

Electronic Supplementary Information

A Template-free Synthesis for the Hierarchical Hydroxymethyl PEDOT Tube-Coral Array and Its Application in Dye-Sensitized Solar Cells

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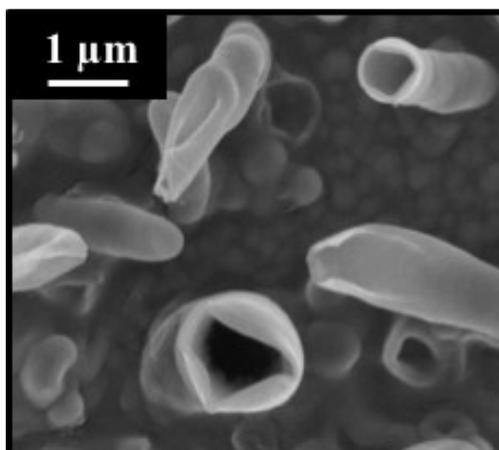


Fig. S1 FE-SEM images of the PEDOT-MeOH TA* film obtained from the electro-polymerization bath containing tetramethylammonium perchlorate (TMAP).

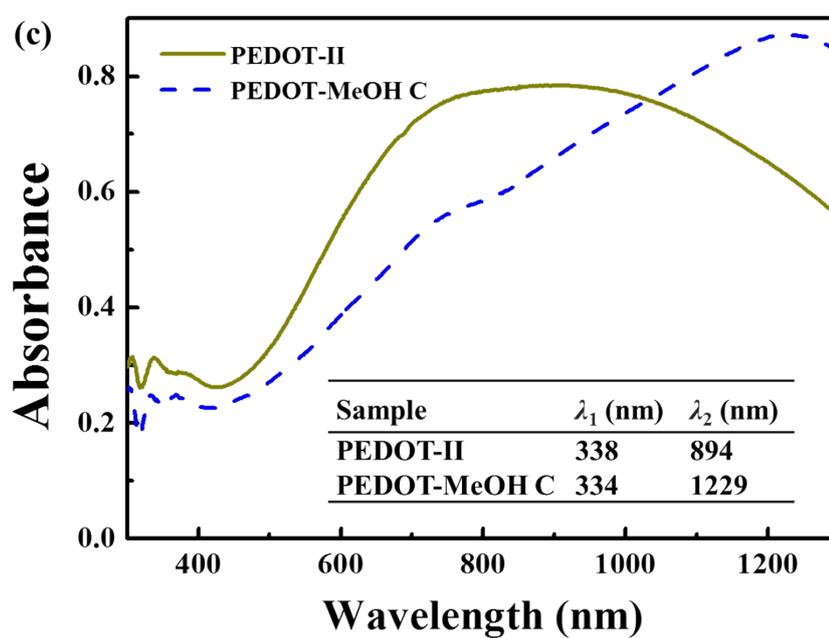
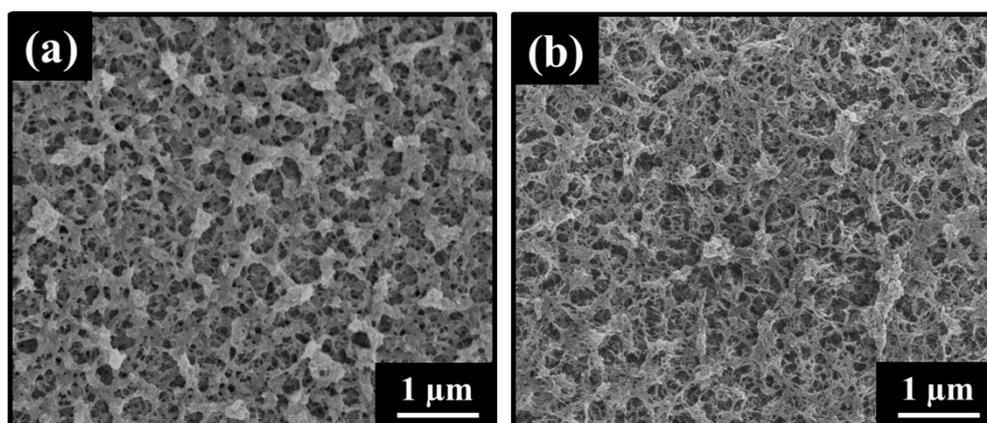


Fig. S2 FE-SEM images of (a) PEDOT-I and (b) PEDOT-II films.
 (c) Absorption spectra of PEDOT-II and PEDOT-MeOH C films.

