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Effect of solvent in the hydrogenation of acetophenone catalyzed by Pd/S-DVB.

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Streszczenie

A solvent effect was found in the hydrogenation of acetophenone catalyzed by a new Pd/S-DVB catalyst, immobilized on a styrene (S)/divinylbenzene (DVB) copolymer containing phosphinic groups. The porous structure of the catalyst was characterized by a specific surface area of 94.7 m^2 g^{-1}. The presence of Pd(II) and Pd(0) in Pd/S-DVB was evidenced by XPS and TEM. Pd/S-DVB catalyzes the hydrogenation of acetophenone (APh) to 1-phenylethanol (PhE) and ethylbenzene (EtB). The highest conversion of APh was obtained in methanol (MeOH) and in 2-propanol (2-PrOH), while in water it was lower. The conversion of APh correlates well with the hydrogen-bond-acceptance (HBA) capacity of the solvent. However, in all binary mixtures of alcohol and water the APh conversion and the yield of products significantly decreased. The observed inhibiting effect can be explained by the microheterogeneity of these mixtures and the blocking of the catalyst surface restricting access of the substrates to the Pd centers.

Adres publiczny

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