Differences in nano structure on PET films formed with low-pressure and atmospheric pressure plasmas TAKASHI KURIKI, MASANORI KAWAGUCHI, TATSURU SHIRAFUJI, SUNG-PYO CHO, Department of Materials, Physics and Energy Engineering, Nagoya University, NAGAHIRO SAITO, EcoTopia Science Research Institute, Nagoya University, OSAMU TAKAI, Department of Materials, Physics and Energy Engineering, Nagoya University / EcoTopia Science Research Institute, Nagoya University — At present, dielectric barrier discharge methods is commonly used for treatment of polymer films. Many works are reported on cleaning and adhesion improvement of them, and recently, roll-to-roll atmospheric pressure treatment is also available. However, there are few reports on the detailed discussion on the nano-structure formation on the polymer surface. We have investigated differences between PET surface treatments with low-pressure and atmospheric-pressure plasmas. In the case of low-pressure oxygen-plasma treatment, we can obtain fine nano-structured roughness on the PET after the treatment. This brings about super hydrophilic feature on the surface, and super hydrophobic feature is available after forming hydrophobic self-assembled monolayer on it. In the case of atmospheric-pressure plasma treatment, we cannot obtain the fine roughness but broader roughness. This is considered to be due to a kind of “loading effect.” A possible method for preventing the loading effect is proposed.