Supplementary Material

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

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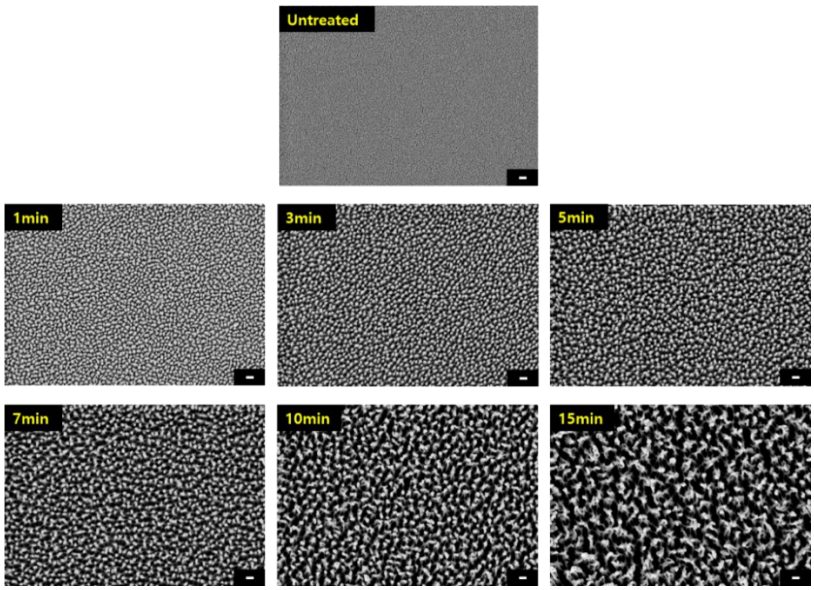


Fig. 1 Top-view SEM images of biaxial PET film (B-PET) plasma etched for 0, 1, 3, 5, 7, 10 and 15 min. (x80000, scale bar: 100nm)

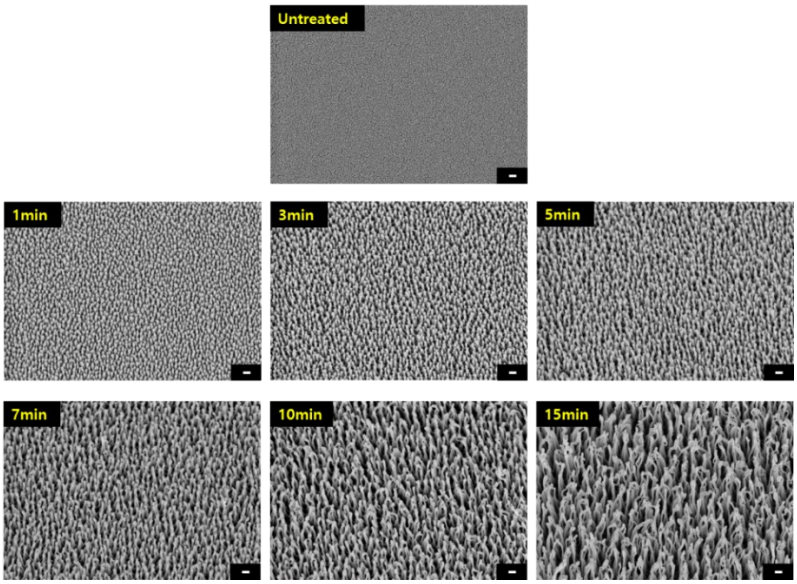


Fig. 2 Tilted-view SEM images of biaxial PET film (B-PET) plasma etched for 0, 1, 3, 5, 7, 10 and 15 min. (x80000. scale bar: 100nm)

