Interlamellar Metal Complexes in Layer Silicates III Silver(I)—Arene Complexes in Smectites

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Abstract: The complexation of benzene and several methyl substituted benzenes with exchangeable silver(I) on the interlamellar surfaces of Ag(I)-montmorillonite has been studied using spectroscopic methods. There are no physically adsorbed molecules interacting with the internal silicate surfaces and the only chemisorbed species present are those which are coordinated through π electrons to the exchangeable Ag(I) ions. In each case the coordinated species are similar to the previously studied Cu(II)-montmorillonite Type I complexes where aromaticity is retained. Complete replacement of coordinated and other interlamellar water molecules was accomplished with relative ease. Stoichiometric determinations indicate a 2:1 benzene:Ag(I) complex. Similarities between the Cu(II) and Ag(I) complexes are discussed in relation to electronic configurations.

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