



	Experiment title: Spin polarised electron momentum distributions as a function of pressure in Fe ₃ Pt	Experiment number: HE-1362
Beamline: ID15a	Date of experiment: from: 12.02.04 to: 17.02.04	Date of report: 25/08/05 <i>Received at ESRF:</i>
Shifts: 18	Local contact(s): Nozomu Hiraoka	
Names and affiliations of applicants (* indicates experimentalists): Jonathan A. Duffy (University of Warwick)* Chris Steer (University of Warwick)* Leopold Blaauw (University of Warwick)* Jonathan W. Taylor (Rutherford Appleton Laboratory)*		

Report:

The Fe_(1-x)Pt_x system exhibits the invar effect at concentrations around the stoichiometric ordered Fe₃Pt phase. The aim of this experiment was to investigate the spin polarised electron momentum distribution as a function of applied pressure, in the ordered (Cu₃Au) and disordered phases of the invar system Fe₇₂Pt₂₈, using the magnetic Compton scattering MCS technique, in order to investigate the t_{2g} - e_g charge transfer at the High Spin (HS) Low Spin (LS) transition, and compare with LMTO, FLAPW and KKR electronic structure calculation results.

This experiment was not successful, because the beryllium gaskets we required became unavailable at the start of the experiment. Alternative materials were tried during the experiment, but no successful high pressure measurements were made, and no data could be collected at high pressure.

Our experiment, HE-1580, was targetted at developing the techniques required for high pressure spin-polarised Compton scattering measurements using ID15. A more successful measurement of Fe₃Pt, taken as a test measurement in the pressure cell, is presented in Experimental Report HE-1580. That experiment demonstrated the viability of the technique. Further research into alternative gasket sources, and indeed, materials, are presently being conducted.