
X-Ray Diffraction Study of Aqueous Montmorillonite Emulsions

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Abstract: An X-ray diffraction study of aqueous emulsions of a Na-montmorillonite shows that: (1) At low water content, the d-spacings of the montmorillonite increased stepwise with increasing water content; (2) At high water content, sharp (001) peaks due to regular stacking of montmorillonite layers were not detectable, but broad, halo patterns were observed in the low-angle scattering region; and (3) The addition of Ca^{2+} or H^+ to the aqueous emulsions caused Ca-montmorillonite or H-montmorillonite crystals to form. A zig-zag column model of montmorillonite layers fits the observed data for aqueous emulsions of Na-montmorillonite.

Key Words: Emulsion • Layer stacking • Low angle scattering • Montmorillonite • Water • X-ray diffraction

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