



RuO₂ supported on V₂O₅-Al₂O₃ material as heterogeneous catalyst for cyclohexane oxidation reaction

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Abstract

RuO₂ supported on V₂O₅-Al₂O₃ mixed oxide material was prepared by impregnation method and characterized by XRD, nitrogen adsorption-desorption, SEM, UV-visible and FT-IR spectroscopic techniques. The catalytic activity of the prepared catalyst was evaluated for the liquid-phase oxidation of cyclohexane under mild conditions. In this reaction, conversion of cyclohexane to cyclohexanol and cyclohexanone and the selectivity ratio of cyclohexanol to cyclohexanone were greatly affected by the solvent and the oxidant agent used. The results show that the catalyst exhibit good conversion in polar solvents. The use of acetic acid gives more than 26% conversion in presence of TBHP as oxidant and an ~40% conversion with hydrogen peroxide as oxidant in presence of an initiator, with 92% selectivity for cyclohexanol product.

DOI

10.1007/s12034-012-0331-5

Print ISSN

0250-4707

Online ISSN

0973-7669

Publisher

Springer-Verlag

Keywords

- Ruthenium oxide
- sol-gel method
- impregnation
- cyclohexane oxidation