

Synthesis of Pd/TiO<sub>2</sub> catalyst using ionic liquids for aerobic benzyl alcohol oxidation

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Pd/TiO<sub>2</sub> particles were synthesized for aerobic benzyl alcohol oxidation. Catalysts were prepared using 8 room temperature ionic liquids to control the palladium properties as active sites. After then Pd/TiO<sub>2</sub> particles were calcined at 300°C, 400°C and 500°C to obtain optimum catalyst. With increasing calcination temperature, surface area and pore volume of catalyst were decreased, but pore size of catalyst was little changed. However, the structural properties of catalyst were varied with the type of ionic liquids. Under identical reaction conditions, catalytic activity was different with calcination temperature and ionic liquid. Mostly, the catalyst calcined at 400°C showed higher catalytic activity. However, the catalyst prepared with 1-Octyl-3-methylimidazolium hexafluorophosphate and 1-Octyl-3-methylimidazolium trifluoromethanesulfonate showed better catalytic performance after calcination at 300°C. Among the catalyst, Pd/TiO<sub>2</sub> prepared with 1-Octyl-3-methylimidazolium tetrafluoroborate and calcined at 400°C showed the highest catalytic activity.