
Reaction Series for Dioctahedral Smectites

Dennis Eberl

Department of Geology, University of Illinois, Urbana, Ill. 61801

Abstract: Several dioctahedral clay minerals are related through reaction series. These series can be produced hydrothermally from beidellite gel and montmorillonite by making simple changes in interlayer and solution chemistry. The series are: gel-K-beidellite-random illite/smectite-K-rectorite-illite; K-montmorillonite-K-rectorite-illite; Na-montmorillonite or beidellite-Na-rectorite-paragonite; Li-montmorillonite-Li-tosudite-Li-rectorite-cookeite(?); Mg-montmorillonite-Mg-rectorite-tosudite-sudoite(?); Ca-montmorillonite-Ca-rectorite-margarite(?); Al-Ca-montmorillonite-kaolinite/smectite-kaolinite (150° C); Al-Ca-montmorillonite-pyrophyllite/smectite-pyrophyllite (320° C). Assuming stability for the mixed-layer phases, paragenesis is a function of P, T, and X conditions. If the phases are considered to be metastable, paragenesis is a function of the speed and path of reaction.

Key Words: Beidellite • Cookeite • Hydrothermal • Mixed-layer • Rectorite • Sudoite • Tosudite

Clays and Clay Minerals; October 1978 v. 26; no. 5; p. 327-340; DOI: [10.1346/CCMN.1978.0260503](https://doi.org/10.1346/CCMN.1978.0260503)

© 1978, The Clay Minerals Society

Clay Minerals Society (www.clays.org)