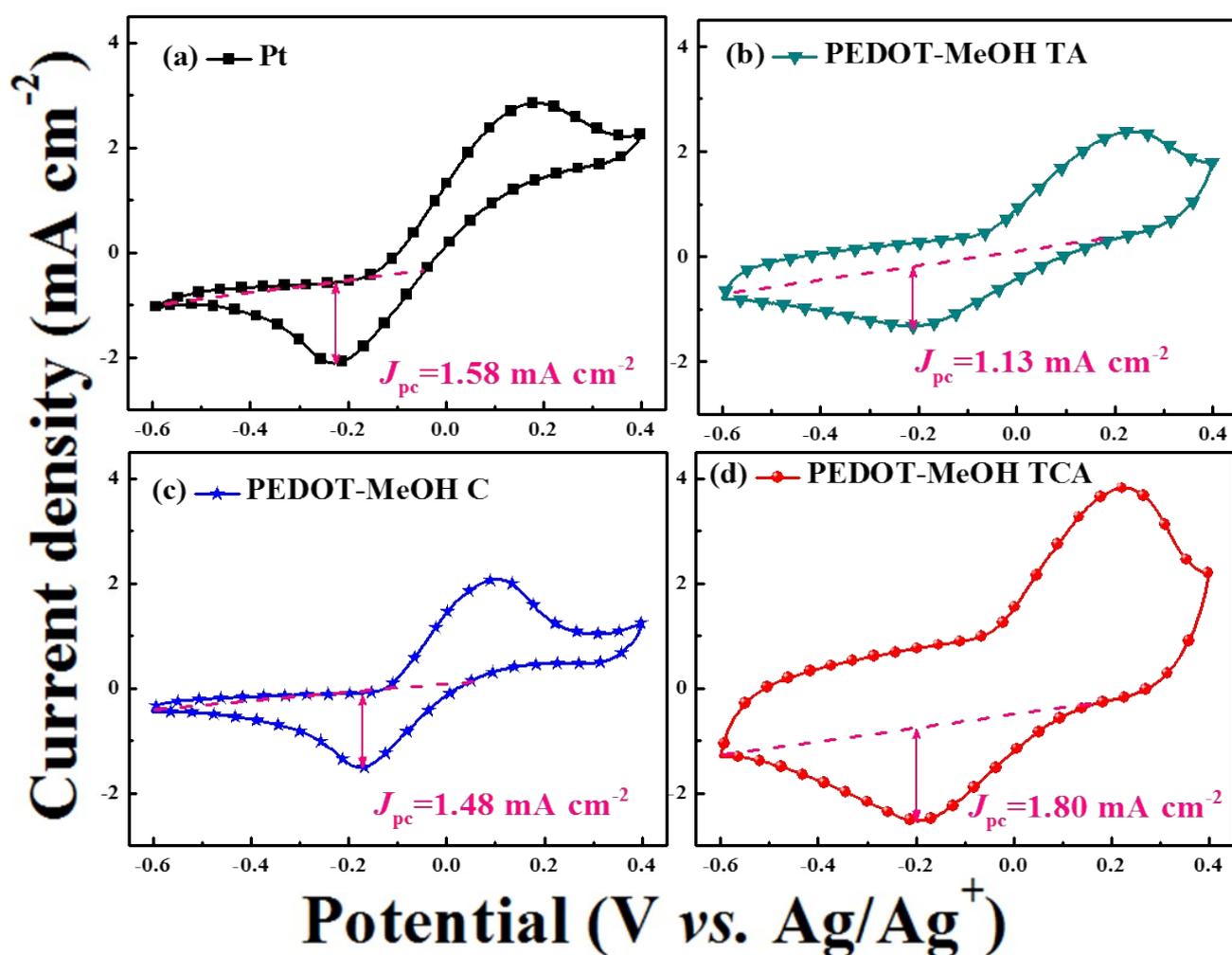


Fig. S3 Cyclic voltammograms of various films including the background curves. The distance-lines from the cathodic peak to the background curve (namely, J_{pc}) are given.

