

Supporting Information

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Fully Organic ITO Replacement through Acid Doping of Double-Walled Carbon Nanotube Thin Film Assemblies

Yong Tae Park^a, Aaron Y. Ham^a, You-Hao Yang^b and Jaime C. Grunlan^{*a,b}

^aDepartment of Mechanical Engineering

^bDepartment of Chemical Engineering

Texas A&M University

3123 TAMU, College Station, TX, 77840 (USA)

E-mail: jgrunlan@tamu.edu

*To whom correspondence should be addressed, Tel: +1 979 845 3027. Fax: +1 979 862 3989. E-mail:
jgrunlan@tamu.edu.

CNT Dispersion.

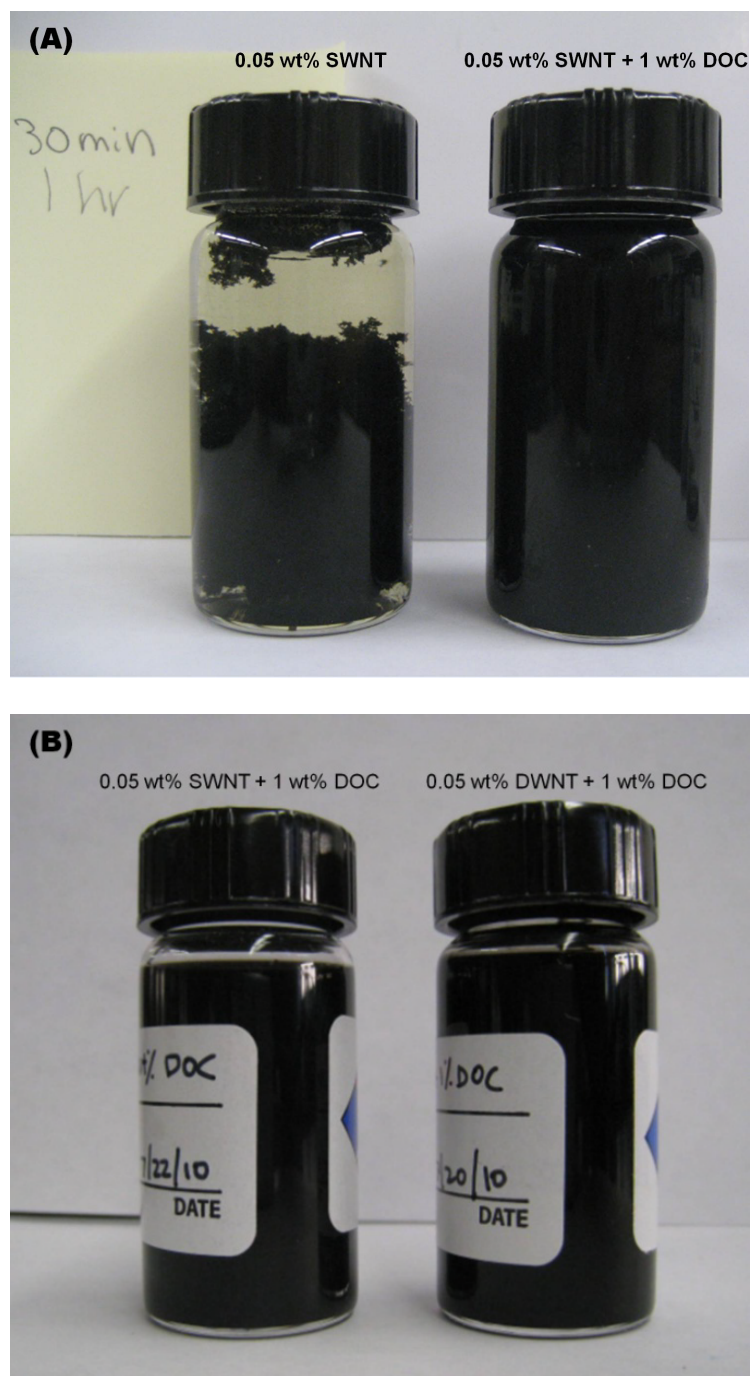


Fig. S1 (A) Photograph of 0.05 wt% SWNT only solution and (0.05 wt% SWNT+1 wt% DOC) solution after 1 hour sonication. (B) Photograph of (0.05 wt% SWNT+1 wt% DOC) and (0.05 wt% DWNT+1 wt% DOC) solutions 2 months after sonication.

