

Abstract Submitted
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Atmospheric Pressure Non-Thermal Air Plasma Jet¹ ABDEL-ALEAM MOHAMED, AHMED AL-MASHRAQI, MOHAMED BENGHANEM, Department of Physics, Faculty of Science, Taibah University, Almadinah Almunawwarah, Saudi Arabia, SAMIR AL SHARIFF, Electrical Engineering Department, Faculty of engineering, Taibah University, Almadinah Almunawwarah, Saudi Arabia — Atmospheric pressure air cold plasma jet is introduced in this work. It is AC (60Hz to 20kHz) cold plasma jet in air. The system is consisted of a cylindrical alumina insulator tube with outer diameter of 1.59mm and 26mm length and 0.80mm inner diameter. AC sinusoidal high voltage was applied to the powered electrode which is a hollow needle inserted in the Alumina tube. The inner electrode is a hollow needle with 0.80mm and 0.46mm outer and inner diameters respectively. The outer electrode is grounded which is a copper ring surrounded the alumina tube locates at the nozzle end. Air is blowing through the inner electrode to form a plasma jet. The jet length increases with flow rate and applied voltage to reach 1.5cm. The gas temperature decreases with distance from the end of the nozzle and with increasing the flow rate. The spectroscopic measurement between 200nm and 900nm indicates that the jet contains reactive species such as OH, O in addition to the UV emission. The peak to peak current values increased from 6mA to 12mA. The current voltage waveform indicates that the generated jet is homogenous plasma. The jet gas temperature measurements indicate that the jet has a room temperature.

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