Simultaneous Improvements in Self-cleaning and Light-trapping Abilities of Polymer Substrates for Flexible Organic Solar Cells

Eunwook Jeong\textsuperscript{a,b}, Guoquing Zhao\textsuperscript{a}, Myungkwan Song\textsuperscript{a}, Seung Min Yu\textsuperscript{c}, Jongjoo Rha\textsuperscript{a}, Jongmoon Shin\textsuperscript{a*}, Young-Rae Cho\textsuperscript{b*}, and Jungheum Yun\textsuperscript{a*}

\textsuperscript{a}Surface Technology Division, Korea Institute of Materials Science, Changwon, Gyeongnam 51508, Republic of Korea

\textsuperscript{b}Department of Materials Science and Engineering, Pusan National University, Busan 46241, Republic of Korea

\textsuperscript{c}Jeonju Center, Korea Basic Science Institute, Jeonju, Jeonbuk 54907, Republic of Korea

*Corresponding authors: E-mail: jmshin@kims.re.kr, yescho@pusan.ac.kr, jungheum@kims.re.kr
**Fig. S1.** Plane (a, c, e) and cross-sectional (b, d, f) FE-SEM images of polymer protrusions evolved on the surface of PET substrates as a result of plasma treatment for different periods: (a, b) 10 min, (c, d) 30 min, and (e, f) 60 min.
Fig. S2. Change in the sliding angle of water and ethylene glycol on the PFOTS-coated SNA layer fabricated with different plasma-treatment times.
**Fig. S3.** Photographs and contact angles of hexadecane droplets on (a) a PFOTS-terminated PET surface without an SNA layer and (b) a PFOTS-coated SNA layer fabricated on a PET surface plasma-treated for 30 min.
Fig. S4. Plane-view FE-SEM images of (a) \(~7\) nm Ag(O) and (b) \(~7\) nm Ag on a 40-nm ZnO film.
**Fig. S5.** Optical characteristics of PET substrates coated with SNA and OMO layers. Changes in the (a) specular transmittance and (b) total reflectance spectra of the PET substrates as a function of the plasma-treatment time.