



Experiment title:
X-ray Detected Ferromagnetic Resonance in multilayers using Resonant Magnetic Scattering in Bragg-condition

Experiment number:
 HC-966

Beamline: ID12	Date of experiment: from: 10.6.2014 to: 19.6.2014	Date of report: <i>Received at ESRF:</i>
Shifts: 18	Local contact(s): Fabrice Wilhelm	

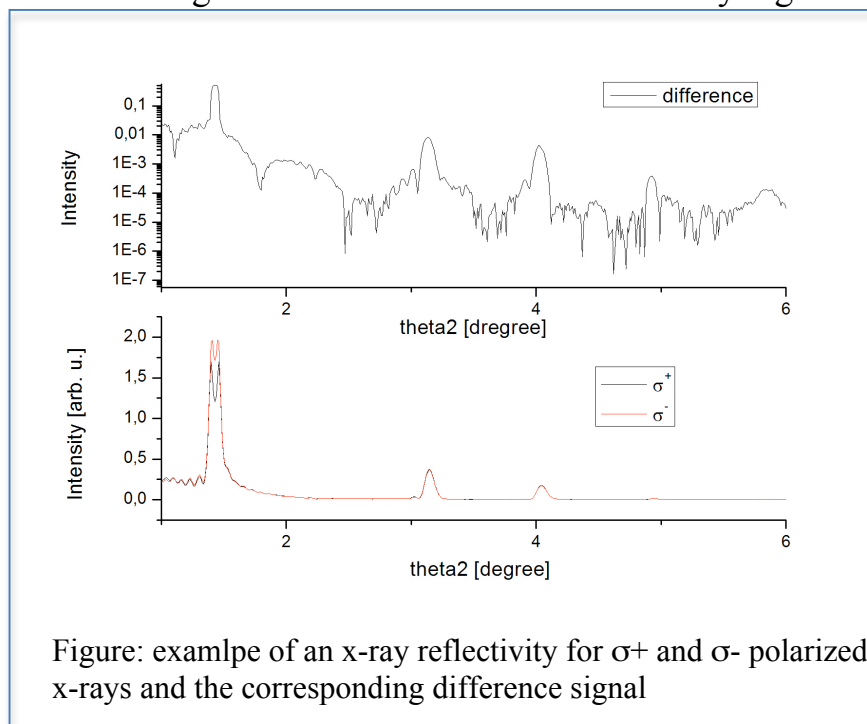
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Report:

The aim of the proposal was to measure x-ray detected ferromagnetic resonance (XDMR) using resonant magnetic scattering in Bragg condition and by that adding depth selectivity and allowing to extend XDMR in the hard x-ray regime to metallic samples.



For that we studied $[\text{Fe}/\text{Pd}(t)/\text{Gd}/\text{Pd}(t)]_{12}$ multilayers with different thicknesses of Pd which were characterized using conventional ferromagnetic resonance and x-ray reflectivity with a lab source.

As a first step we measured XMCD and reflectivity at the Fe K-edge and the Pd and Gd L-edges. These measurements revealed the different coupling of Fe and Gd through the Pd layers with different thickness.

As a second step we mounted a stripline in the reflectometer to measure FMR and reflectivity simultaneously. Unfortunately,

however, the microwave field at the position of the sample was too weak in order to excite the ferromagnetic resonance sufficiently to measure a signal which could be detected by x-ray reflectivity. Therefore we decided to use the remaining beamtime to complete the XMCD and reflectivity measurements for low temperatures which can lead to a publication. For the FMR setup we are currently investigating other possible layouts.