A Novel Parallel Configuration of Dye-Sensitized Solar Cells with Double-Sided Anodic Nanotube Arrays

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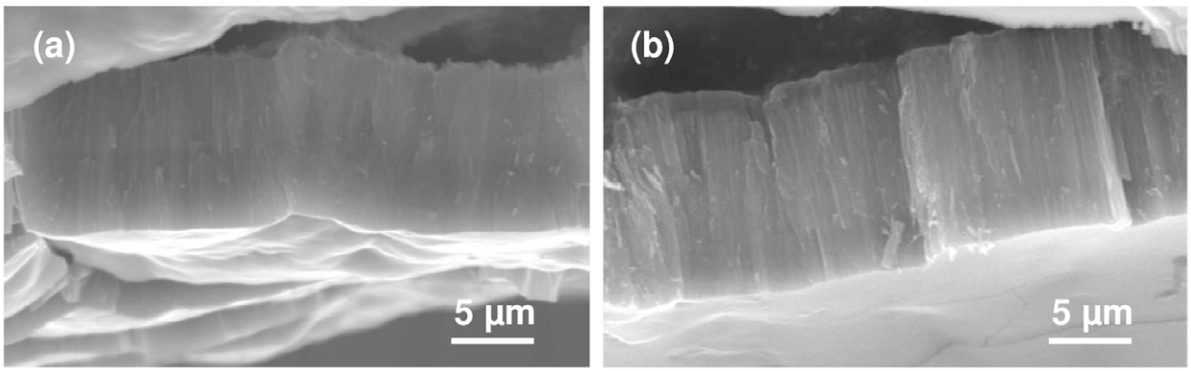

Fig. S1 SEM cross-sectional views of the nanotubes used in most of this study: (a) frontside, (b) backside.

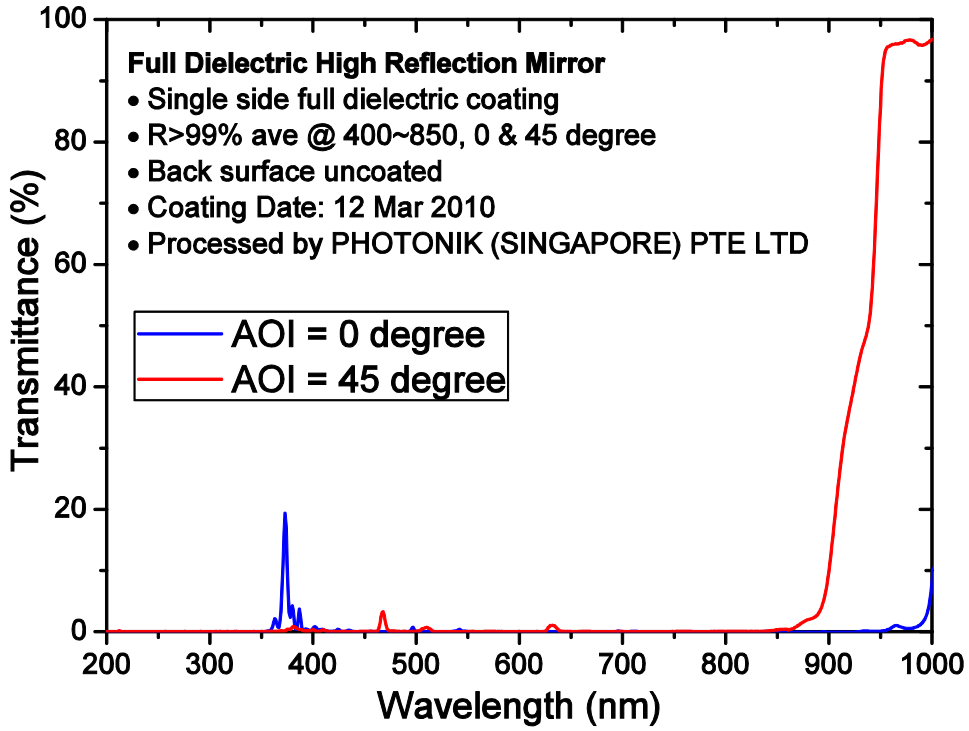

Fig. S2 Transmittance spectra of the dielectric mirror used for light reflection in the current work. AOI denotes angle of incidence. Data are provided by PHOTONIK (SINGAPORE) PTE LTD.

