Experimental report

06/02/2016

Proposal: 5-11-397 **Council:** 4/2012

Title: Deep mantle related natural microstructures assessed by Quantitative Texture Analysis of natural rocks.

Research area: Other...

This proposal is a new proposal

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Samples: FeMgCrSiOH

Instrument	Requested days	Allocated days	From	To
D19	4	3	23/11/2012	26/11/2012

Abstract:

This experiment aims to study the microstructures of crustal rocks that inherited crystallographic traces of their deep flow within the Earth mantle. Such microstructures are not detectable with other techniques than neutron diffraction quantitative texture analysis. QTA allows to identify the crystallographic preferred orientations of the rock forming minerals, even when only a small amount of them are still present in the rock sample (<10% in volume). The investigation of textures of relicts minerals is the base to investigate the behavior of mantle rocks during the main geodynamic processes that acted in the past and are now acting at depth, producing mantle and lithospheric anisotropies. Though such processes have been modelled little is known about the real structures that are produced. This experiment allows the direct investigation of these structures in natural samples.

Experimental report for 5-11-397: Deep mantle related natural microstructures assessed by Quantitative Texture Analysis of natural rocks.
Several technical problems have been experienced in linking raw data from D19 and MAUD for texture treatment.

However, the results of this experiment have been published in the paper:

Zucali, M., Voltolini, M., Ouladdiaf, B., Mancini, L. & Chateigner, D., 2014. The 3D quantitative lattice and shape preferred orientation of a mylonitised metagranite from Monte Rosa (Western Alps): Combining neutron diffraction texture analysis and synchrotron X-ray microtomography. *Journal of Structural Geology*, 63, pp.91–105.