

Abstract Submitted  
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**In-situ measurement of electron emission and electron reflection yields** MARK SOBOLEWSKI, National Institute of Standards and Technology — Plasma simulations require values for electron emission yields at plasma-exposed surfaces. In-situ measurements can provide useful values for effective or total yields, summed over all incident, energetic particles produced by a given plasma. Here, measurements were performed at 5-10 mTorr of argon/CF<sub>4</sub> mixtures in a radio-frequency (rf) biased, inductively coupled plasma (icp) system. The rf voltage and current across the sheath adjacent to the rf-biased electrode were measured, along with Langmuir probe measurements of ion current density and electron temperature. The measurements are analyzed by a numerical sheath model, which allows the emitted electron current to be distinguished from other current mechanisms. Also, electrons elastically reflected at the counterelectrode are detected by measuring the current component at twice the icp frequency, 2f. Although photon fluxes and photocurrents are also modulated at 2f, new measurements are now able to distinguish these effects. Values obtained for the elastic reflection coefficient are smaller and more precise than those reported previously, but the measured emission yields remain nearly unchanged. Using additional information, contributions to the total emission yield from each type of incident particle are identified.

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