

# Experimental Report

07/07/2005

<b>Proposal:</b>	<b>5-26-153</b>	<b>Council:</b>	10/2001		
<b>Title:</b>	Quantitative Texture Analysis of mylonitic diorites from Central Alps. Correlation between fabric development & metamorphic transformations				
<b>This proposal is a new proposal</b>					
<b>Research Area:</b>	Other				
<b>Main proposer:</b>	ZUCALI Michele				
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<b>Local Contact:</b>	OULADDIAF Bachir				
<b>Samples:</b>	Na-Ca-Mg-Al-Fe silicates				
<b>Instrument</b>	<b>Req. Days</b>	<b>All. Days</b>	<b>From</b>	<b>To</b>	
D1B	7	7	06/05/2002	13/05/2002	
<b>Abstract:</b>					

# Quantitative texture analysis of glaucophanite deformed under eclogite facies conditions (Sesia-Lanzo Zone, Western Alps): comparison between X-ray and neutron diffraction analysis

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**Abstract:** X-ray and neutron diffraction techniques have been applied to quantitative texture analysis of a glaucophanite from the Sesia-Lanzo Zone (Western Italian Alps), naturally deformed under eclogite facies conditions. The comparison has been carried out in order to reveal the limits and problems of texture analysis related to strongly deformed polymineralic. Different methods of measuring and computing the orientation distribution function from diffraction data have been tested, in particular X-rays, direct peak integration, and neutron diffraction using Rietveld-texture analysis. Due to grain-size problems and heterogeneity of individual amphibole minerals, neutron radiation is shown to be the best probe for characterizing the whole rock: being more penetrative than conventional X-rays, a larger volume of the mineral aggregate is sampled, giving better statistics. However, results obtained by summing the corresponding individual spectra of at least three X-ray diffraction experiments on parallel slabs of the same specimen also give statistically valid, semi-quantitative results that reproduce the overall textures. The quantitative texture analysis shows the strong texture of the two generations of amphiboles (AmpI and AmpII), which are mainly characterized by  $[001]^*$ -directions at an angle of about  $10^\circ$  to the mineral lineation and by  $(hk0)$  planes describing girdles around the lineation. The texture is comparable to those described in the literature for amphibole deformed under different temperature and pressure conditions, and the pronounced asymmetry of the  $[001]^*$  directions with respect to the mineral lineation is consistent with a non-coaxial component that occurs during the deformation.