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Selective Oxidation of Benzyl Alcohol Over Hydroxyapatite – Supported Au-Pd Nanoparticles

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ABSTRACT

The selective oxidation of alcohols to the carbonyl compounds is of great importance as aldehydes and ketones are valuable intermediates for the production of fine chemicals. Au and Pd are highly active for the oxidation of primary alcohols. However, traditional oxidants are often toxic and release a considerable amount of by-products. Here we report the synthesis of bimetallic Au-Pd nanoparticles supported on hydroxyapatite (HAP) as a heterogeneous catalyst for the selective oxidation of benzyl alcohols to benzaldehydes under air atmosphere without using any oxidant. Under optimal conditions, bimetallic Au-Pd/HAP catalyst showed remarkably enhanced catalytic activity and selectivity as compared with their monometallic counterparts. The catalyst was found to be highly stable, passes hot filtration test successfully and could be recycled several times without significant loss of activity. The catalyst was characterized by TGA, FTIR, AAS, XRD, SEM and TEM.

Keywords: Oxidation of benzyl alcohols, Au-Pd/HAP, Heterogeneous catalysis, Recyclability, Benzaldehydes.