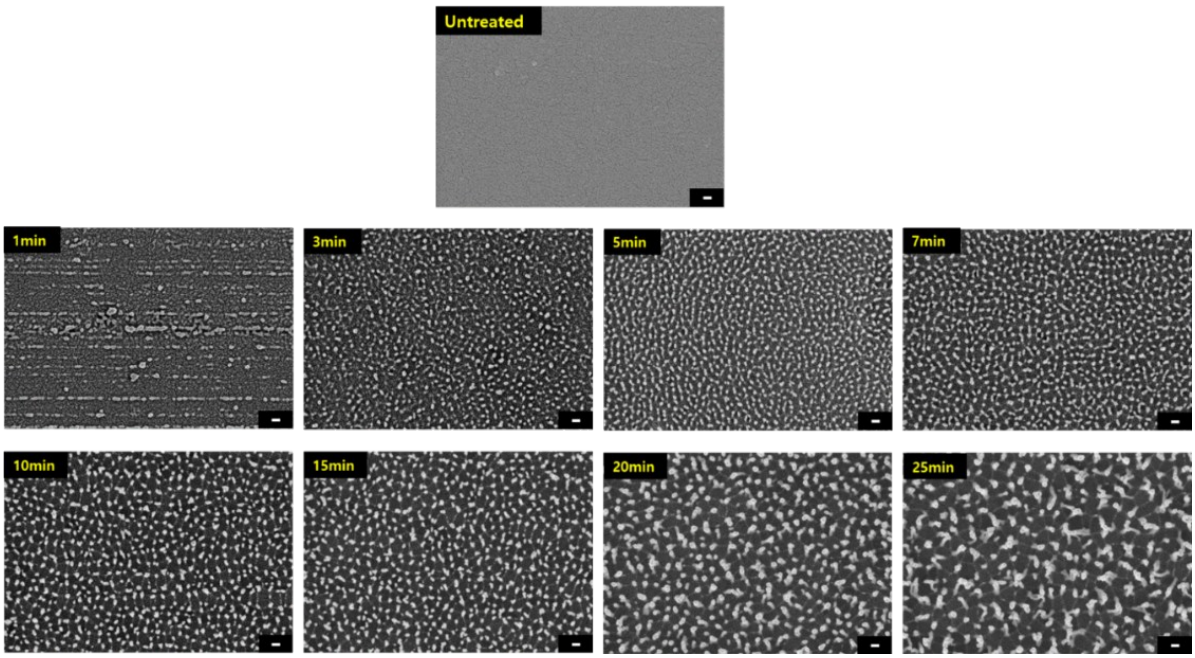


Fig. 3 Top-view SEM images of amorphous PET film (A-PET) plasma etched for 0, 1, 3, 5, 7, 10, 15, 20 and 25 min. (x80000, scale bar: 100nm)

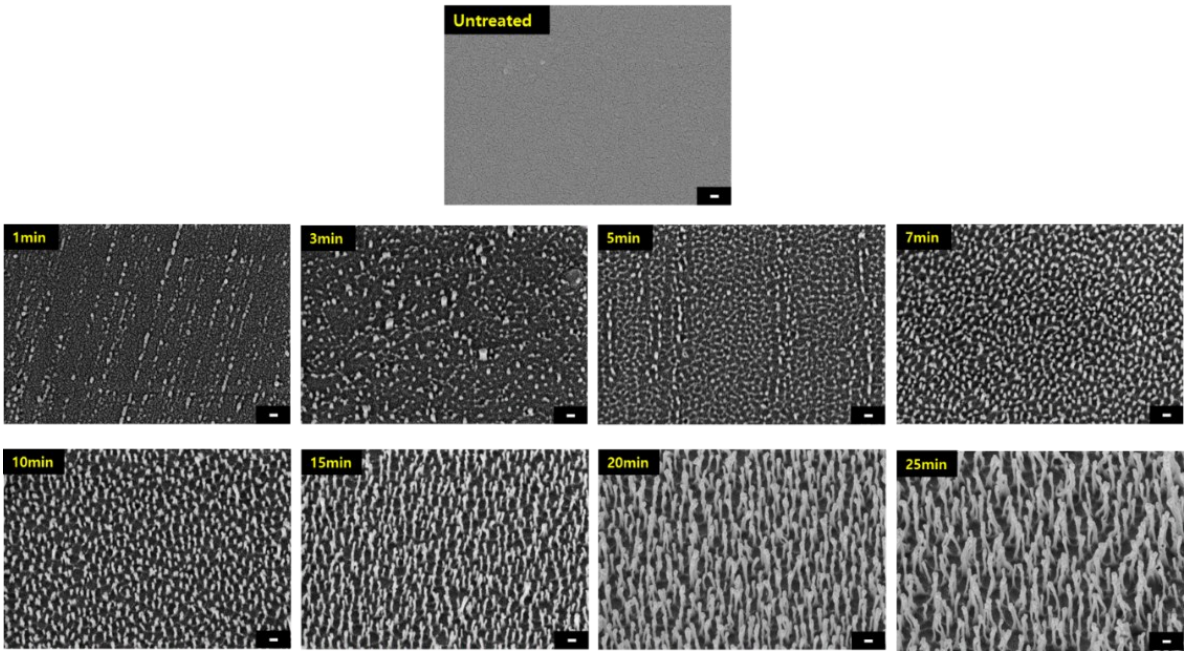


Fig. 4 Tilted-view SEM images of amorphous PET film (A-PET) plasma etched for 0, 1, 3, 5, 7, 10, 15, 20 and 25 min. (x80000, scale bar: 100nm)