Optical Images and UV-vis Analysis.

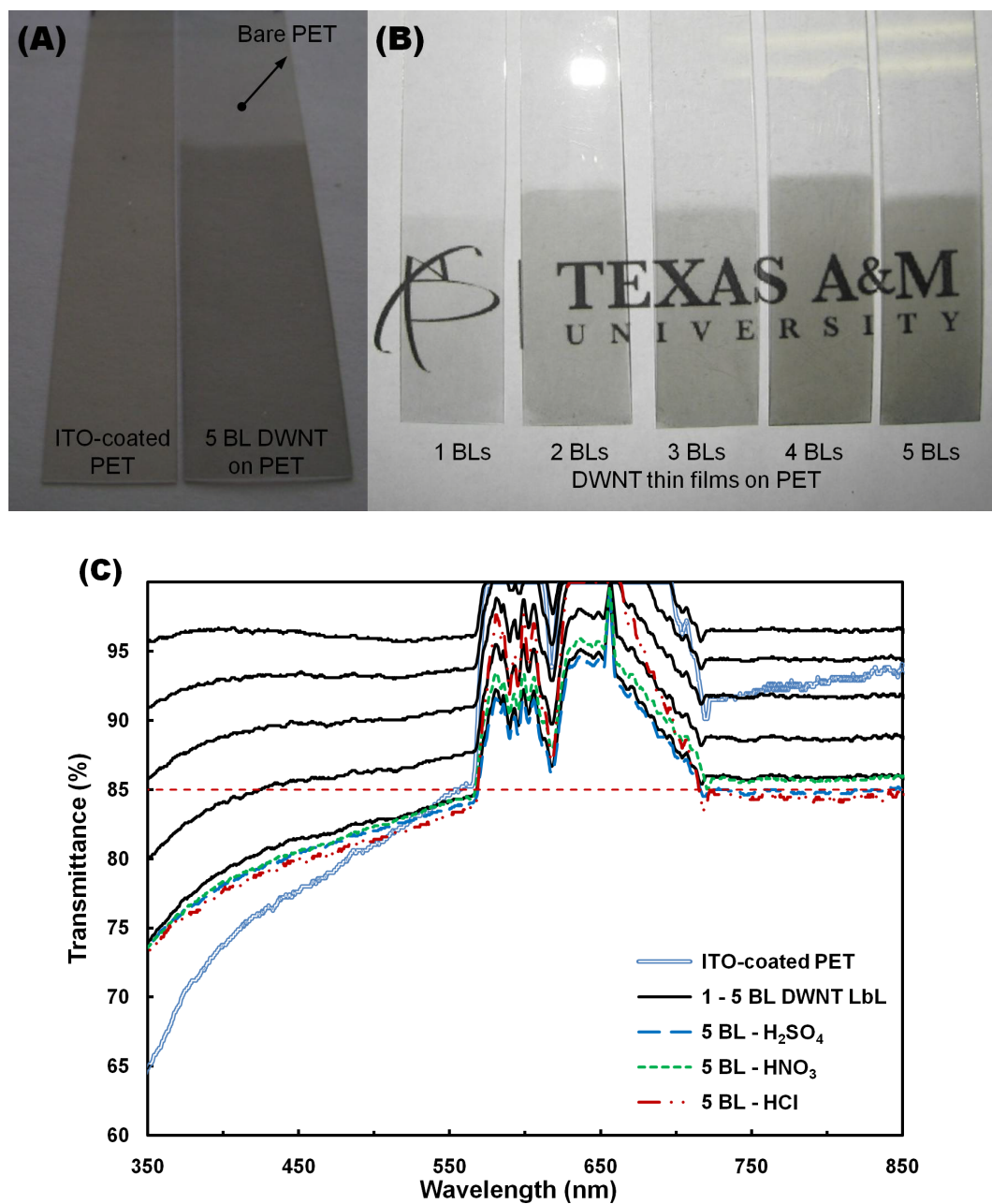


Fig. S2 (A) Photograph of a $100 \Omega \text{ sq}^{-1}$ single side ITO-coated PET and a 5 BL DWNT assembly ($103 \Omega \text{ sq}^{-1}$) on both sides of PET. (B) Optical image of $[\text{PDDA}/(\text{DWNT}+\text{DOC})]_n$ ($n = 1-5$) assemblies on both sides of PET substrates. (C) Transmittance spectra of an ITO-coated PET and $[\text{PDDA}/(\text{DWNT}+\text{DOC})]_n$ ($n = 1-5$) on PET. Absorbance of the LbL thin films, coated on both sides of PET was divided by two to produce the data shown here. The dotted lines are transmittance of $[\text{PDDA}/(\text{DWNT}+\text{DOC})]_5$ after sulfuric, nitric, or hydrochloric acid treatment.

DWNT LbL Films - SEM Surface Images.

