Experimental report

08/11/2016

Proposal: **INTER-319** **Council:** 4/2015

Title: Internal time on IN11

Research area:

This proposal is a new proposal

Main proposer: **Claudia MONDELLI**

Experimental team:

Local contacts: Peter FOUQUET

Samples: C

Instrument	Requested days	Allocated days	From	To
IN11	2	2	07/12/2015	09/12/2015

Abstract:

EXPERIMENTAL REPORT FOR INT 319
EXPERIMENTAL TEAM: C Mondelli P. Fouquet

ABSTRACT
Magnetic properties of non-sp^3 carbon-based systems have prompted intriguing discussions on the possibility of magnetism in carbon in the recent past. There is an emerging consensus on the existence of magnetism in *sp* and sp^2 carbon materials, which is supported largely by theoretical studies, and there are only a very few experimental observations. Magnetic measurements suggest the existence of magnetically correlated electron spins within nano-sized regions. We used polarised neutron scattering study to ascertain the dynamic nature of the magnetic short ranged correlations in the system.

Experiment:

We performed a measure on IN11 at lambda= 5.5 A at 4 different angles and at T=3, 40, 80 K in order to evidence the existence of a magnetic correlation spin-spin and spin lattice around 20 and 50 ns (these values were evaluated from pevious magnetic measurements).
We used 2g of sample, made at 600°C that assure the maximum value of magnetic moment as obtained from SQUID FC/ZFC experiment.
The sample has been dried for 3 hours under vacuum at 80°C.
In spite of that, we did not have a good statistic because the incoherent coming from the hydrogen present in the sample either for the synthesis methods or because the sample was not enough dried.

On the base of these results we will deuterate the sample for next neutron experiments and we evaluated the beam time needed for a successful experiment.