

# A SYNTHETIC COBALT OLIVINE WITH A MONOCLINIC SYMMETRY

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As part of systematic studies on transition metal silicates, a single-crystal of cobalt olivine was synthesized with the floating-zone method in a nitrogen atmosphere. A part of the obtained crystal was cut and shaped into a sphere with diameter of about 42  $\mu\text{m}$ . The symmetry and cell dimensions of the specimen were examined with the single-crystal X-ray diffraction technique at temperatures 120, 170, 220, 270 and 300 K, utilizing synchrotron radiations of 0.750(1) Å.

At all the temperatures the crystal shows a monoclinic symmetry, giving the cell dimensions  $a=4.772(1)$ ,  $b=10.340(7)$ ,  $c=5.953(2)$  Å,  $\alpha=90.45(3)^\circ$  at 300 K. The  $a$ -axis is chosen as the unique one, and the edge lengths are given in relative values to the assumed wavelength of the used radiations. The observed systematic absence indicates the space group  $P2_1$  for the crystal.

Laihunite, a nonstoichiometric olivine-type mineral is known to have the monoclinic symmetry  $P2_1/b$  (the unique axis:  $a$ ). However, the present crystal has no significant deviation from the stoichiometry in chemical composition unlike laihunite according to a chemical analysis with EPMA. The deviation from the ideal olivine structure is now under examination.