
The Adsorption of n-Aliphatic Alcohols from Dilute Aqueous Solutions on RNH₃-Montmorillonites. II. Interlamellar Association of the Adsorbate

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Abstract: The adsorption of butanol, hexanol, and octanol on alkylammonium montmorillonites of different chain length is similar to the distribution of alcohol between an organic solvent and water in bulk solution. Successive expansion of the clay layers starts at critical alcohol/cation ratios of 0.6 or lower which are biased mean values due to the heterogeneity of the cation density of the mineral. In the interlamellar phase autoassociation of the alcohols occurs in contrast to their behavior in aqueous solution. The intrinsic association constants ($k_M \sim 7$) are of the same magnitude of the values found in cyclohexane. The alcohols can associate with molecules fixed on specific sites of the mineral and on free monomers. The ratio of fixed to free monomers is of the order of 10/1.

Key Words: Alcohol adsorption • Alkylammonium clays • Intercalates • Montmorillonite

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