

---

# Chlorite Polytype Geothermometry

Jeffrey R. Walker

Department of Geology and Geography, Vassar College, Poughkeepsie, New York 12601

**Abstract:** Since the initial studies of chlorite polytypes, it has been suggested that the stability of the various polytypes may be a function of the temperature at which the mineral formed; however, few studies have been performed in which polytypes of chlorite in a specific suite of samples have been determined and correlated with temperature. A review of the reported occurrences of type I chlorite indicates that other factors, including grain size of the host rock, may be at least as important as temperature in controlling the stability of these polytypes. Results of systematic studies in areas of diagenesis and very low-grade metamorphism suggest that type-II chlorite is stable at temperatures well below 200° C and that it can form as the initial chlorite phase without passing through any intermediate polytypic stages. The conditions under which type-I polytypes occur are somewhat restricted, and cognizance of those restrictions will help to direct future studies of chlorite polytype transformations. These studies should focus on the structural details of polytype transformations; on the relationship of polytype stability to pressure, composition and kinetics; and on experimental calibration of the transformations.

**Key Words:** Chlorite • Diagenesis • Geothermometry • Low-grade metamorphism • Polytypes

*Clays and Clay Minerals*; April 1993 v. 41; no. 2; p. 260-267; DOI: [10.1346/CCMN.1993.0410212](https://doi.org/10.1346/CCMN.1993.0410212)

© 1993, The Clay Minerals Society

Clay Minerals Society ([www.clays.org](http://www.clays.org))

---