

Report for the Experiment HC – 3538

Different batches sample of $\text{FeNi}(\text{CN})_5\text{NO}$ and $\text{FeNi}(\text{CN})_4$ were analysed.

The analyses were carried out at the BM01 beamline of the European Synchrotron Radiation Facility (ESRF; Grenoble, France) in the temperature range 300 – 1100 K. The scanning rate was set at 5 K/min. The analyses were performed in a flowing Ar atmosphere because of, during the heating, the samples decompose with the release of gases. Data both during heating and cooling were collected.

The general mechanism observed followed our prediction obtained with laboratory XRD on *ex-situ* samples annealed at different temperatures. After several decompositions steps the final material resulted in the FeNi fcc phase. The complete identification of the decomposition path was not trivial especially because the formation of amorphous phases occurred.

The superlattice peaks of the tetragonal FeNi phase, objective of the proposal, were not completely identified. Anyway, magnetic analyses are still in progress in order to correlate the observed behaviour at ESRF with the structural properties of the material.