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Characterization of cold atmospheric pressure plasma plume in the ambient air for medical applications VEDA PRAKASH GAJULA, KIRAN PATEL, NARAYAN BEHERA, AJAI KUMAR, Institute for Plasma Research — Over the last few years, many researchers have performed experiments to understand the low temperature atmospheric pressure plasma parameters for medical applications. Still there is a lack of clarity about optimization of the plasma jet parameters for specific medical applications. Possibly this is due to the adopting various experimental conditions. In this work, we have attempted to further understand the plasma plume parameters such as temperature, velocity and electron density, along the plume length. For this a 4kVp-p, 33 kHz sinusoidal voltage source has been developed. Helium as an active gas with flow rates of up to 11 lpm is used to produce the plume length of 4 cm into the ambient air. Thorough characterization of the plume has been carried out by using optical diagnostics such as emission spectra measurements, ICCD imaging and electrical discharge using voltage and current probes. The plasma density along the length of plume has been assessed by using the data obtained from the ICCD images (for plume drift velocity) and plume current measurements. The estimated values are in the range of 0.05-3.2 x 10^{12} cm^{-3}. Furthermore, the discharge ignition and plasma plume dynamics with gas flow rate will be presented.

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