

عنوان مقاله:

Manganese oxide grafted on SBA-15 by atomic layer deposition as an efficient and reusable catalyst for selective oxidation of benzyl alcohol in the liquid phase

محل انتشار:

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خلاصه مقاله:

Manganese oxide supported on mesoporous silica SBA-15 catalysts (Mn-SBA-15), with Mn content of 0.8 - 23 wt% range, were prepared by a controlled grafting process through atomic layer deposition (ALD). For comparison, a sample was prepared by conventional wet impregnation method. These samples were characterized by various techniques such as ICP, XRD, SEM, diffuse reflectance UV-Vis, and N₂ absorption-desorption surface area measurement. These results indicate that grafted manganese oxides have been successfully synthesized over the surface of SBA-15 and exhibited high surface area, large pore volume. It was found that Mn-SBA-15 is an efficient and selective catalyst for the oxidation of benzyl alcohol with tert-butylhydroperoxide in the liquid phase. As we expected, the leaching of grafted manganese oxide from support during the reaction was negligible, because of strong interaction between manganese and hydroxyls groups of surface. Under optimized conditions 70% conversion of benzyl alcohol and 100% selectivity to benzaldehyde was achieved.

کلمات کلیدی:

Manganese Oxide; Grafting Method; SBA-15; Selective Oxidation; Benzyl Alcohol

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