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【120】Multilayer mirrors for wavelengths beyond the extreme ultraviolet

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Replacing 193 nm UV-radiation, extreme ultraviolet (EUV) radiation of 13.5 nm wavelength has entered commercial microelectronics production. Further progress and novel applications like microscopy of biological specimens require a further reduction of the wavelength to the sub-10-nm range ("Beyond EUV"- BEUV), e.g. the water window (2.33 nm to 4.4 nm). In this wavelength range multilayer mirrors are used instead of refractive optical components, e.g. alternating Cr/Sc structures at 3.12 nm. Their reflectivity spectra are far narrower than emission spectra of BEUV sources. In a numerical study we use grading of the layer thicknesses to widen the reflectivity spectra to collect more of the radiation and increase the optical throughput.

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