EUV beam splitter for use in the wavelength region around 6 nm

Hisataka Takenaka, Satoshi Ichimaru, and E.M. Gullikson

NTT Advanced Technology Co., 162 Shirakata, Tokai, Ibaraki, 319-1193, JAPAN

* Lawrence Berkeley National Laboratory, Berkeley, CA 94720, USA

We are developing beam splitters for the EUV region, which have application to an interferometric X-ray microscopy, X-ray lasers, polarization experiments, and so on. In this study, the target wavelength was around 6 nm. The beam splitters were designed for a wavelength of around 6 nm, and an incident angle of 45° and 80°. The fabrication involves the deposition of a CoCr/C and a Cr/C multilayer on a SiN membrane by magnetron sputtering, and the subsequent removal of the SiN membrane by reactive ion etching. Figure 1 shows a photograph of a fabricated device with a window size of 10 mm × 10 mm. Measurements on Beamline 6.3.2 of the Advanced Light Source revealed the reflectivity of a CoCr/C beam splitter to be 8.7% and the transmittance to be 4.4% at a wavelength of 6.36 nm and an incident angle of 45°. The reflectivity of the Cr/C beam splitter to be 5.8% and the transmittance to be 6.6% at a wavelength of 6.15 nm and an incident angle of 80° (Fig. 2).

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References