

# REGISTRATION OF STRUCTURAL DISORDER PROFILE OF CRYSTALLINE MATERIAL WITH PARTICLE-INDUCED DAMAGED DOMAINS VIA GRAZING-ANGLE INCIDENCE HARD X-RAY NANOSCOPE

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We propose in presented theoretical paper a method appropriate for high-resolution non-destructive investigations of the various kinds of one-dimensional structural disorder profiles of radiation-damaged layers using the coplanar grazing-angle incidence hard x-ray backscattering diffraction (GIXB) technique applied in the specular beam suppression conditions (see Fig. 1 for the set-up of proposed GIXB experiment).

Particularly, we have discovered within the specular beam suppression angular region a peculiar value of the Bragg angle, for which the curve shape of the x-ray reflectivity coefficient is very close to the shape of the corresponding structural disorder profile. So, it gives the possibility of rapid and direct registration of mentioned structural disorder profile for the high-energy particle irradiated crystalline materials.

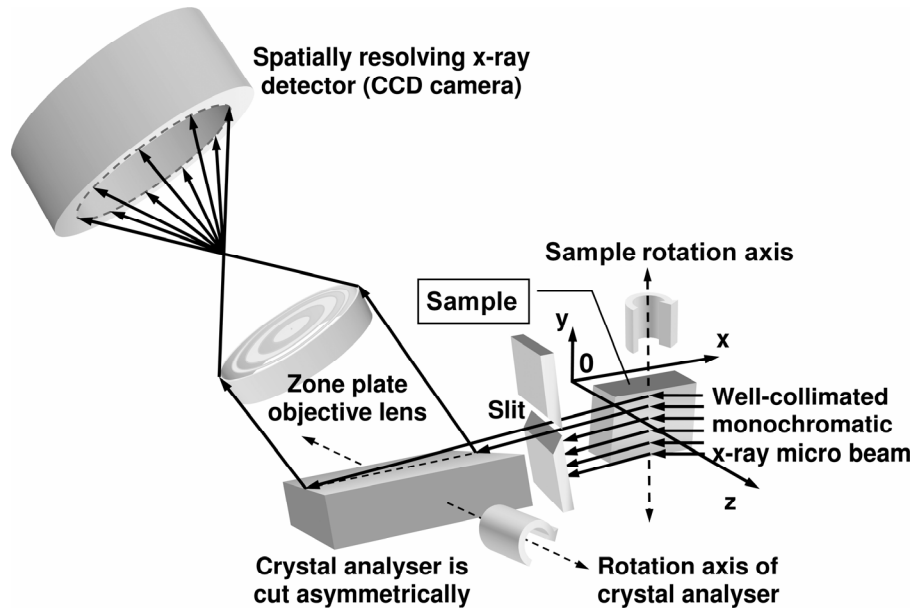


Figure 1. Set-up of the proposed imaging experiment via grazing-angle incidence hard x-ray nanoscope (GIXN).

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