

# Report on the results obtained during the HC-920 experiment

The goal of this experiment was to measure the structure of the archetypal antiferroelectric PZO as a function of both temperature and electric field.

We have brought the environmental setup (Linkam) to perform such experiment to replace the one existing on the beamline as it did not allow for the application of an electric field. We have benefitted from the most appreciated support from the beamline scientists, on that aspect as well as during the experiment, and it worked as a charm.

We have been able to measure Bragg peaks as well as super-structure reflections, thereby getting original and unique results which have enabled to resolve the long-standing controversy on the existence or not of an intermediate ferroelectric phase in lead zirconate. Such results would not have been possible without the use of synchrotron radiation.

We have also been able for the first time to measure the dynamics of the field-induced antiferroelectric to ferroelectric phase transition in PZO.

These results are at the core of Romain Faye PhD, which he successfully defended in November 2014. The articles related to these results are either submitted or under preparation at this time.

Reference : Romain Faye, PhD Ecole Centrale Paris, November 2014.