
The Chemisorption of Anisole on Cu(II) Hectorite*

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Abstract: The sorption of anisole and some related aromatic ethers on the interlamellar surfaces of Cu(II) hectorite has been investigated by i.r. and e.s.r, spectroscopy. In addition to physical adsorption, anisole forms two distinct types of Cu(II) complexes which are analogous to the type I and II species previously reported for benzene-Cu(II) smectite systems. These complexes can be transformed to type I and II complexes of 4,4' -dimethoxybiphenyl. Possible mechanisms are proposed for the oxidation process. Butyl phenyl ether formed a type II complex with Cu(II)-hectorite, but no dimerization reaction was noted in this system. Phenyl ether and benzyl methyl ether form a type I π complex with Cu(II)-hectorite. No type II analog was noted. E.S.R. spectra of each of the type II ether-Cu(II)-hectorite systems showed a single, narrow band with g near the value expected for a "free spinning" electron. The type I phenyl ether and benzyl methyl ether complexes also exhibited this e.s.r, band. Ag(I) hectorite adsorbs anisole by forming exclusively a type I complex. Na(I) and Co(II) hectorite adsorb anisole by physical means only, indicating association with the silicate surface.

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