

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

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Quantitative Texture Analysis (QTA) [1] has been developed for several decades at many neutron centres worldwide. The first analyses used point detectors and needed several days to measure single pole figures. Twenty years ago, the curved position sensitive detector (CPS) of D1B-ILL reduced the acquisition time to nearly one day but provided all the pole figures simultaneously [2]. More recently at the D20-ILL diffractometer, the whole pole figure set got measurable in typically 4h [3].

The new detector that became available at the D19 diffractometer at ILL last year encompasses 30° along the tilt angle and 120° in 2θ, hereby reducing the (χ, φ) usual texture scans nearly by a factor of 5 compared to standard CPS, thanks to an increase in solid angle. This consequently reduces the texture measurements to typically less than 1h. This opens up the possibilities of measuring textures quantitatively in characteristic times comparable to annealing kinetics of ceramics, i.e. to “dynamic” developments of textures like recrystallisation or annealing times.

Quantitative texture analysis at D19 just began and has been tested on a *belemnite* calcitic rostrum to calibrate the instrument and data reduction for combined analysis [4]. This first approach proved realistic with the shortest acquisition times.

[1] H.-J. Bunge, C. Esling Ed.: Quantitative Texture Analysis, DGM, Germany, 1982, 450p.

[2] D. Chateigner, H.-R. Wenk & M. Pernet. *J. Applied Crystallography*, **30**, 1997, 43-48.

[3] D. Chateigner, L. Lutterotti & T. Hansen. *ILL report 97 "Highlights"*: 1998, 28-29

[4] D. Chateigner Ed.: "Combined analysis: structure-texture-microstructure-phase-stresses-reflectivity analysis by x-ray and neutron scattering", 2004, 147p