

High-pressure Raman study of nyerereite from Ol Doinyo Lengai

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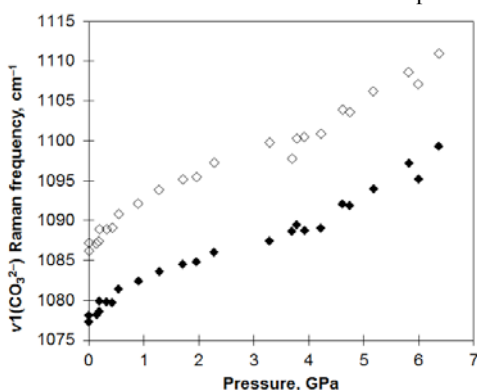
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Ol Doinyo Lengai is a unique volcano producing natrocarbonatite lava, rich in rare sodium carbonate nyerereite, $\text{Na}_2\text{Ca}(\text{CO}_3)_2$. Nyerereite also attracted a lot of attention as an inclusion phase in mantle minerals, probably linked to the deep carbonatite magmatism [1].

We measured Raman spectra of nyerereite from Ol Doinyo Lengai up to 7 GPa using a diamond anvil cell and silicone oil as a quasi-hydrostatic pressure-transmitting medium. The main Raman doublet of $\nu_1(\text{CO}_3^{2-})$ (1078 and 1087 cm^{-1} at ambient pressure) demonstrates $\sim 3 \text{ cm}^{-1}/\text{GPa}$ blue shift with pressure



(Fig. 1).

Figure 1: Pressure-induced Raman shift of $\nu_1(\text{CO}_3^{2-})$ nyerereite doublet.

The obtained data demonstrates an absence of pressure-induced phase transformations in nyerereite up to 7 GPa, and give a calibration for residual pressure measurements in nyerereite-containing inclusions.

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[1] Kaminsky *et al.* (2009) *Min. Mag.* **73**, 797–816.