



SULFUR ORGANIC COMPOUNDS OXIDATION IN THE PRESENCE OF CROWN ETHERS

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Thiols, sulfides, and benzothiophene derivatives oxidation is very important route for purification of hydrocarbon raw materials and oil fractions from sulfur compounds. Among the different catalysts proposed for this process transition metal peroxo complexes are the most frequently studied. There are many difficulties to carry out benzothiophene derivatives oxidation in the presence of homogeneous and heterogeneous catalysts.

In the present work, we dedicated particular attention to niobium and vanadium peroxo complexes with N- and O-containing ligands which are able with high activity to catalyze oxidation of organic sulfides and benzothiophenes by hydrogen peroxide in bi-phase system. The concept of this system is a combination of phase transfer and metal complex catalysis. In this case sulfide and oxidation products are dissolved in organic phase and catalyst is presented in water phase. Alkylaryl sulfides in the presence of vanadium peroxo complexes can be oxidized mainly to corresponding sulfoxides, and in the presence of niobium peroxo complexes sulfides and benzothiophenes can be oxidized to corresponding sulfones with almost quantitative yield in mild conditions.

Oxidation of sulfides and benzothiophenes by hydrogen peroxide in the presence of crown ethers without any metal catalysts has been studied as well. This oxidation system gives possibility to carry out oxidation of dibenzothiophenes which have very low activity in motor fuels desulfurization processes. Transition metal peroxo complexes and crown ether were applied for diesel fuel oxidative desulfurization with high effectivity.

References.

[1] A.V.Anisimov, A.V.Tarakanova, E.V.Fedorova, A.Z.Lesnugin, L.A.Aslanov. *Catalysis Today* 78 (2003) 369.

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