Qualitative and Quantitative Study of Stacking Faults in a Hydrazine Treated Kaolinite—Relationship with the Infrared Spectra

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Abstract: Artificial stacking faults can be created within a well-crystallized kaolinite by intercalating and removing hydrazine. X-ray powder patterns with electron microscopy show that the created defects are $\pm \mathbf{b}/3$ translations with a proportion 0.30. The infrared spectrum of the treated kaolinite is not modified with respect to the starting one. On the other hand, a natural kaolinite containing defects by displacement of Al vacancies in a similar proportion shows an infrared spectrum significantly different from that of a well-crystallized kaolinite. The modification of the infrared spectra of natural disordered kaolinites is then related to the presence of defects by change of Al vacancy positions

Clays and Clay Minerals; December 1977 v. 25; no. 6; p. 422-429; DOI: 10.1346/CCMN.1977.0250608

Clay Minerals Society (www.clays.org)