

Abstract Submitted
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UV Spectroscopy Advancements for Measurements of Tungsten Erosion & Re-deposition¹ D.A. ENNIS, C.A. JOHNSON, S.D. LOCH, Auburn Univ, T. ABRAMS, GA, A.G. MCLEAN, LLNL — A new high-resolution and high-throughput spectrometer has been constructed to resolve the most promising W line radiation in the DIII-D divertor between 200 and 400 nm arising from erosion during and between ELMs. Recently completed spectral surveys in the Compact Toroidal Hybrid experiment have identified over 30 low charge state W emission lines in the UV region, which can be combined with atomic predictions to determine the erosion and re-deposition of plasma facing W surfaces. The importance of metastable level populations on the W spectrum requires that multiple W emission lines be monitored simultaneously to accurately characterize erosion rates. The new UV spectrometer has a maximum resolving power of 1.6 \AA at 250 nm with better than 1 kHz temporal resolution. The designs for fiber-coupled collection optics and instrument shielding required for installation on the DIII-D tokamak will be presented along with expected signal levels for DIII-D plasma conditions.

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