Table S1 The photovoltaic parameters of this study. The parameters obtained from Tafel plot are based on the symmetric cell of the films, while the parameters obtained from EIS analysis are based on the DSSCs with various CE films. The standard deviation for each Tafel plot is calculated based on the data collected from three symmetric cells.

Electro-catalytic films on the counter electrode	J_0 (mA cm ⁻²)	$R_{ct-Tafel}$ (Ω cm ²)	R_s^* (Ω)	R_{ct1} (Ω)	R_{ct2} (Ω)
Pt	4.59 ± 0.09	2.80 ± 0.05	23.53	1.78	13.53
PEDOT-MeOH TA	3.99 ± 0.07	3.16 ± 0.06	20.40	2.46	13.90
PEDOT-MeOH C	4.39 ± 0.04	2.92 ± 0.02	22.05	2.13	13.88
PEDOT-MeOH TCA	4.82 ± 0.03	2.65 ± 0.02	20.09	1.51	13.60

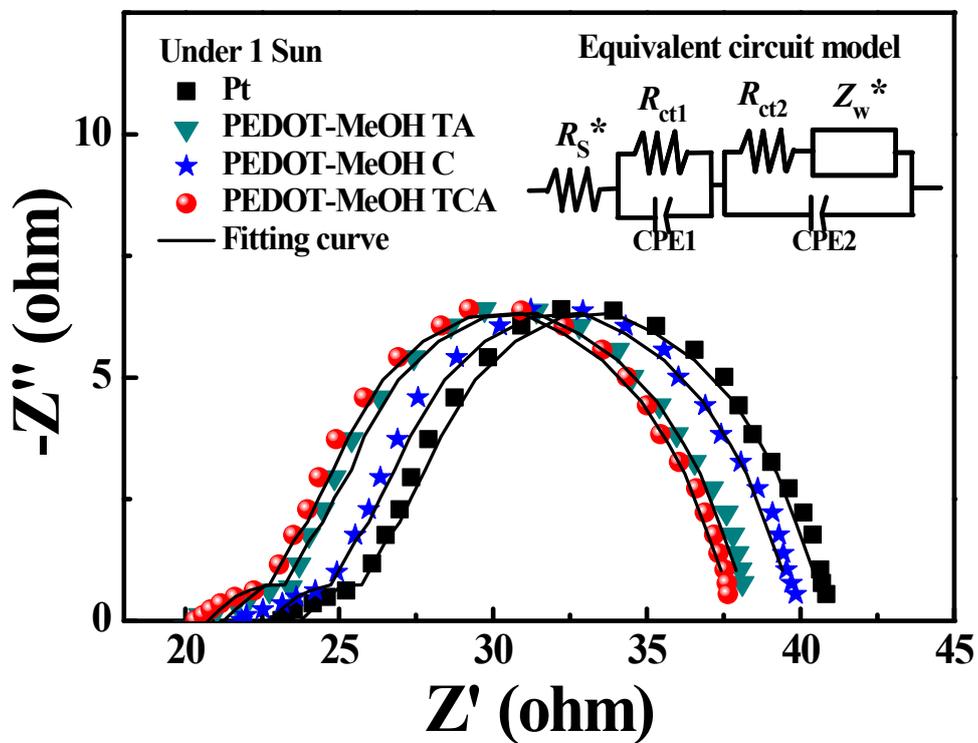


Fig. S4 Electrochemical impedance spectra of DSSCs with various counter electrodes, measured at 100 mW cm^{-2} (AM 1.5G).