

Experimental report: CH-5607

The experiment was intended to discover the expected transition between  $\epsilon_0$  and  $\epsilon_1$  as predicted by simulations at low temperature inside the epsilon phase.

The DAC loaded with oxygen was placed inside the cryostat and we tried to obtain a fine powder of the epsilon phase by making 6 times the delta-epsilon transition at 50 K.

The quality of the powder was improving thanks to the grinding of the crystals due to the delta-epsilon transition, producing more homogenous Debye-Scherrer diffraction rings. Unfortunately the quality of the powder was never reaching the quality required to perform a Rietveld refinement.

Nevertheless, we tried to analyze the data by studying the pressure evolution of the d-spacing of some selected diffraction lines. We observe some kink in the pressure evolution under decompression right at the expected pressures, but the quality of the data is not good enough to assess the discovery of the epsilon zero epsilon one transition.

The experiment has to be redone following a different sample preparation.