

Abstract Submitted  
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**Plasma Surface Interactions at a “Spinning Wall”<sup>1</sup>** VINCENT M. DONNELLY, University of Houston — Reactions of neutral species on surfaces immersed in plasmas have been recognized for many years to be important in affecting the chemistry of plasma processes such as plasma etching and chemical vapor deposition. The reactions of radicals on the surfaces of chamber walls and substrates are a sink for radicals and a source of larger product species. This talk will discuss a method for studying these processes in near-real-time. The surface of a rapidly rotating cylindrical substrate placed between the plasma chamber wall and a differentially pumped diagnostic chamber is continuously exposed to the plasma and then analyzed. Products desorbing from the surface a few milliseconds after exposure to the plasma are detected by line-of-sight mass spectrometry, while the surface is monitored with Auger electron spectroscopy. Kinetics of surface reactions can be extracted from an analysis of the signal intensities as a function of substrate rotation frequency. Examples of recombination of Cl and O atoms in chlorine and oxygen plasmas will be discussed. Possible applications of this method to studies plasma-surface interactions under harsher conditions, including at the edge of magnetic fusion devices, will be discussed.

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