

Abstract Submitted  
for the GEC11 Meeting of  
The American Physical Society

**Multi-dimensional modelling of atmospheric pressure discharges with complex chemistry**<sup>1</sup> M.M. IQBAL, M.M. TURNER, Dublin City University, Ireland — Atmospheric pressure discharges typically have complex chemistry. In particular, such discharges commonly operate in a mixture of helium and air. Understanding the chemical kinetics of such plasmas is important for the development of applications. There is presently little understanding of the relationship between the operating conditions of the discharge and the characteristics of the resulting plasma. This work discusses a three-dimensional simulation of a dielectric barrier discharge with helium-air chemistry. In particular, we examine the effect of the discharge gap and driving frequency on the spatial structure and chemical character of the plasma. Filamentation, for example, is inhibited at driving frequencies in excess of 70 KHz. We will also present comparisons with relevant experiments.

<sup>1</sup>This work was supported by Science Foundation Ireland under grant number 08/SRC/I1411.

Miles Turner  
Dublin City University

Date submitted: 18 Jul 2011

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