

**Perfluorinated resinsulphonic acid (Nafion-H<sup>R</sup>) catalyzed highly efficient oxidations of organic compounds with hydrogen peroxide.**

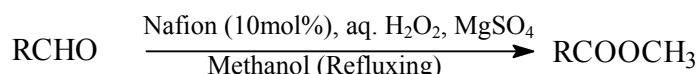
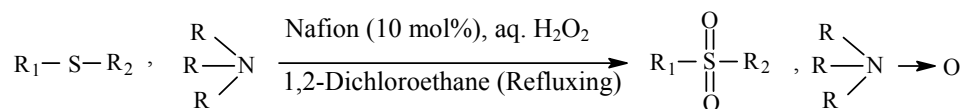
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Replacement of conventional toxic, polluting Bronsted and Lewis acid catalysts with environmentally benign reusable solid heterogeneous catalysts like acidic groups containing resins is an area of current interest. Perfluorinated resinsulphonic acid (Nafion-H<sup>R</sup>) which is strongly acidic with its acidity almost equivalent to 100% sulphuric acid and chemically as well as thermally stable have been found to be an excellent catalyst for a variety of major organic reactions like alkylation, olefin isomerization, olefin oligomerization, acylation, esterification, etherification, hydration, dehydration and nitration. However to the best of our knowledge there is no literature report on the use of Nafion-H<sup>R</sup> as a heterogeneous catalyst for the oxidation of organic substrates using hydrogen peroxide as oxidant. We herein report for the first time perfluorinated resinsulphonic acid (Nafion-H<sup>R</sup>) to be highly efficient, environmentally friendly, recyclable heterogeneous catalyst for the oxidation of sulphides to sulphones, tertiary amines to N-oxides and aldehydes to esters in excellent yields under mild reaction conditions using 30% hydrogen peroxide as oxidant.



Among the various sulphides studied, alkyl sulphides were found to be more reactive as compared to the aryl sulphides. Similarly aliphatic tertiary amines and pyridines those substituted with electron donating groups were found to be more reactive. Acetonitrile and 1,2-dichloroethane were found to be most suitable solvents for these transformations. In case of aldehyde oxidation presence of water trapping agent (MgSO<sub>4</sub>) was found to be essential and in its absence corresponding acids formed as major products instead of esters.

Keywords: Oxidation, hydrogen peroxide, perfluorinated resinsulphonic acid, heterogeneous catalysis