

Abstract Submitted
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A New UV Spectrometer 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 ultraviolet spectrometer has been constructed to resolve the most promising W line radiation arising from erosion during W sourcing experiments in the DIII-D divertor. Spectral surveys in the Compact Toroidal Hybrid experiment between 200 and 400 nm have identified over 60 neutral and singly ionized W emission lines in the UV region, which can be combined with atomic predictions to determine the net erosion and re-deposition of W on plasma facing surfaces. The importance of W metastable level populations 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 Å at 250 nm with better than 1 kHz temporal resolution. The details of the 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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