# Electron Optical Observations on Marblehead Illite

**Necip Güven**

University of Illinois, Department of Geology, Urbana, Illinois 61801, U.S.A.

**Abstract:** Electron optical observations on Marblehead illite showed the presence of twinned aggregates of lath-shaped crystallites. The selected area diffraction patterns of these aggregates indicate a strict orientational relationship between them.

Original twinned mica flakes display all possible stages of the transformation of these micas into lath-shaped illites, where the *a* and *b* dimensions of layers do not show any noticeable changes, but *c*-dimension becomes shortened in the illites. The transformation seems to involve parting along (110) of the micas, subsequent $H_2O$ and OH inclusion in the structure and other possible chemical changes resulting from the hydration. The morphology and the size of lath-shaped crystallites displaying (001) and (110) forms seem to be responsible for the excess of water and K-deficiency in the Marblehead illite compared to the micas.

Individual illite laths commonly have a length $0 \cdot 1 - 4$ μ, a width of $0 \cdot 01 - 0 \cdot 1$ μ and a thickness varying between 10 and 50 Å.

*Clays and Clay Minerals*; April 1972 v. 20; no. 2; p. 83-88; DOI: 10.1346/CCMN.1972.0200206

Clay Minerals Society (www.clays.org)