

Broadband spectrometer development based on high-density free-standing transmission gratings

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To gain a comprehensive understanding of the plasma based light sources, such as extreme ultraviolet (EUV) light sources for lithography and metrology, spectral characterization of the EUV range as well as the longer wavelengths is necessary. In this paper, we present a compact transmission type spectrometer based on a grating chip that is carrying an array of free-standing transmission gratings. The spectrometer comprises very high (up to 10,000 lines/mm) and lower line density gratings for recording high resolution spectra and covering wavelengths reaching beyond visible wavelengths. We present the characterization and spectral calibration of the spectrometer, and measured spectral data from different sources.