

Abstract Submitted
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Generation of Diffuse Large Volume Plasma by an Ionization Wave from a Plasma Jet MOUNIR LAROUSSE, HAMID RAZAVI, Old Dominion University — Low temperature plasma jets emitted in ambient air are the product of fast ionization waves that are guided within a channel of a gas flow, such as helium. This guided ionization wave can be transmitted through a dielectric material and under some conditions can ignite a discharge behind the dielectric material. Here we present 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 inside the chamber by a plasma jet located externally to the chamber and that is physically and electrically unconnected to the chamber. Instead, the plasma jet is just brought in close proximity to the external wall/surface of the chamber or to a dielectric tubing connected to the chamber. The plasma thus generated is diffuse, large volume and with physical and chemical characteristics that are different than the external plasma jet that ignited it. So by using a plasma jet we are able to “remotely” ignite volumetric plasma under controlled conditions. This novel method of “remote” generation of a low pressure, low temperature diffuse plasma can be useful for various applications including material processing and biomedicine.

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