Supporting Information

Electrochemical Characterization of TiO_2 Blocking Layers for Dye Sensitized Solar Cells

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Figure S1: Cyclic voltammograms at bare FTO electrode and that covered by TiO_2 film of various thicknesses made by electrochemical deposition. (The virgin film without heat treatment is labeled 'as rec'). The film which was heat treated in air at 100 °C overnight is labeled '100oC'. Scan rate 50 mV/s. The electrolyte solution was 0.5 mM $K_4Fe(CN)_6$ + 0.5 mM $K_3Fe(CN)_6$ in aqueous 0.5 M KCl, pH 2.5.

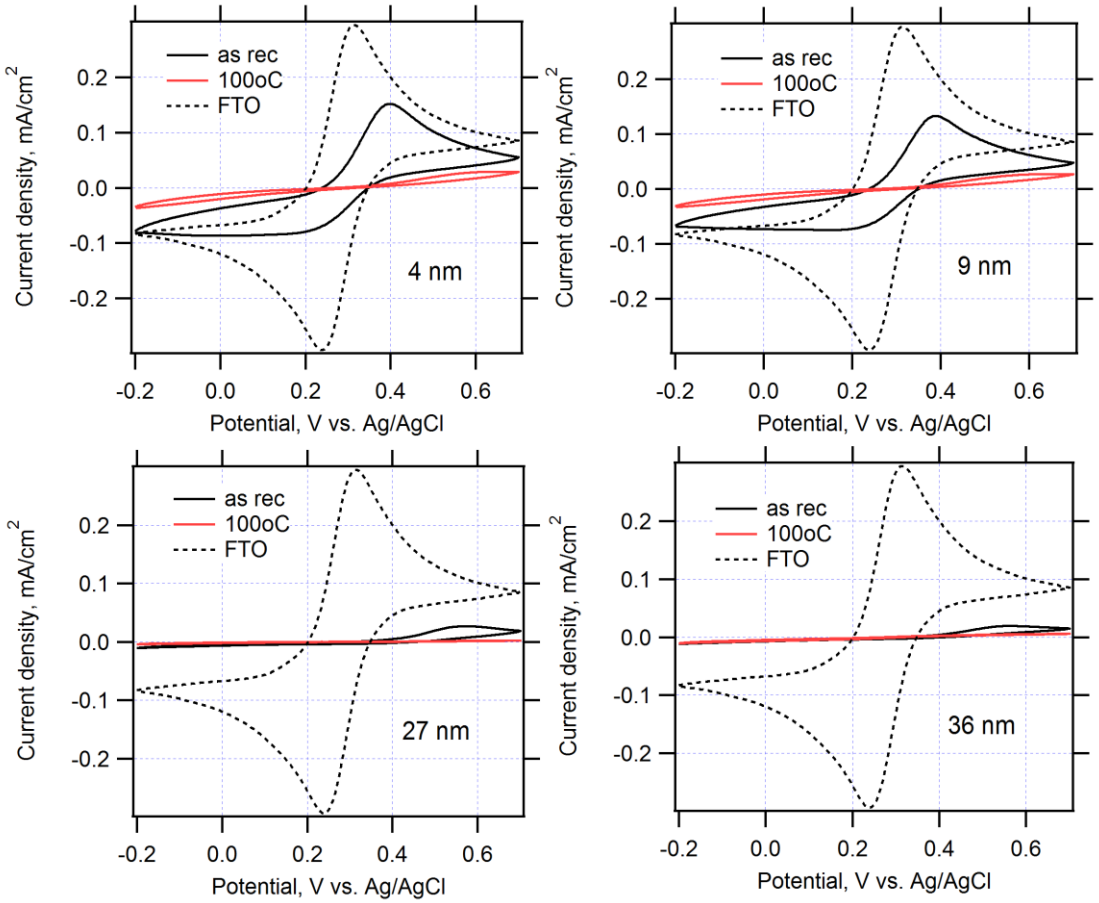

Figure S2: Cyclic voltammograms at bare FTO electrode and that covered by ALD made layers of various thicknesses from 1 to 6 nm. The layers were deposited using TDMAT and H_2O as precursors, substrate temperature 150 ^{o}C. Scan rate 50 mV/s. The electrolyte solution was 1 mM spiro-OMeTAD in CH_2Cl_2 + 0.3 M tetrabutylammonium hexafluorophosphate.

