

High Energy X-ray Optics for Synchrotron Radiation

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Refractive x-ray lenses are a powerful tool for focusing and imaging with synchrotron radiation. The lenses which are produced at RWTH Aachen University have rotationally parabolic and cylinder parabolic profile. The radii of curvature at the apex of the parabolas range from 50 to 1500 μ m. The linear lenses are useful for prefocusing in order to obtain a circular focal spot from highly elongated x-ray sources, as they are common in storage rings. In the meantime, lenses made of Be, Al and Ni are available. Al lenses are designed for the energy range from about 40 to 80 keV, whereas Ni lenses cover the energy range above about 80 keV. The talk will describe the state of the art of Al and Ni lenses as optical components for the energy range above 40 keV and it will outline possible applications in diffraction, spectroscopy and imaging.