

# **A Mo/Si Multilayer-Coated Photodiode Detector for Monitoring Soft X-Ray Laser Intensity**

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A commercial X-ray photodiode detector was coated with a Mo/Si multilayer film designed for a high efficiency polarizer at soft X-ray laser (XRL) of 13.9 nm to monitor the beam intensity in real-time. Reflectivity measurements of the multilayer-coated photodiode were carried out at an angle of incidence of 45° using synchrotron radiation. The s-polarized reflectivity was evaluated to be 44% at 13.9 nm wavelength, which was detected by another photodiode detector without multilayer coating. The transmitted and absorbed light was measured as the current of the multilayer-coated photodiode detector. A very strong positive correlation of 0.999 was observed between the two photodiode detectors. Next, reflectivity measurements using the XRL were also performed, and the correlation coefficient was 0.961. The above results indicate that the multilayer-coated photodiode detector can be utilized for shot-by-shot monitoring of the fluctuating XRL beam intensity. The details of the multilayer-coated photodiode detector and its application to absolute reflectivity measurements and polarization analysis using the XRL will be reported in this conference.