
Kaolinite Intercalation Procedure for All Sizes and Types with X-Ray Diffraction Spacing Distinctive from Other Phyllosilicates

M. L. Jackson* and F. H. Abdel-Kader†

Department of Soil Science, University of Wisconsin, Madison, WI 53706, U.S.A.

† Department of Soil and Water Science, Alexandria University, Egypt (on leave as Visiting Research Associate, UW-MSN)

* Franklin Hiram King Professor of Soil Science (UW-MSN).

Abstract: Kaolinites of all kinds (fine, ' fireclay,' ' type IV,' etc.), some of which do not expand or expand incompletely with the usual intercalation methods used for comparison, are expanded completely by treatment of dry (110° C) clay with dry CsCl salt, followed by contact with hydrazine for 1 day at 65° C and then with DMSO overnight at 90° C. Comparison treatments were grinding in KOAc, soaking in hydrazine, and Li-DMSO, as well as combination of these. Following the Cs-hydrazine-DMSO treatment, the 7.2 Å spacing of 1:1 dioctahedral layer silicates shifts to 11.2 Å and the 11.2 Å/(7.2 + 11.2 Å) ratio \simeq 1.0. The trioctahedral 1:1 layer silicates and chlorite are not expanded by the Cs-hydrazine-DMSO procedure.

Key Words: Cesium • Dimethylsulfoxide • Expansion • Hydrazine • Intercalation • Interlayer • Kaolinite

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