Abstract Submitted
for the GEC10 Meeting of
The American Physical Society

Development of Atmospheric Pressure Plasma Jet with Slit Nozzle for large area treatment NOBUAKI OSHIMA, RYUJI TAKADA, TAMIO HARA, TOYOTA TECHNOLOGIACL INSTITUTE TEAM — Atmospheric pressure plasma jet has been used widely for surface treatments such as modifications, cleaning and deposition of thin films. In our previous work, a long flame nitrogen plasma jet was developed by eliminating oxygen from the atmosphere surrounding the jet. The long flame plasma jet could be applicable for treating objects having deep channels or large surface areas. Processing width of plasma jet, however, are limited to a narrow width of less than 10 mm. A large area processing capability is therefore desirable to expand the range of application in the industry including installation of plasma jets in production lines. In the present study, a wide-flame nitrogen plasma jet with a slit-type nozzle has been developed for treatment of large surface area, which is not necessary to control an ambient gas. The contact angle of water on the surface of polyethylene (PE) has been measured to estimate the plasma width expanded by the slit nozzle. It has been confirmed that contact angles of water on the polyethylene (PE) surface treated by the nitrogen atmospheric plasma jet has good uniformity in the range of 50 mm.

Nobuaki Oshima
Toyota Technologiacl Institute

Date submitted: 11 Jun 2010 Electronic form version 1.4