American Mineralogist, Volume 102, pages 1957–1960, 2017

Letter

EosFit-Pinc: A simple GUI for host-inclusion elastic thermobarometry

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Abstract

Elastic geothermobarometry is a method of determining metamorphic conditions from the excess pressures exhibited by mineral inclusions trapped inside host minerals. An exact solution to the problem of combining non-linear Equations of State (EoS) with the elastic relaxation problem for elastically isotropic spherical host-inclusion systems without any approximations of linear elasticity is presented. The solution is encoded into a Windows GUI program EosFit-Pinc. The program performs host-inclusion calculations for spherical inclusions in elastically isotropic systems with full *P-V-T* EoS for both phases, with a wide variety of EoS types. The EoS values of any minerals can be loaded into the program for calculations. EosFit-Pinc calculates the isomeke of possible entrapment conditions from the pressure of an inclusion measured when the host is at any external pressure and temperature (including room conditions), and it can calculate final inclusion pressures from known entrapment conditions. It also calculates isomekes and isochors of the two phases.

Keywords: Geobarometry, inclusion, Equations of State, elasticity