

IV-04

Optics for high energy x-ray scattering applications

Thomas Tschentscher
ESRF, B.P.220, F-38043 Grenoble-Cedex, France

High energy photons in the range from 80 to 500 keV are a relatively new tool that is provided with sufficient fluxes only by the latest generation of synchrotron sources. Due to the high energies, and respectively very short wavelengths, new arrangements for monochromators or mirrors have to be investigated in addition to standard monochromator concepts. An overview of possible monochromator setups is given, and the needs for experiments to be performed at these energies are evaluated. Low absorption enables the use of rather thick absorbers in order to reduce the heat load problem, which is due to the high power synchrotron beam. Even monochromator crystals become semi-transparent, thus giving the possibility of operating more than one experimental station using the same synchrotron beam. Focusing techniques may be applied and monochromators with an increased bandwidth are of interest for providing sufficient monochromatic flux. The optical concept of the High Energy beamline ID15 at the ESRF is presented, where two different insertion devices can be used alternately. Monochromatic beam in the range from 30 to 80 keV is provided by the use of bent, cooled Si monochromators, and results of the performance tests are shown.