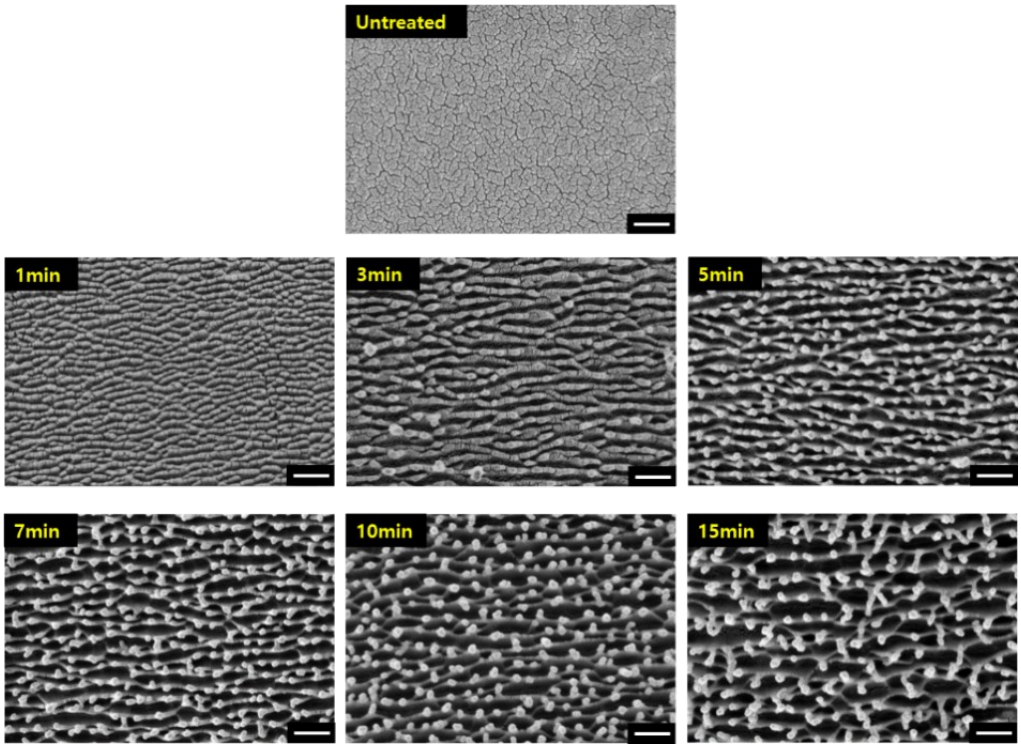


Fig. 5 Top-view SEM images of PET fabric (F-PET) plasma etched for 0, 1, 3, 5, 7, 10 and 15 min. (x80000, scale bar: 100nm)

