Supplementary Material

Effect of Crystallinity on the Recovery rate of Superhydrophobicity in Plasma-nanostructured Polymers

Ji-Hyun Oh¹,², Myoung-Woon Moon²*, Chung Hee Park¹*

¹ Department of Clothing and Textiles, Seoul National University, Seoul, 151-742, Republic of Korea. E-mail: junghee@snu.ac.kr

² Department of Materials Science and Engineering, Massachusetts Institute of Technology, Massachusetts 02139, USA

³ Division of Materials and Life Science Research, Korea Institute of Science and Technology, Seoul, 136-791, Republic of Korea. E-mail: mwmoon@kist.re.kr

Fig. 1 Top-view SEM images of biaxial PET film (B-PET) plasma etched for 0, 1, 3, 5, 7, 10 and 15 min. (x80000, scale bar: 100nm)
Fig. 2 Tilted-view SEM images of biaxial PET film (B-PET) plasma etched for 0, 1, 3, 5, 7, 10 and 15 min. (x80000, scale bar: 100nm)

Fig. 3 Top-view SEM images of amorphous PET film (A-PET) plasma etched for 0, 1, 3, 5, 7, 10, 15, 20 and 25 min. (x80000, scale bar: 100nm)
Fig. 4 Tilted-view SEM images of amorphous PET film (A-PET) plasma etched for 0, 1, 3, 5, 7, 10, 15, 20 and 25 min. (x80000, scale bar: 100nm)

Fig. 5 Top-view SEM images of PET fabric (F-PET) plasma etched for 0, 1, 3, 5, 7, 10 and 15 min. (x80000, scale bar: 100nm)
Fig. 6 Tilted-view SEM images of PET fabric (F-PET) plasma etched for 0, 1, 3, 5, 7, 10 and 15 min. (x80000, scale bar: 100nm)
Fig 7. XRD patterns of untreated (UT), 10min plasma-etched, 10min plasma-etched and thermally aged at 130 °C for 24 h B-PET films (a), untreated (UT), 20min plasma-etched, 20 min plasma-etched and thermally aged at 80 °C and 130 °C for 24 h A-PET films (b), untreated, 15 min plasma-etched, 15 min plasma-etched and thermally aged at 130 °C for 24 h F-PET fabrics (c).
Fig. 8 Surface roughness analysis of 10min plasma etched biaxial PET film (B-PET) before (a) and after thermal aging at 130°C for 24hr (b) and 20min plasma etched amorphous PET film (A-PET) before (c) and after thermal aging at 80°C for 24hr (d).