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Plasma Propagation Speed Model For Electron Temperature Investigated Of Ar And N_2 In Atmospheric Pressure Non-Thermal Indirect-Plasma Jet PRADOONG SUANPOOT, Maejo University Phrae Campus, JIRAPONG SORNSAKDANUPHAP, GOOK-HEE HAN, HAN-SUP UHM, GUANG-SUP CHO, EUN-HA CHOI, Department of Electrical and Biological Physics, and Plasma Bioscience Research Center, Kwangwoon University — Space and time resolved discharge images from an atmospheric pressure non-thermal indirect-plasma jet have been observed by a high-speed single-frame camera to investigate the electron temperatures. The propagation velocity of the indirect Ar and mixture N_2 (0 - 5%) plasmas along the plasma column has been shown to be in the order of 104 m/s, and that corresponds to an ion acoustic velocity in order of 102 m/s. Plasma has been generated by input discharge voltage of 3.0 kV at driving frequency of about 40 kHz. Particularly, there are two kinds of the electron, and it has been presented in atmospheric pressure non-thermal indirect-plasma jet. At slow electron energy, the average electron temperature has been found to be about 0.33 eV for Ar plasma and change to 0.42 eV for mixture Ar/N_2 plasma. And fast electron energy, the average electron temperature has been found to be about 1.19 eV for Ar plasma and change to 1.40 eV for mixture Ar/N_2 plasma. Implications of the results and directions for further studies are discussed.

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