Abstract Submitted
for the GEC10 Meeting of
The American Physical Society

Water-Repellent Thin Film Deposition using a Gas-Liquid Mixed Phase Plasma Jet YOSHIHITO TAKAHASHI, JUNKO HIEDA, TATSURU SHIRAFUJI, Department of Materials, Physics and Energy Engineering, Nagoya University, NAGAHIRO SAITO, EcoTopia Science Research Institute, Nagoya University/ CREST, JST, OSAMU TAKAI, Department of Materials, Physics and Energy Engineering, Nagoya University/ EcoTopia Science Research Institute, Nagoya University/ CREST, JST — Water-repellent surface modification has attracted much attention because of their application in a variety of engineering fields. Wet processing methods are already known to be applicable to obtain the water-repellent surface. On the other hand, dry processing, particularly plasma processing, also provides a good solution to deposit the water-repellent thin films on various substrates without changing their bulk properties. Atmospheric-pressure plasma-jets operated with a low frequency of several kHz have advantages on three-dimensional low-temperature surface treatments without vacuum systems. Using this feature, we have investigated a possibility of preparing a water-repellent surface by using the plasma-jets with a liquid SiOC source material of hexamethyldisiloxane, which is non-toxic and has sufficient vapor pressure at room temperature. Resultant thin films were analyzed by using contact angle measurements, Fourier-transform infrared spectroscopy, X-ray photoelectron spectroscopy, and scanning electron microscopy.

Yoshihito Takahashi
Dept of Materials, Physics and Energy Engineering, Nagoya University

Date submitted: 10 Jun 2010 Electronic form version 1.4