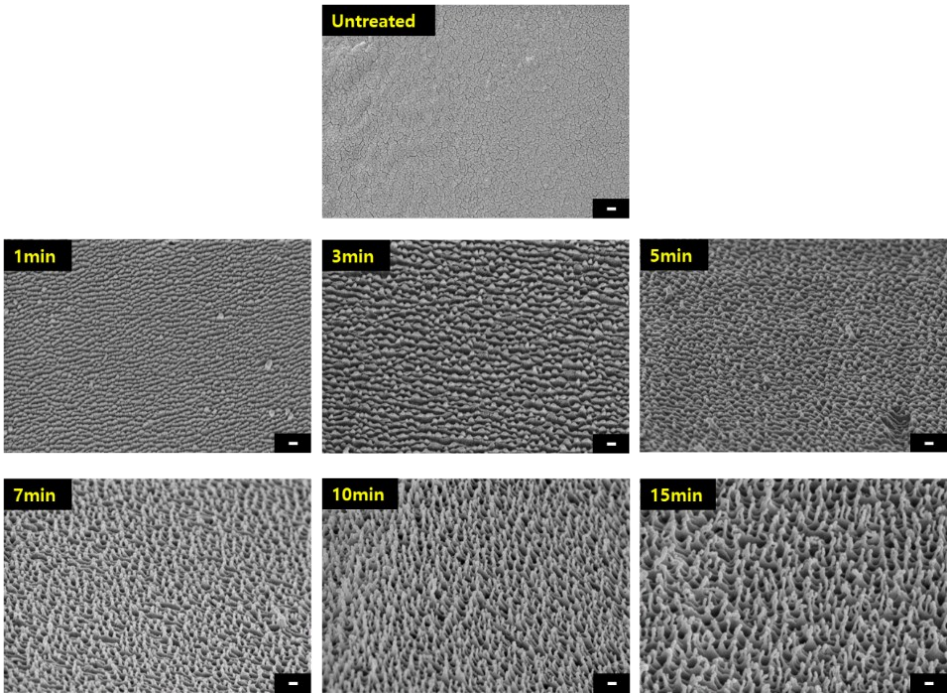


Fig. 6 Tilted-view SEM images of PET fabric (F-PET) plasma etched for 0, 1, 3, 5, 7, 10 and 15 min. (x80000, scale bar: 100nm)

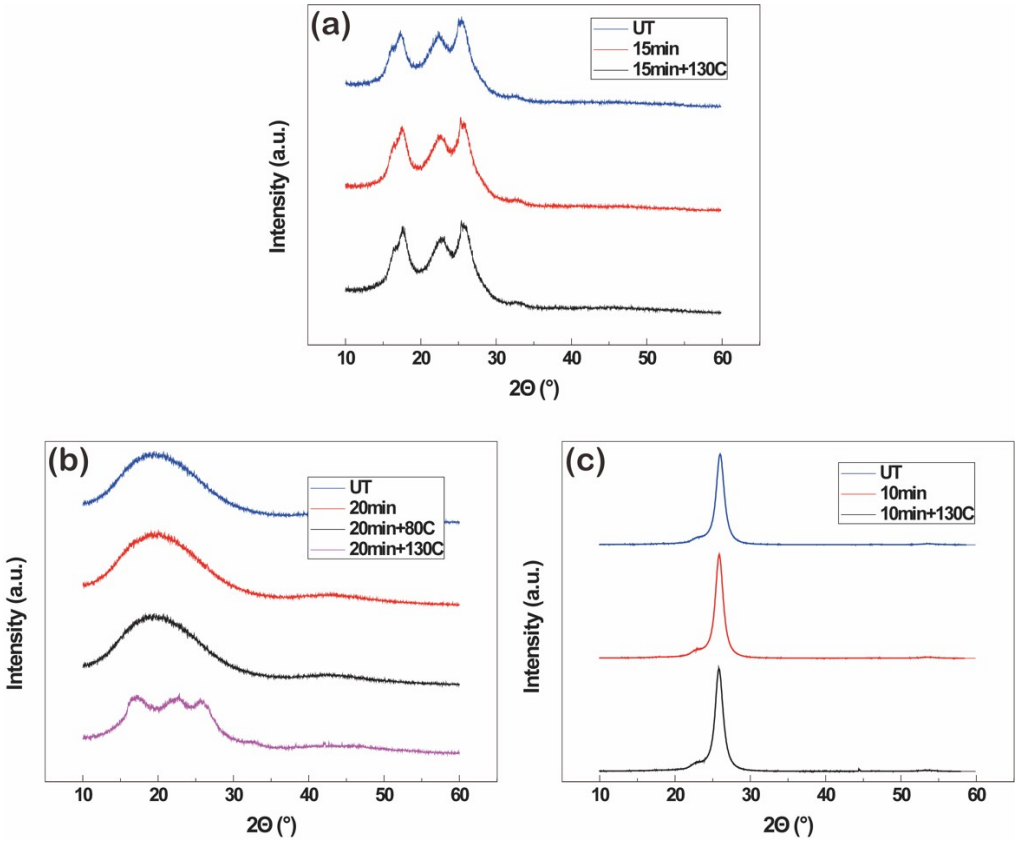
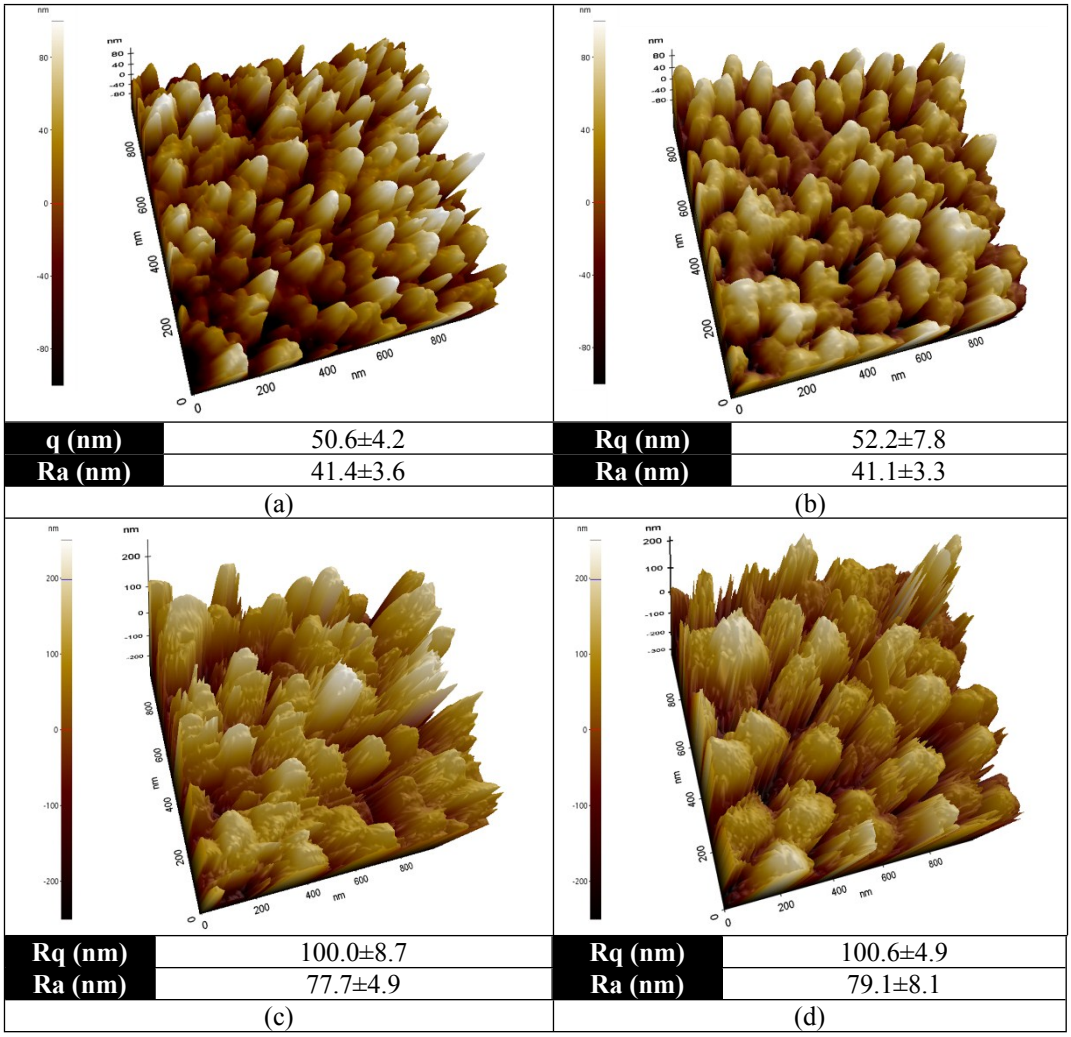


Fig 7. XRD patterns of untreated (UT), 10min plasma-etched, 10min plasma-etched and thermally aged at 130 ℃ for 24 h B-PET films (a), untreated (UT), 20min plasma-etched, 20 min plasma-etched and thermally aged at 80 ℃ and 130 ℃for 24 h A-PET films (b), untreated, 15 min plasma-etched, 15 min plasma-etched and thermally aged at 130 ℃ for 24 h F-PET fabrics (c).



q (nm)	50.6±4.2	Rq (nm)	52.2±7.8
Ra (nm)	41.4±3.6	Ra (nm)	41.1±3.3
(a)		(b)	
Rq (nm)	100.0±8.7	Rq (nm)	100.6±4.9
Ra (nm)	77.7±4.9	Ra (nm)	79.1±8.1
(c)		(d)	

Fig. 8 Surface roughness analysis of 10min plasma etched biaxial PET film (B-PET) before (a) and after thermal aging at 130℃ for 24hr (b) and 20min plasma etched amorphous PET film (A-PET) before (c) and after thermal aging at 80℃ for 24hr (d).