

Abstract Submitted  
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**In situ FTIS Measurement of Thermo-oxidation in DIII-D<sup>1</sup>** K.R. UMSTADTER, UCSD, S.L. ALLEN, R. ELLIS, LLNL, C. CHROBAK, R. LEE, GA, E.A. UNTERBERG, ORNL — Carbon plasma-facing surfaces in the ITER divertor will chemically erode and produce co-deposits that contain trapped tritium. Direct monitoring of these gases is important as retained tritium will limit fusion reactor operation. These erosion products have distinct optical absorption bands that can be measured by Fourier Transform Infrared Spectroscopy (FTIS). Methods of in-situ removal will also require new diagnostics to monitor deuterium and tritium release. At the end of the 2009/2010 experimental campaign, a thermo-oxidation experiment was performed in the DIII-D tokamak. Thermo-oxidation removes both carbon and deuterium from co-deposits and produces CO, CO<sub>2</sub>, and D<sub>2</sub>O. Real-time molecular absorption measurements were made on the tokamak utilizing a novel technique employing FTIS and existing optical pathways. Initial results of the measurements and future applications of the diagnostic will be discussed.

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