Experiment HC-711, ID12

Title: Magnetism of 2D arrays of AuCo alloy nanoprisms

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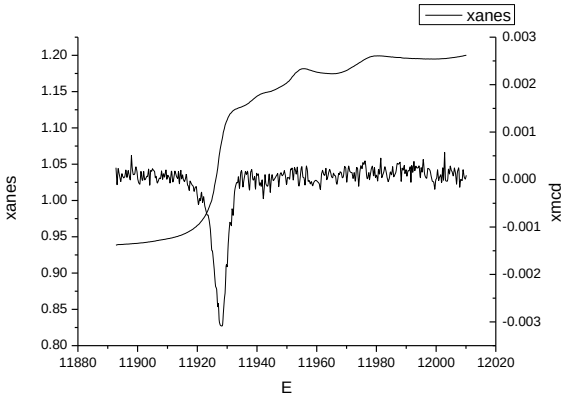
Experimental conditions: XMCD at Au L3 and L2 edges. B = 1 T, T = 2 K

Samples: Au-Co sputtered layers (30 um thick), Au-Co 2D arrays of Au-Co nanoprisms, one 2D array of Au-Co nanosemishells (for test).

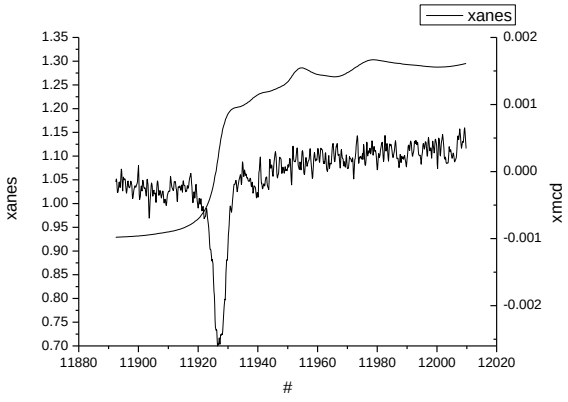
We have measured the XMCD signal from 4 samples. Each of them is the average of a lot of spectra. Data quality was good for the films, not for the nanoprisms. The reason was a combination of sample dilution with a lower mixing level of Au and Co atoms. So, for films (Au0.5:Co0.5 and Au0.7:Co0.3) the estimation of the spin over orbital magnetic moment was possible, while for the nanostructures was not. Anyway, we had the possibility to test a 2D array of Au-Co nano-semishells, where the XMCD signal was detectable (last spectrum below). Correspondingly, an EXAFS experiment performed at ESRF in the following month (08-01-908) has shown a significant degree of alloy in these arrays of nanostructures. A paper on the results of films is in preparation, while we plan to submit a new XMCD experiment on arrays of Au-Co nanostructures.

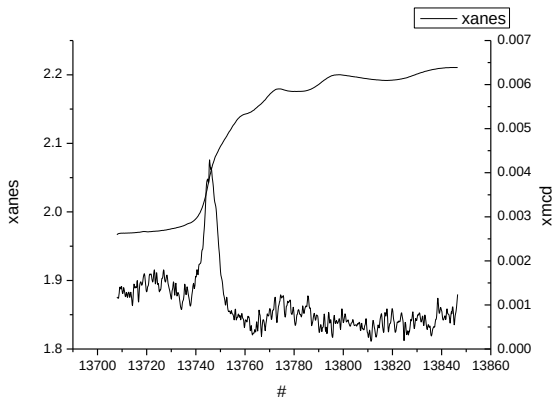
Example of data:

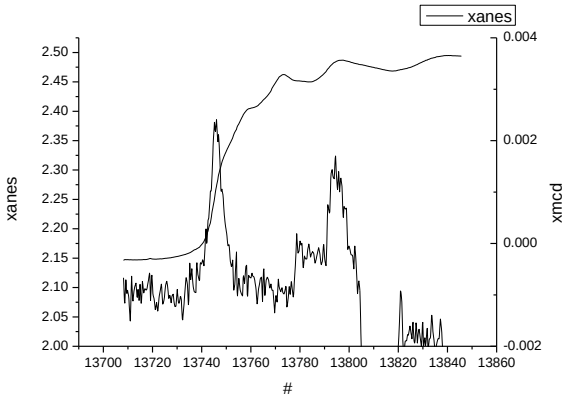
Au05Co05 film



Au07Co03 film







Nano-semishell, preliminary test at Au L3 edge