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JABOYEDOFF Michel, KÜBLER Bernard, STADELMANN Pierre, THELIN Philippe

An attempt to correlate HRTEM and XRD determination of coherent scattering domain size of illite-smectite interstratification using "illite crystallinity"

The relationships among the Kübler Index (KI), coherent scattering domain thickness, and HRTEM data are examined, using careful modeling of X-ray diffraction (XRD) patterns of air dried, glycolated, and heated samples of interstratified illite-smectite (I-S) from a stylolitic marly limestone. The XRD spectra are decomposed assuming that I-S consists of illite particles can be separated along expandable interlayers; there are also small amounts of two discrete phases mica phases and maybe pyrophyllite. The values obtained for coherent diffraction domain thickness of I-S are compatible with results obtained by HRTEM.

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