

Oxidation of alcohols with *tert*-butylhydroperoxide catalyzed by nano-sized γ -alumina supported metallophthalocyanines

Mirabdullah S. Sadjadi · Amin Ebadi · Karim Zare

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Abstract The oxidation of alcohols with *tert*-butylhydroperoxide, in the presence of metallophthalocyanines supported on γ -alumina was investigated. These metallophthalocyanines supported on γ -alumina were effective catalysts for the oxidation of alcohols such as cyclohexanol, benzyl alcohol and hexanol.

Keywords Oxidation · Alcohols · γ -alumina · Metallophthalocyanines

Introduction

Oxidation reactions are among the most important transformations in synthetic chemistry and offer an important methodology for the introduction and modification of functional groups [1]. The selective oxidation of alcohols to aldehydes or ketones is a vital reaction in synthetic organic chemistry. In this way, chemists have used different kinds of metal salts and oxides in the form of homogeneous catalysts [2, 3] or supported metal ions and supported oxometal catalysts as heterogeneous systems [4, 5].

Metallophthalocyanine (MPc) complexes have been used as alternative catalysts, because they have a similar structure to porphyrins and are cheaper and more stable to degradation [6]. The immobilization of MPc on solid supports is highly desirable to synthesize heterogeneous catalysts [7]. There are some reports for the use of cobalt and iron phthalocyanines as homogeneous catalysts for oxidation of alcohols [8, 9]. However, to the best of our knowledge, there is no report for application of MPc supported on γ -alumina for oxidation of alcohols. In this work, the catalytic effect of Fe, Mn and CoPc supported on γ -alumina are investigated for the oxidation of alcohols in heterogeneous systems.

M. S. Sadjadi (✉) · A. Ebadi
Department of Chemistry, Science and Research Branch, Islamic Azad University,
Poonak, Tehran, Iran
e-mail: mirabdullahsadjadi@yahoo.com

K. Zare
Department of Chemistry, Shahid Beheshti University, P.O. Box 19396-4716, Tehran, Iran