

Deposit Item

Methods

All microstructural analyses were conducted on double-polished garnet chips. Both, micro-Raman spectroscopy and EMPA were performed at the University of Potsdam. Micro-Raman spectroscopy was performed on the mineral phases inside the inclusions using a HORIBA Jobin–Yvon Confocal LabRAM HR 800 equipped with a Peltier cooled multichannel CCD detector and an Olympus BX41 petrographic microscope. For excitation ($\lambda = 532$ nm, laser power on the sample was 2–3 mW), an air-cooled Nd:YAG laser was used with a grating of 300 (eclogite samples) and 1800 (granulite samples) lines/mm, slit width set to 100 μm , and confocal hole set to 200 μm . The inclusions were analyzed in the range between 100 and 4000 cm^{-1} using a 100 \times objective, three accumulations of 30 s, and a spectral resolution of 10 cm^{-1} (for 300 grating) and 0.5 cm^{-1} (for 1800 grating; see also Ferrero et al., 2016). A Raman map of a nanogranitoids under the surface of the garnet from Mount Klet’ was acquired using a spot diameter of 1–1.5 μm and consists of a grid of $15 \times 15 \mu\text{m}^2$ with equidistant points separated by 0.5 μm . Each spectrum was acquired using a 100 \times objective between 90 and 4000 cm^{-1} , integrating three repetitions of 30 s, with spectral resolution of 10 cm^{-1} . Another map is visible in Figure 1 below.

The dmisteinbergite composition was constrained by EMPA using a JEOL JXA-8200. The measurements were performed at an acceleration voltage of 15 kV, 15 nA beam current and a probe diameter of 1 μm . FEG microprobe analysis were conducted on nanogranitoids with a JEOL Hyperprobe JXA-8500F (GFZ (German Research Centre for Geosciences, Potsdam) acquiring high-resolution backscattered electron (BSE) images and energy dispersive spectrometer (EDS) elemental maps.

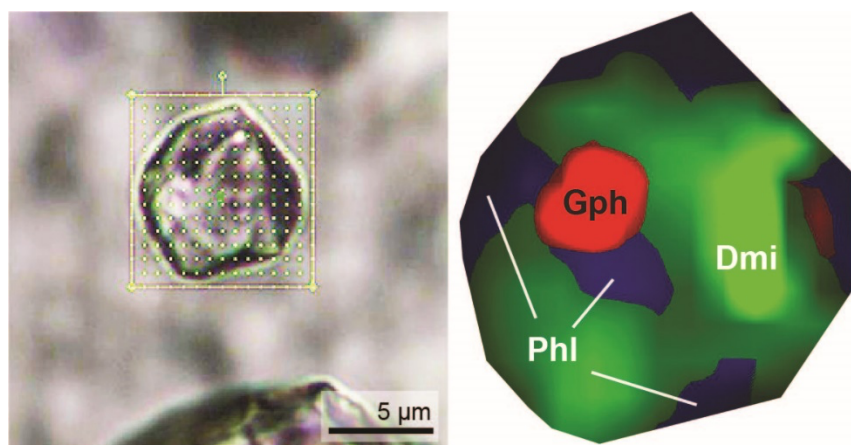


Fig. 1_Deposit Item. This Raman map (acquired on the same inclusion in Fig. 1e in the main manuscript) shows the spatial distribution of the following peaks coded by colors: 118 cm^{-1} for dmisteinbergite, 1580 cm^{-1} for graphite and 679 cm^{-1} for phlogopite.