

Abstract Submitted  
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**Microwave Plasma Window Theory and Experiments**<sup>1</sup> ANDREW MCKELVEY, PENG ZHENG, MATTHEW FRANZI, Y.Y. LAU, RONALD GILGENBACH, University of Michigan, PLASMA, PULSED POWER, AND MICROWAVE LABORATORY TEAM — The microwave plasma window is an experiment designed to promote RF breakdown in a controlled vacuum-gas environment using a DC bias. Experimental data has shown that this DC bias will significantly reduce the RF power required to yield breakdown, a feature also shown in recent simulation [1]. The cross-polarized conducting array is biased at (100's V) DC on the surface of a Lucite vacuum window. Microwave power is supplied to the window's surface by a single 1-kW magnetron operating at 2.45 GHz CW. The goal of this project is to establish controllable characteristics relating vacuum pressure, DC bias, RF power required for surface breakdown, as well as RF transmission after the formation of plasma. Experimental data will be compared with multipactor susceptibility curves generated using a Monte Carlo simulation [1] which incorporates an applied DC bias and finite pressures of air and argon.

[1] P. Zhang et al., Phys. Plasmas 18, 053508 (2011)

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