QUANTITATIVE TEXTURE ANALYSIS AT THE D19-ILL BEAM LINE USING A 120° CURVED AREA PSD

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Quantitative Texture Analysis (QTA) has been developed for several decades on many neutron centres worldwide. First analyses used point detectors and several days of beamtime per sample to extract the necessary pole figures. More recently the use of curved position sensitive detectors (CPS) enabled several pole figures to be measured simultaneously, reducing acquisition times to typically one day (i.e. on D1B-ILL) [1], then few hours when intense beam got available like on D20 at the steady-state source of ILL [2]. We show here that this time can still be reduced by increasing the solid-angle range spanned by the detector, as recently became available at the D19 beamline of ILL. The new detector is a 120° CPS that encompasses 30° along the tilt angle, reducing the (χ,φ) texture scans nearly by a factor of 5.

We choose two *belemnite sp.* calcitic rostra from the Cretaceous and Jurassic to calibrate the instruments for the combined analysis [3] and prove we obtain the same texture results as from previously measured data on the other instruments. These rostra are exhibiting fibre textures which fit into the mollusc phylogeny and the Cephalopoda clade.

In order to push forward QTA to magnetic analyses, we operated measurements on soft ferromagnetic samples. We developed a new approach that takes into account all the scattering contributions, acquiring magnetic diffraction peaks versus sample orientations, in order to determine the magnetic orientation distribution functions (MODF).

1: D. Chateigner, H.-R. Wenk & M. Pernet. *J. Applied Crystallography*, **30**, 1997, 43-48.
2: D. Chateigner, L. Lutterotti & T. Hansen. *ILL report 97 "Highlights"*: 1998, 28-29
3: D. Chateigner Ed.: "Combined analysis: structure-texture-microstructure-phase-stresses-reflectivity analysis by x-ray and neutron scattering", 2004, 147p
http://www.ecole.ensicaen.fr/~chateign/texture/combined.pdf
4: D. Chateigner, C. Hedegaard & H.-R. Wenk. *J. Structural Geology* **22(11-12)**, 2000, 1723-1735