

Abstract Submitted  
for the DPP09 Meeting of  
The American Physical Society

**Optical Comparison of Single and Double Dielectric barrier plasma actuators**<sup>1</sup> NOAH HERSHKOWITZ, LUTFI OKSUZ, ALAN HOSKINSON, University of Wisconsin Madison — Time resolved ICCD pictures are taken for double and single surface barrier discharge plasma actuator for thick and thin powered electrodes. The filament and jet propagation minimum speeds are measured for both single and double barrier actuators. Optical emission spectra are measured using a monochromator. In a typical OES spectrum, O<sub>2</sub>, O<sup>+</sup>, CO, OH, N, N<sub>2</sub>, N<sub>2</sub><sup>+</sup> and also optical emission lines from exposed electrodes (stainless steel, copper and tungsten lines) were observed for single barrier actuators. The optical data are fit by SPECAIR code<sup>1</sup>. The translational and rotational temperatures are found to be approximately room temperature while the vibrational temperatures were 1700 K and 1200 K, the electron temperatures were 3200 K and 2400 K for thick and thin electrode respectively. The different regimes in a discharge will be discussed.

<sup>1</sup>This work was supported by NASA under cooperative agreement NNX07AB84A and the Air Force Office of Scientific Research (AFOSR) under grant FA9550-07-1-0025.

Lutfi Oksuz  
University of Wisconsin Madison

Date submitted: 24 Jul 2009

Electronic form version 1.4