

Abstract Submitted
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Diagnostics of the Cold Atmospheric Plasma Jet DAVID SCOTT, YASH JAIN, ALEXEY SHASHURIN, MICHAEL KEIDAR, The George Washington University — Cold atmospheric plasmas (CAP) may have the ability to improve cancer treatment, though the mechanisms of which are yet to be fully understood. To this end a better understanding of the CAP physics is required. Recent works have shown that Raleigh microwave scattering (RMS) can successfully be used to obtain the absolute value of the electron density in CAP. The fabrication and calibration of an atmospheric condition RMS apparatus to estimate electron density has recently been completed. The plasma electron density will be analyzed with varying gas mixtures, flow rates, and input power frequencies. Helium and oxygen will comprise the preponderance of input gases. The plasma gun is made of a Pyrex syringe and yields plasma with a diameter of 3 mm and length of 2 – 4 cm. In addition, a novel CAP extension has been fabricated that will yield a plasma with 1.25 mm diameter via flexible conduit. This design is intended for in-vitro CAP treatment of cancer cells. The electron density of this in-vitro apparatus will also be analyzed under varying input conditions. Photographing via an intensified charged-coupled device will be performed concurrently with density measurements in order to analyze the life-cycle of the CAP, including the streamer head and afterglow regions.

David Scott
The George Washington University

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