



Experiment title: Pressure dependence of the local structure of iridium ditelluride across the structural phase transition

Experiment number:
HC-1304

Beamline: ID-24	Date of experiment: from: 02-04-2014 to: 08-04-2014	Date of report:
Shifts: 18	Local contact(s): Sakura Pascarelli, (email: sakura@esrf.fr)	<i>Received at ESRF:</i>
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Report:

During this beamtime, the local structure of IrTe₂ has been studied by iridium L₃-edge x-ray absorption spectroscopy as a function of pressure at two temperatures 100 K and 295 K. IrTe₂ undergoes a structural phase transition at around 270 K. Both extended x-ray absorption fine structure (EXAFS) and x-ray absorption near-edge structure (XANES) spectra were employed to have information on the pressure-dependent changes above and below the structural phase transition. The high-temperature phase of IrTe₂ (trigonal at 295 K) reveals a clear anomaly in the Ir-Te correlations at around 4 GPa, while the low-temperature phase (at 100 K) shows a smaller change at around 6 GPa. XANES spectra, measuring higher-order atomic correlations, also show nonlinear pressure dependence in the local geometry at the anomalous pressures. These nonlinear changes suggest that IrTe₂ goes through lower local symmetry phases with increasing pressure.

Publication: Pressure dependence of the local structure of iridium ditelluride across the structural phase transition: E. Paris, B. Joseph, A. Iadecola, C. Marini, H. Ishii, K. Kudo, S. Pascarelli, M. Nohara, T. Mizokawa,

N.L. Saini, in *Phys. Rev. B* 93 (2016) 134109 doi: [10.1103/PhysRevB.93.134109](https://doi.org/10.1103/PhysRevB.93.134109)

<http://dx.doi.org/10.1103/PhysRevB.93.134109>