



Iranian Journal of Physics Research, Vol. 19, No. 4, 2020

Characterization of EUV and Soft X-ray emitted by plasma produced in a nanosecond laser field using AXUV Photo-Diode detector

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(Received 04 November 2018 ; in final form 14 October 2019)

Abstract

By using AXUV (absolute extreme ultraviolet) photodiode, experimental results obtained for soft X-ray and EUV emission are presented. Plasma produced by the nanosecond laser pulse laser system with the maximum energy of 250 mJ, pulse durations, 10-30 ns and wavelength, 1064 nm, under interaction with steel-316 target is applied. The energy of emission in the related wavelength is observed to be approximately linearly in proportion to the laser pulse energy. The related emissions with specific signal were detected by AXUV photodiode with durations of about 15 ns and the time delay of about 20 ns, relative to the laser pulse. The average energy conversion efficiency emission was determined to be about 2.5%.

Keywords: AXUV photodiode, EUV emission, Soft X-ray, laser produced plasma, laser energy conversion efficiency

For full article, refer to the Persian section