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Oxidation of benzyl alcohols in presence of sulfur/graphene

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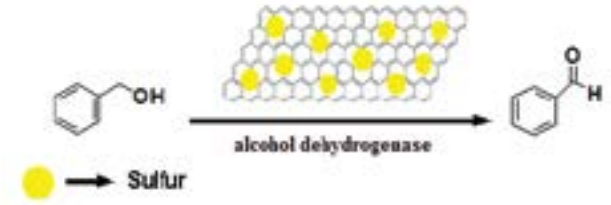
Sulfur/graphene catalyst was invented to be recyclable and impressive for selective oxidation of benzyl alcohol under simple reaction conditions.In this study,graphene oxide (GO) was prepared by a Hummers and Offman method.A one-step environmentally way is developed to prepare sulfur/reduced graphene. Sulfur/reduced graphene oxide (S/RGO) composite has been synthesized using a simple and low cost method with thiosulfate and graphene oxide (GO) as precursors.Thepowder was determined by X-ray diffraction, Fourier transform infrared spectroscopy and scanning electron microscopy images. After that,as-prepared sulfur graphenehas been used for oxidation of benzyl alcohols to benzaldehyde. Acetonitrile has been used as solvent in the reaction. This composite were able to oxidation of benzyl alcohol to benzaldehyde with high efficiency (about 96%). This conversion has been demonstrated by gas chromatography equipped with mass spectroscopy. Substituted benzyl alcohols also can be oxidized by O_2 to corresponding aldehydes with high selectivityin presence of catalyst. However this conversion has been reported difference yield with graphene oxide and another composite of graphene, but the first time was reported sulfur/graphene.



Biography

Rahmatollah Rahimi has completed his PhD at Howard University (USA). He has been now serving as a full Professor in the Department of Chemistry, Iran University of Science and Technology. He has published about 90 papers in reputed journals.

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