

Abstract Submitted
for the GEC19 Meeting of
The American Physical Society

Fabrication of a Micro Secondary Electron Detection System and Its Measurement Results ZHENGYANG WANG, MATTHEW GOECKNER, LAWRENCE OVERZET, Department of Electrical and Computer Engineering, the University of Texas at Dallas, PLASMA APPLICATIONS TEAM — The presentation is about the fabrication of and measurement results from a micro-scale secondary electron detection system that should have the capability of imposing a variable surface electric field. To our knowledge, no experiments have been done to measure the ion induced secondary electron emission (IIEE) yield as a function of the surface electric fields. This is a critical factor in the operation of microplasmas since strong electric fields are present on all surfaces due to the plasma sheath. In our design, an electric field of at least $1\text{V}/\mu\text{m}$ will be applied on a chemically clean Si surface to simulate the E-field in a plasma sheath. Then low energy ions are directed onto the Si surface and produce IIEE. A collector layer is used to collect the secondary electron current. We have made our first working device and we are making test runs on it using a modified mass spectrometer as the ion source. We plan to present the fabrication of this micro detector together with results of its upcoming test runs.

Zhengyang Wang
University of Texas at Dallas

Date submitted: 05 Jun 2019

Electronic form version 1.4