Abstract Submitted
for the GEC19 Meeting of
The American Physical Society

Multiple gas discharges in a dielectric barrier discharge for large-scale plasma jets DUC BA NGUYEN, YOUNG SUN MOK[1], Jeju National University — In recent years, there has been an increasing interest in bio-applications of atmospheric pressure plasma jet (APPJ), namely cancer treatment, sterilization, skin treatment, and wound healing. A common APPJ used to bio-applications has a confined area and considerable consumption of noble gases (Ar/He) during the plasma process, due to require room-temperature plasma. Thus, this is costly process and limited commercial capabilities. Since plasma jets spread area during interaction with a non-conductive surface (e.g. human skin), multiple plasma jets would generate in multi-bore tubing instead of one large diameter tube, the effect plasma area will be similar while reducing noble gas consumption. Moreover, the surface discharge in multi-bore tubing has a large area, suggesting more strong internal plasma. Consequently, in this study, multiple gas discharges will be investigated in a two-ring dielectric barrier discharge reactor, the dielectric is a multi-bore tubing and He as plasma gas. The effects of applied voltage, flow rate, and electrodes gap on the plasma jet will be examined in terms of jet length, jet temperature, and gas emission. Optical emission spectra of the plasma jet will be analyzed to evaluate activated chemical species by the plasma source.

[1]Corresponding author: smokie@jejunu.ac.kr (Mok)

Duc Ba Nguyen
Jeju National University

Date submitted: 05 Jun 2019 Electronic form version 1.4