Abstract Submitted
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Time Resolved Spectroscopy: Dynamic Study of a Dielectric Barrier Discharge Plasma[1] SARAH GUCKER, University of Michigan - Ann Arbor, MARIA GARCÍA, Universidad de Córdoba, Spain, BENJAMIN YEE, JOHN FOSTER, University of Michigan - Ann Arbor — Atmospheric pressure plasmas have prompted strong interest due to their potential application to a wide range of fields and technologies (such as materials processing and medical applications). When these atmospheric discharges are created within a gas bubble and liquid water medium, vast quantities of short-lived, highly oxidative particles are produced. These plasmas have been shown to possess the capacity to decompose aromatic compounds and other contaminants, thereby leading to the sterilization of the water. Here, the results from a dielectric barrier discharge plasma jet in liquid water operating on a variety of gases are presented. These plasmas display several distinct physical characteristic over a power cycle; therefore, the chemical dynamics taking place in the liquid is also expected to have a similar time dependence. Non-evasive, dynamic methods are necessary to probe these dynamic systems. Presented here are time-resolved optical emission spectroscopy measurements aimed at quantifying the fundamental characteristics of the plasma such as temperature and density- and how they evolve throughout the discharge cycle.

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