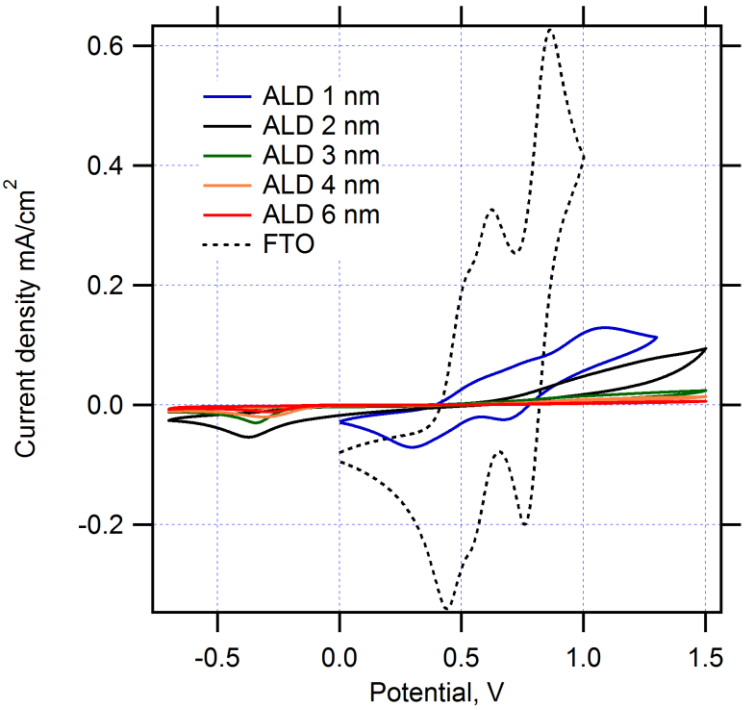

Figure S3: Cyclic voltammograms at bare FTO electrode and that covered by ALD made layers of various thicknesses from 1 to 6 nm. The layers were deposited using TDMAT and H_2O_2 as precursors, substrate temperature 200 ^oC. Scan rate 50 mV/s. The electrolyte solution was 1 mM spiro-OMeTAD in CH_2Cl_2 + 0.3 M tetrabutylammonium hexafluorophosphate.

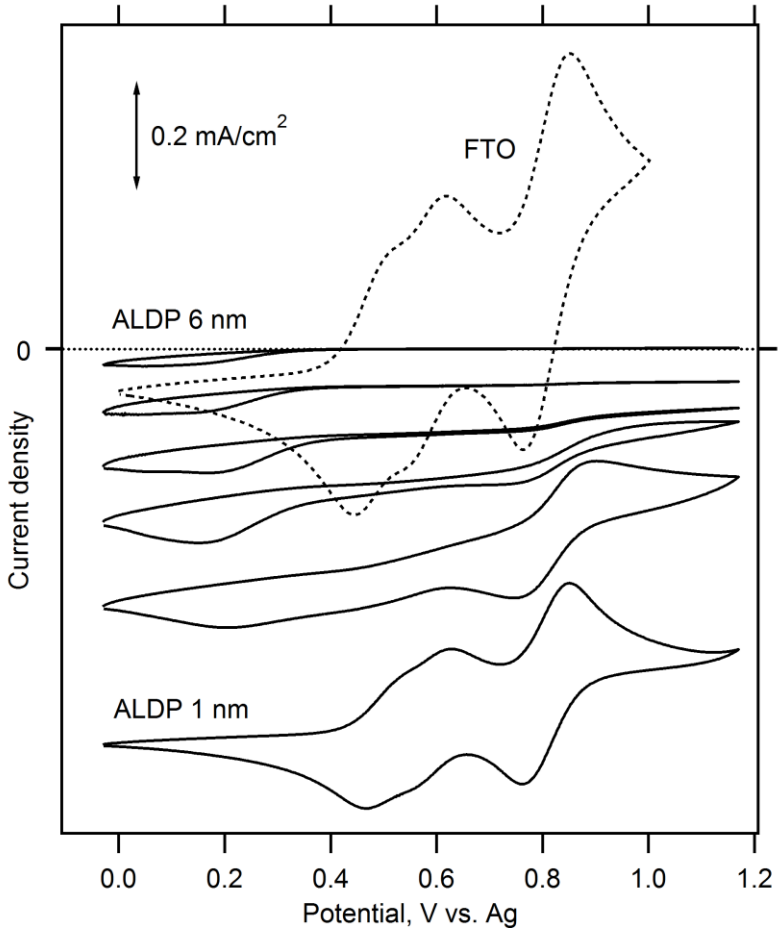

Figure S4: Cyclic voltammograms at a non-calcined 60 nm thick TiO_2 film made by electrochemical deposition. Scan rate 0.1 V/s. The electrolyte solution was aqueous 0.5 M KCl, pH 2.6. Black curve (labeled 'electrodep.') is for a virgin electrode; red curve (labeled 'electrodep. & doped') is a repeated run of the same electrode, after passing the EIS measurement during which the electrode was subjected to a potential scan from 1.3 V to -0.8 V.

