

Abstract Submitted  
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**Effect of Dielectric Properties on Functional Relationship between Plasma Initiation and Ambient Pressure** JOSEPH VALERIOTI, THOMAS CORKE, University of Notre Dame — A parameter study is conducted using Single Dielectric Barrier Discharge (SDBD) plasma actuators. An experimental setup is used to determine the plasma initiation voltage for a range of pressure, frequency, dielectric thickness, and dielectric material. An actuator is placed in a sealed chamber evacuated to a given negative gage pressure. Peak-to-peak voltage of an AC sine wave is then increased until plasma formation is verified by means of light intensity. The variation of this initiation voltage is determined as a function of ambient pressure for different combinations of thickness/material of the SDBD dielectric. The relationship is then presented so as to assess its collapsibility to a parameter describing the ratio of the dielectric coefficient to the dielectric thickness, which is central to lumped element models used in plasma modeling. Future work will examine the relationship at pressures above atmospheric.

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