

Abstract Submitted  
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**Plasma Potential Fluctuation Measured by an Emissive Probe in Processing Plasma**<sup>1</sup> DONGSOO LEE, NOAH HERSHKOWITZ, Department of Engineering Physics, University of Wisconsin-Madison — Measuring the plasma potential is very important not only to the fundamental understanding of plasma parameters but also to industrial development of plasma systems such as semiconductor etchers because the plasma potential determines the ion energy to wafers. One weakly perturbing technique for measuring the plasma potentials is the use of emissive probes for evaluating the inflection points of the I-V characteristics in the limit of zero emission. When RF power is coupled to the plasma, difficulties can arise in the measurement due to potential fluctuations by harmonic RF fields and deposition on the probe by reactive gases. In this study, we provide experimental data of plasma potential fluctuations measured in an inductive and a helicon processing tool using a fluorocarbon gas ( $\text{CF}_4$ ). The fluctuations give the minimum and maximum values of the fluctuating plasma potential. Deposition effects on the probes are also investigated.

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