Experimental Report

Proposal:	**5-26-176**	**Council:**	4/2005	

Title: Magnetic Quantitative Texture Analysis (MQTA) using neutron diffraction

This proposal is a new proposal

Researh Area: Materials

Main proposer: **CHATEIGNER Daniel**

Experimental Team: CHATEIGNER Daniel

Local Contact: OULADDIAF Bachir
MCINTYRE Garry

Samples: Nd2Fe14B
LaSrMnO

Instrument	Req. Days	All. Days	From	To
D19	0	4	04/07/2005	08/07/2005

Abstract:

We aim to determine the magnetic orientation distribution function using magnetic pole figures of crystallographically textured, ferromagnetic samples. This will be operated using a specially ILL-built magnetic sample holder allowing the magnetic field to be fixed relative to the sample when this latter rotates inside the Eulerian cradle for pole figure acquisition.

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D19

Magnetic Quantitative Texture Analysis (MQTA) using neutron diffraction

Experimentalist: D. Chateigner
Local contact: B. Ouladdiaf

The experiment was aimed at determining the Magnetic Quantitative Texture Analysis of ferromagnetic samples of the Nd-Fe-B system. This consists in the development of the methodology + formalism.

Two different issues have to be fixed:

- The first issue focus on developing the "classical" quantitative texture analysis of the nuclear part at the D19 instrument using the newly developed 120° detector. This detector is mandatory in such system to detect magnetic signals in enough sample orientations in a reasonable time.
Concerning this part of the development, the detector calibration and necessary corrections for distortions and flat field have recently been carried out. We are now on the processing of data on calibrated samples that we measured at D20 during a previous run. Once this will be achieved, we'll focus on the magnetic samples.

- The second step is the development of the MQTA using difference data sets. We are actually working on the formalism development, waiting for the first step to be achieved.

We estimate in less than a year from now the time required to get the first results.