Clay Mineral Synthesis—III Rapid Hydrothermal Crystallization of an Aluminian Smectite

W. T. Granquist, G. W. Hoffman and R. C. Boteler

Baroid Division, N.L. Industries, Inc., Houston, Texas 77001, U. S. A.

Abstract: An aluminian smectite with about one Al^{3+}/Si^{4+} replacement per unit cell was batch-synthesized on a large scale (100-gal autoclave) at 300 ° C and 1240 psig with reaction times of several hours rather than days. This rapid crystallization was related to the use of NH_4^+ as the charge-balancing cation and to partial F/OH substitution. The short synthesis time prompted a study of continuous crystallization. Either of two techniques, flow through a stirred autoclave and through a multi-staged reactor column, produced crystalline product; neither gave the crystallinity of the batch process.

Clays and Clay Minerals; October 1972 v. 20; no. 5; p. 323-329; DOI: 10.1346/CCMN.1972.0200509

Clay Minerals Society (www.clays.org)