Heterogeneity of Charge Density Distribution in Montmorillonite as Inferred from Cobalt Adsorption

P. Peigneur, A. Maes and A. Cremers

Centrum voor Oppervlaktescheikunde en Colloidale Scheikunde, Katholieke Universiteit Leuven de Croylaan 42, 3030 Heverlee, Belgium

Abstract: A comparison is made of the ion exchange behavior, towards the cobalt ion, of five sodium montmorillonite clays. The selectivity for the bivalent ion at low cobalt loading is correlated with the average dimensions of the particles in the various clays, as characterized by several methods. The data are interpreted in terms of a higher selectivity of the bivalent ions for the broken bonds located at the edges of the clay crystals. Using a model comprising two areas of different charge densities, the experimental differences in behavior can be predicted reasonably well.

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