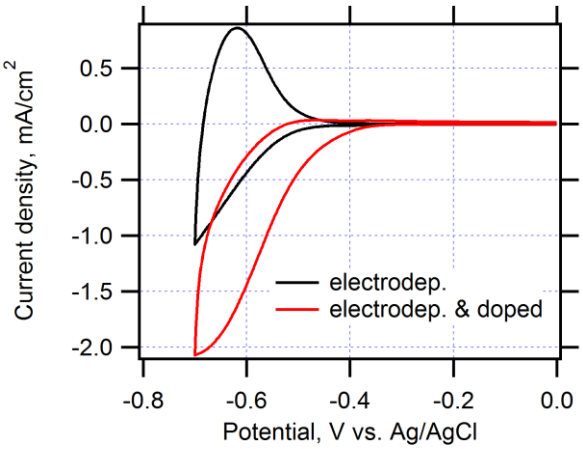

Figure S5: Cyclic voltammograms at TiO_2 films made by atomic layer deposition. The layers were deposited using TDMAT and H_2O as precursors, substrate temperature 150 ^oC. Scan rate 0.1 V/s. The electrolyte solution was aqueous 0.5 M KCl, pH 2.6. Black curve (labeled ALD) is for a virgin electrode; red curve (labeled 'ALD. & doped') is a repeated run of the same electrode, after passing the EIS measurement during which the electrode was subjected to a potential scan from 1.3 V to -0.8 V.

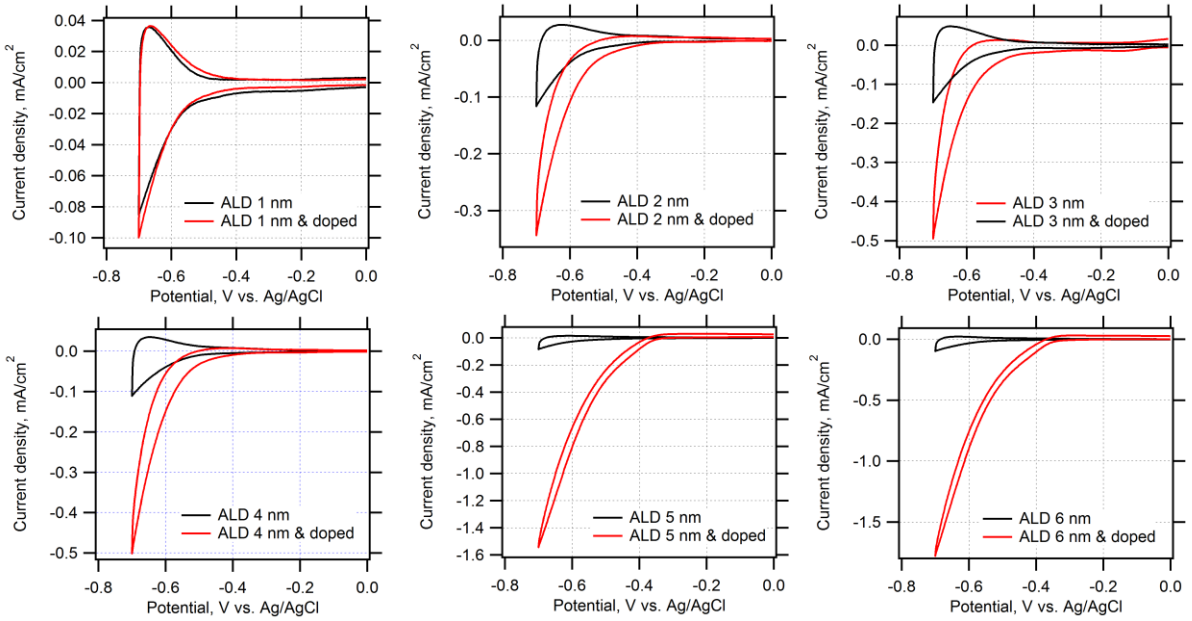

Figure S6: Mott-Schottky plot of a FTO electrode covered with TiO_2 film made by atomic layer deposition (ALDP 1 nm to ALDP 7 nm). The layers were deposited using TDMAT and H_2O_2 as precursors, substrate temperature 200 ^oC. Electrolyte solution: 0.5 M KCl, pH 2.6.