomerize.

A mechanistic study on soot oxidation over CeO₂–Ag catalyst with ‘rice-ball’ morphology

pp 289–298

Kiyoshi Yamazaki*, Tomoyuki Kayama, Fei Dong, Hirofumi Shinjoh

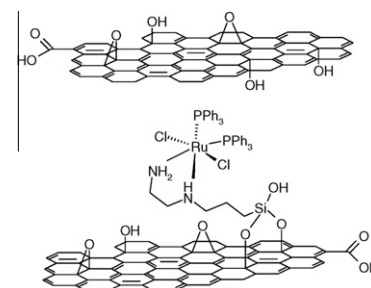


A CeO₂–Ag catalyst with ‘rice-ball’ morphology exhibits exceptional performance for soot oxidation. The moderately large Ag particles (>30 nm) and large interface with small CeO₂ particles result in the formation of active oxygen species on the Ag surface and migration to soot particles.

Chemoselective hydrogenation of cinnamaldehyde: A comparison of the immobilization of Ru–phosphine complex on graphite oxide and on graphitic surfaces

pp 299–309

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Excellent selectivities in the hydrogenation of cinnamaldehyde have been obtained with Ru(PPh₃)₃Cl₂ immobilised onto three different carbon materials: graphite, carbon nanofibers, and graphite oxide (GO).