

Optical And Structural Characterization Of Nb, Zr, Nb/Zr, Zr/Nb Thin Films On Si₃N₄ Membranes Windows

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High brilliance sources in the EUV spectral range such as Synchrotron and Free Electron Lasers (FEL) are widely used in multiple scientific and technological applications thanks to their peculiar characteristics. One main technical problem of FEL is related to the rejection of high harmonics, seed laser, first stage photons, and diffuse light; in order to improve the quality of the beam delivered by these sources, a suitable optical system acting as band-pass filters is necessary[1,2,3]. We will discuss the optical and structure characterization of Nb/Zr and Zr/Nb self-stand transmittance filters, designed for 4.5 nm-20 nm wavelength ranges. In order to understand the properties of these bilayers filters, a campaign of measurements has been planned to be performed on Zr and Nb films on Si₃N₄ membrane windows and silicon substrates, deposited with e- beam deposition technique. Optical microscope and AFM images, IMD transmittance and reflectance simulation results, together with preliminary Transmittance and reflectance measurement results, will be shown in this work.

References

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