X-RAY FOCUSING CRYSTAL VON HAMOS SPECTROMETER WITH A CCD LINEAR ARRAY AS A DETECTOR

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An x-ray focusing crystal von Hamos spectrometer has been developed using mica and graphite cylindrical crystals (radius of curvature R=20 mm) and a CCD linear array as a detector. Parameters of these crystals in the von Hamos scheme (integrated reflectivity, spectral resolution, imaging properties) were investigated earlier in ref. [1-3]. The CCD linear array has had 3600 pixels (8 μm width and 200 μm height) of a total length of 30 mm. Preliminarily the CCD detector was absolutely calibrated using laser-produced plasma x-ray source. Sensitivity (photon/μm^2) of the detector was about two orders of magnitude higher the one of x-ray photo film (Kodak RAR 2492) in the energy range 1.5-5 keV. The spectrometers were tested using laser-produced plasmas as a x-ray source and used for absolute spectral measurements and plasma diagnostics. This type of the spectrometer is very promising for absolute spectral measurements of x-ray radiation from low intensity sources and for practical applications (EXAFS, fluorescence analysis).

References:

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