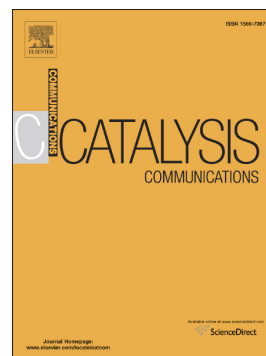


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Catalytic Performance of Ni/ γ -Al₂O₃ for Hydrogenation of 2-Ethyl-2-hexenal

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Abstract: The effect of reaction conditions on the catalytic performance of Ni/ γ -Al₂O₃ was investigated and the result showed that Ni/ γ -Al₂O₃ showed excellent catalytic activity. However, the catalytic performance of the recovered Ni/ γ -Al₂O₃ catalyst declined dramatically. The fresh and the recovered catalysts were comparatively analyzed by means of XRD, XPS and FT-IR techniques. The result demonstrated that the main reason for the activity decline of the recovered Ni/ γ -Al₂O₃ catalyst is that the surface Ni has been reoxidized to NiO. After calcination and reduction, the recovered Ni/ γ -Al₂O₃ catalyst could be reused four times without a significant decrease in its catalytic performance.

Keywords: 2-Ethyl-2-hexenal, 2-Ethylhexanol, Hydrogenation, Deactivation, Regeneration

1. Introduction

2-Ethylhexanol (2-EHO), an important plasticizer alcohol, is mainly used in the production of plasticizers, coatings, adhesives and inks, etc. Nowadays, 2-EHO is produced via gas-phase hydrogenation of 2-ethyl-2-hexenal in the presence of ZnO-CuO catalyst [1], which is in high energy consumption. Therefore, development of economic and environmentally benign 2-ethyl-2-hexenal hydrogenation process and its catalyst is of academic and practical significance.

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