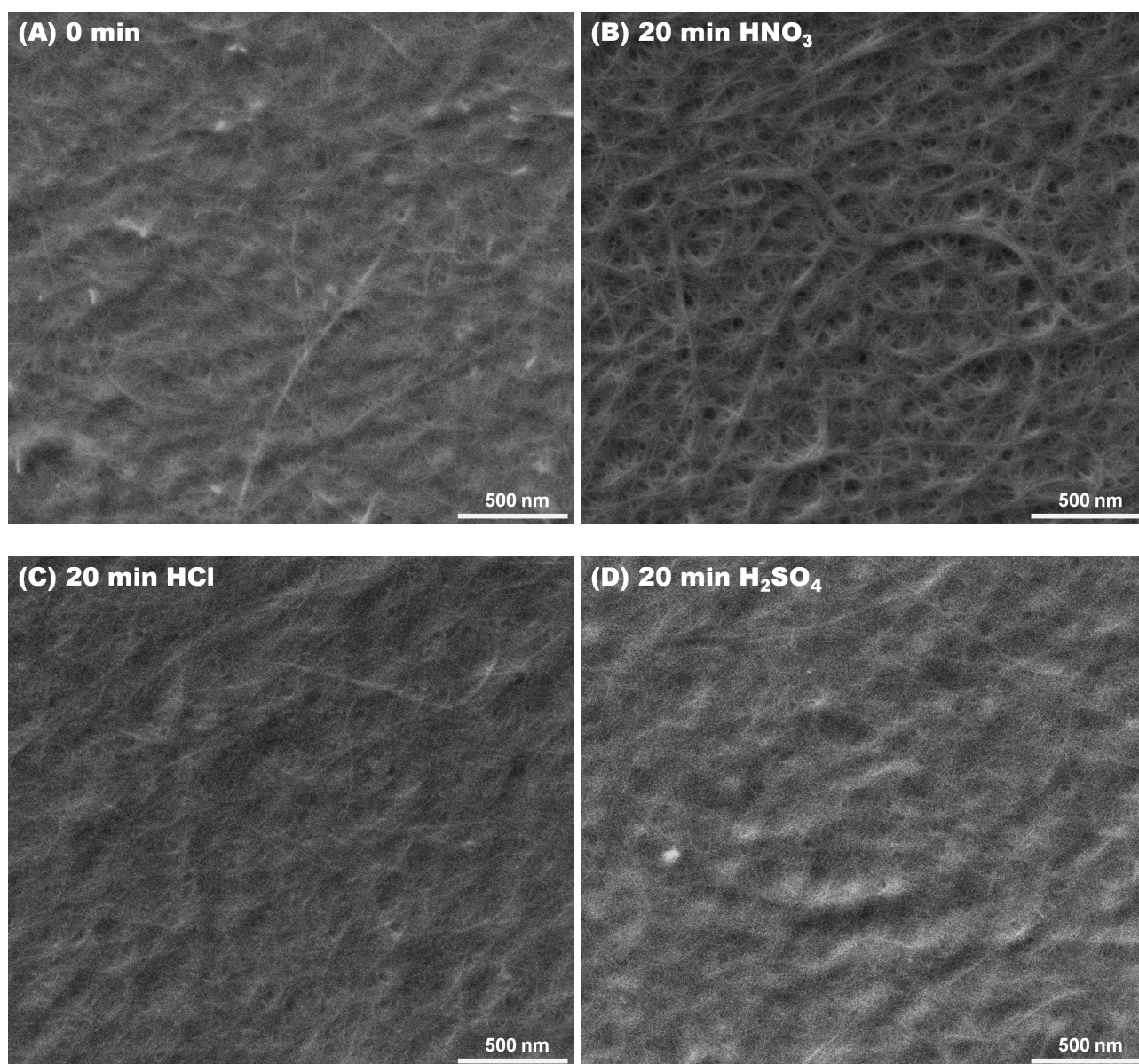


Fig. S3 SEM surface images of [PDDA/(DWNT+DOC)]₅ on PET (A) before and after (B) 20 min HNO₃, (C) 20 min HCl, and (D) 20 min H₂SO₄ treatments.

Energy Dispersive X-ray (EDX) Spectroscopy.

