Characterization of the Particle Size and the Crystallinity of Certain Minerals by Infrared Spectrophotometry and Other Instrumental Methods—I. Investigations on Clay Minerals

J. Hlavay, K. Jonas, S. Elek and J. Inczedy

Veszprem University of Chemical Engineering, Veszprem 8201, Hungary

Abstract: Effects of particle size, crystallinity and the amount of the structural water in kaolinites on their infrared spectra, were studied. The samples were ground in a vibrating ball-mill, and infrared and X-ray spectra, as well as thermal and specific surface area measurements, were taken on the initial and ground samples. Changes of the 3705-cm^{-1} infrared band intensity and of the absorbance ratio of the A 3630/A 3705-cm^{-} bands were determined as a function of the grinding time. Correlation functions between the absorption ratio, calculated from the infrared spectra, and the average particle size, as well as between the amorphism, calculated from the X-ray spectra, and the average particle size, were obtained.

Clays and Clay Minerals; December 1977 v. 25; no. 6; p. 451-456; DOI: 10.1346/CCMN.1977.0250611

Clay Minerals Society (www.clays.org)