

Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Generation of micro-jet atmospheric pressure plasmas and study of their characteristics¹ DANBEE KIM, J.K. RHEE, B. GWEON, W. CHOE, Korea Advanced Institute of Science and Technology — Low temperature micro-plasmas of about 360 μm in radius and were produced in the ambient air at tens of kHz using a pin electrode with and without a plane electrode. A pin electrode was placed in a pyrex tube, through which a helium gas was supplied. In the case of a pin electrode to a dielectric-covered plane electrode set up, a cone-shaped plasma was generated due to the presence of the dielectric material. It was shown that the discharge mode, plasma size, and gas temperature could be controlled not only by operational parameters such as gas flow rate, voltage, frequency, but also by geometrical parameters such as electrode position. The plasma radius was up to 5.5 mm at the dielectric surface and up to 8 mm in length. The rotational temperature was varied between 310 K and 490 K. In the case of the single pin electrode only, a needle-shaped jet plasma was generated of which length was as long as 60 mm. The plasma size was varied as the operational parameters were changed. The measured gas temperature was less than 310 K under all experimental conditions. Due to the advantageous features of the plasmas, they can be applied to treat small area, thermally sensitive surfaces.

¹Work supported by the Agency for Defense Development of the Republic of Korea.

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Date submitted: 21 Jul 2006

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