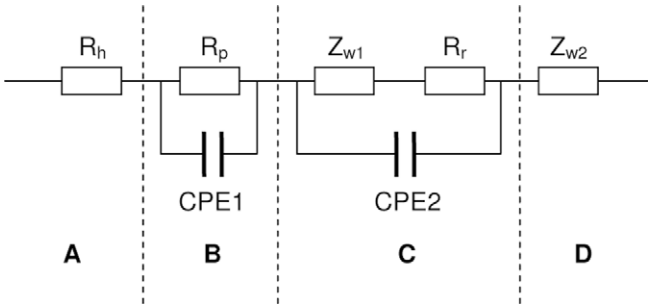

Fig. S3 Equivalent circuit of DSSCs. (A) internal ohmic resistance (R_h); (B) charge transfer at the electrolyte/Pt-FTO interface (R_p, charge transfer impedance; CPE1, double layer capacitance); (C) electron transport in the nanotubes and charge transfer at nanotubes/electrolyte interface (Z_{w1}, diffusion impedance; R_r, recombination impedance; CPE2, constant phase element); (D) Nernst diffusion in the electrolyte (Z_{w2}, Warburg impedance).

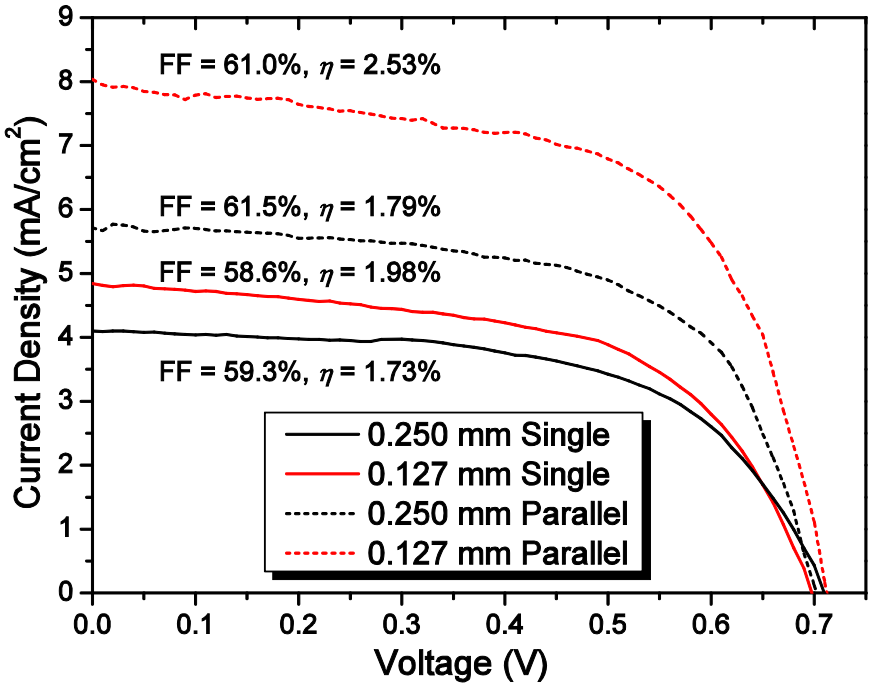

Fig. S4 Photovoltaic performance of dye-sensitized solar cells with nanotubes grown on different thicknesses of titanium foils. All the nanotubes were under UV-ozone treatment for 20 min before dye loading.