



Selective Oxidation of Benzyl Alcohols by Hydrogen Peroxide under Phase Transfer Catalysis

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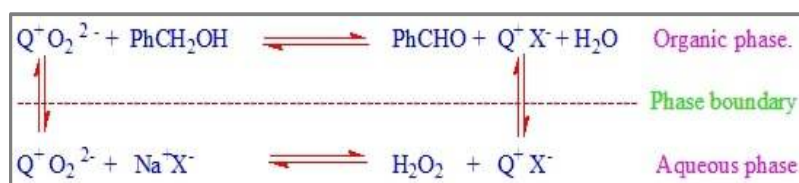
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ABSTRACT

It reports the selective oxidation of benzyl alcohol and substituted benzyl alcohols in non-polar solvents like toluene and ethyl acetate using hydrogen peroxide as oxidant under phase transfer catalysis in presence of catalytic amount of sodium tungstate dihydrate. Tetrabutylammonium bromide, tetrabutylammonium hydrogen sulphate, tricapyrylmethylammonium chloride and Cetyltrimethyl ammonium bromide were used as phase transfer catalysts. The products of oxidation were characterized by melting point and infra-red and UV-Visible spectral techniques. Benzaldehyde and substituted benzaldehydes were formed in a selective manner with good yield (>85%) at room temperature and there were no traces of benzoic acid. All the catalysts were capable of bringing out the reaction but based on yield and ease of reaction, the order of reactivity is tricapyrylmethyl ammonium chloride >Tetrabutylammonium bromide> tetrabutylammonium hydrogen sulphate > Cetyltrimethylammonium bromide. The selective oxidation of benzyl alcohols practically did not occur in non-polar organic solvents without the involvement of a phase transfer catalyst. The reaction is found to be very smooth in both the solvents namely ethyl acetate and toluene. But the yield of benzaldehydes is found to be more in ethyl acetate than that in toluene due to the difference in polarity.

Graphical Abstract



PT catalyzed oxidation of benzyl alcohol by peroxide ion in non-polar solvents.

Keywords: Selective oxidation, Benzyl alcohol, Benzaldehyde, Phase transfer catalysis