Hard X-ray mapping and microscopy with lithographic CRL developed at ANKA Synchrotron radiation facility

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At ANKA Karlsruhe, deep X-ray lithography in SU-8 resist is being successfully applied for the production of efficient compound refractive polymer lenses for hard X-rays. The SU-8 polymer is characterized by low X-ray absorption and high irradiation resistance. The lithographic technique allows arbitrarily shaped structures (parabolas, segments, kinoform) together with extreme small radii, so lenses with very short focal lengths of a few cm and comparatively large effective apertures can be produced [1,2]. Enabling very large demagnifications the lenses focus synchrotron radiation with energies between 5keV to more than 30keV into sub-µm spots with very high intensity gain. Test and characterisation results of the lenses at ANKA and at the ESRF will be presented together with examples from applications in micro probe X-ray spectroscopy and magnified X-ray imaging [3].

1 V. Nazmov *et al*. Microsystem Technologies, 10 (2004) 716
2 V. Nazmov *et al*. AIP conference proceedings, 705(2004) 752
3 V. Nazmov *et al.* Proceedings of SPIEE, 5539 (2004) 235