

Multilayer research for the EUV, soft X-ray and X-ray region in Tongji University

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In my talk, I will present three topics. Firstly, we developed beam splitters for soft X-ray laser Mach-Zehnder and Michelson interferometer at 13.9 nm. Mo/Si multilayers deposited on back side and both sides of silicon nitride with thickness of 100 nm were fabricated using DC magnetron sputtering. We presented the results of their reflectivity, transmission and probing the electron density of laser-produced plasma using a soft X-ray laser Mach-Zehnder interferometer. Secondly, I will describe the design and fabrication of broadband polarizers in EUV range. These polarizers can be used as analyzers for a wideband polarization measurement. We discuss the results obtained with depth-graded Mo/Si multilayer analyzers for 13-19 nm polarization measurements. Finally, I also discuss the development of X-ray super mirrors used as broadband angular reflectors operating at the fixed energy of 8 keV. I summarize our recent investigation of the design, fabrication and performance of depth-graded W/Si, W/C and W/B₄C multilayers.