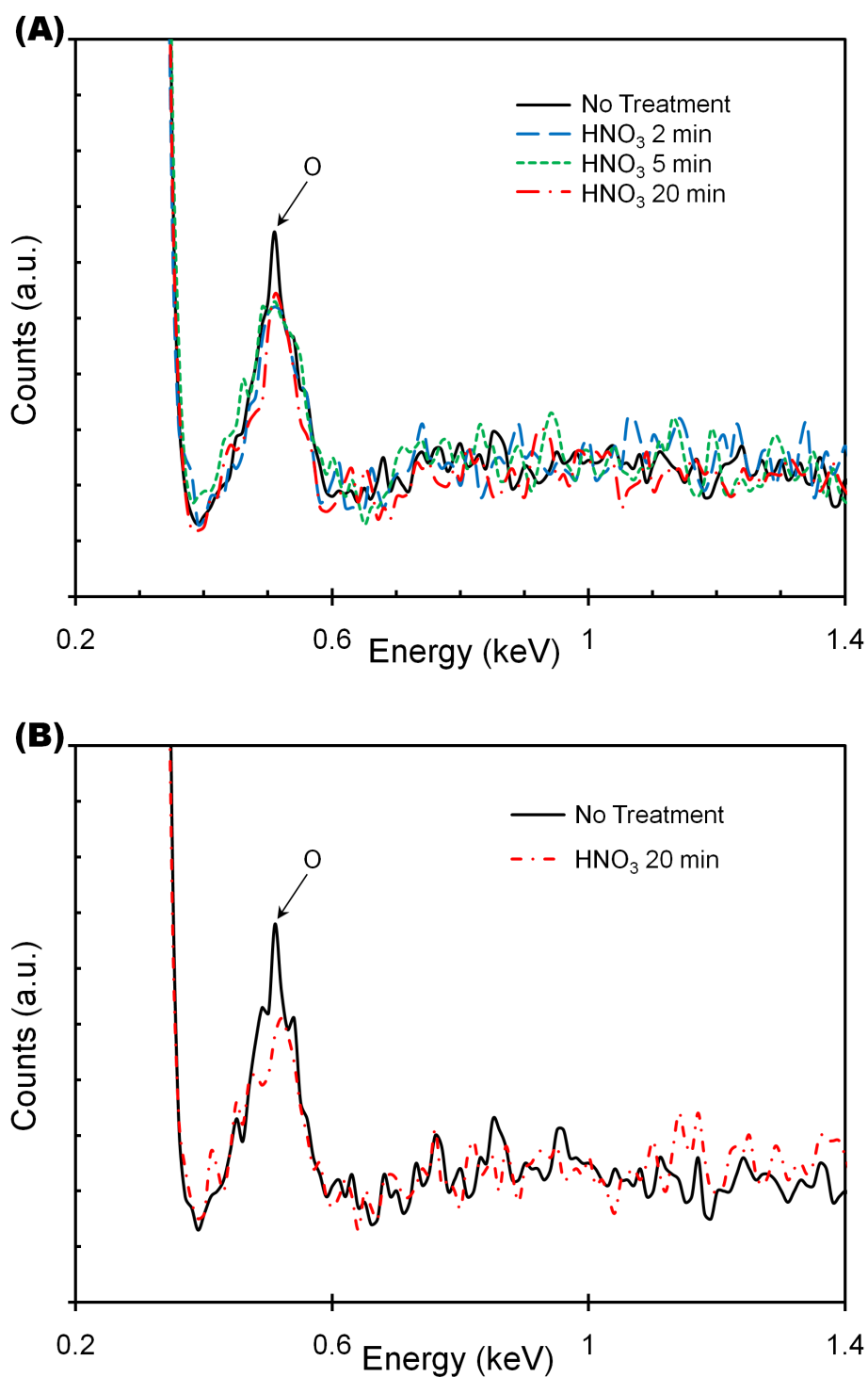


Fig. S4 (A) EDX spectra of [PDDA/(DWNT+DOC)]₅ before and after 2 to 20 min acid exposure time. (B) EDX spectra of the [PDDA/(SWNT+DOC)]₁₀ before and after 20 min nitric acid treatment. These spectra are