Supporting Information

DOI: 10.1039/b000000x

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

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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 Ω sq⁻¹ single side ITO-coated PET and a 5 BL DWNT assembly (103 Ω sq⁻¹) on both sides of PET. (B) Optical image of [PDDA/(DWNT+DOC)]ₙ (n = 1–5) assemblies on both sides of PET substrates. (C) Transmittance spectra of an ITO-coated PET and [PDDA/(DWNT+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 [PDDA/(DWNT+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.
Fig. S5  SEM surface images of [PDDA/(SWNT+DOC)]_{10} on PET (A) before and (B) after 20 min exposure to nitric acid vapor.