Experimental report

08/10/2018

Proposal: 5-31-2477 **Council:** 4/2016

Title: Low-temperature magnetic structure(s) of SmFeO3

Research area: Materials

This proposal is a new proposal

Main proposer: Mael GUENNOU

Experimental team: Mads WEBER
Inmaculada PERAL ALONSO
Mael GUENNOU

Local contacts: Maria Teresa FERNANDEZ DIAZ

Samples: SmFeO3

Instrument	Requested days	Allocated days	From	To
D2B	1	1	07/12/2016	08/12/2016
D1B	2	2	08/12/2016	10/12/2016

Abstract:

The aim of this proposal is to contribute to the understanding of the magnetism of SmFeO3 at low temperature by temperature dependent neutron diffraction. We wish to elucidate the origin of anomalies observed in Raman spectroscopy and possibly related to spin-lattice coupling involving the spin alignment of samarium.

Experimental report on proposal 5-31-2477

The challenge of the experiment lied in the very strong absorption of Sm due to its isotope ^{149}Sm. In an attempt to overcome this problem, the powder was dispersed in Al powder. Unfortunately, this was not sufficient to yield enough intensity for $SmFeO_3$, which precluded the determination of the magnetic structure. Below are the high-resolution diffraction patterns obtained on D2B at 290 and 10 K, together with the expected pattern. While the pattern $SmFeO_3$ is clearly visible, it was not sufficient for the purpose of the study.