

Abstract Submitted
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Diagnostics of Diffuse Large Volume Plasma Generated by an External Ionization Wave HAMID RAZAVI, MOUNIR LAROUCSI, Old Dominion University — Atmospheric pressure low temperature plasma jets are the product of guided ionization waves. Guided ionization waves can be transmitted through a dielectric material and under some conditions can ignite a discharge behind the dielectric material. We have recently reported on a novel way to produce large volume diffuse low pressure plasma inside a Pyrex chamber that does not have any electrodes or electrical energy directly applied to it. The diffuse plasma is ignited by a plasma jet located externally to the chamber. The plasma jet is placed in close proximity to the external wall/surface of the chamber or to a dielectric tubing connected to the chamber. The plasma ignited inside the chamber is diffuse, large volume and with physical and chemical characteristics that are different than the external plasma jet that ignited it. Here, we present diagnostics of the reduced pressure diffuse plasma including electron density and temperature, using Langmuir probe, fast imaging to study the propagation of the ionization wave inside the chamber and the plasma structure, and optical emission spectroscopy to identify the emitting excited species.

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