

Abstract Submitted  
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**In-situ measurement of electron emission and electron reflection yields** MARK SOBOLEWSKI, NIST - 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, in-situ measurements were performed at 5-10 mTorr in an 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. An insulating cap placed on the rf-biased electrode exposes a small, off-center portion of its area. The cap, combined with the azimuthal electric field induced by the icp source, allows emitted electrons to be distinguished from electrons reflected at the counterelectrode. Thus one can measure the emission yield at one surface and the reflection coefficient at the other. The technique has been validated in argon discharges and then applied to measure yields at practical surfaces in fluorocarbon etching plasmas.

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