magnified for clarity of oxygen content.

SEM Surface Images of SWNT LbL Films.

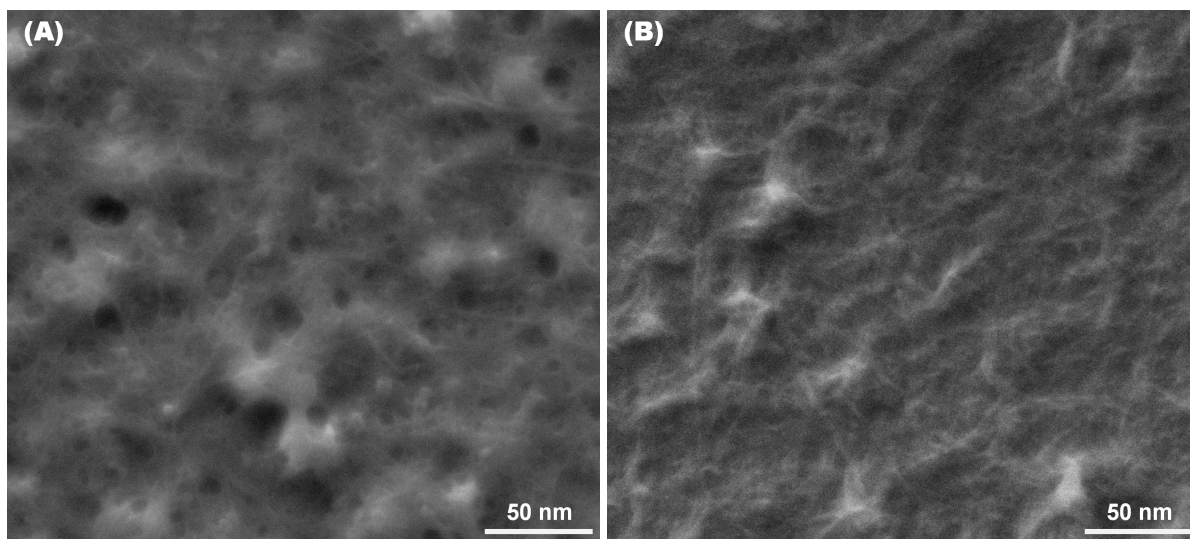


Fig. S5 SEM surface images of [PDDA/(SWNT+DOC)]₁₀ on PET (A) before and (B) after 20 min exposure to nitric acid vapor.