Optical Role of the Thin Metal Layer in TiO$_x$/Ag/TiO$_x$ Transparent and Conductive Electrode for Organic Solar Cells

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Supplementary Information

Figure S1 - Comparison of the measured and obtained from an ellipsometric model (mixed of Tauc-Lorentz and Gauss laws) values of $\tan(\Psi)$ (top) and $\cos(\Delta)$ (bottom) for a sample of 32 nm of TiO$_x$ deposited on glass versus the electromagnetic spectra [250-1650] nm for five different incident angles (55° to 75°).
Figure S2- Optical constants $n$ (left y-axis) and $k$ (right y-axis) of the titanium dioxide versus wavelength.

Figure S3- Comparison of the measured and obtained from an ellipsometric model values of $\tan(\Psi)$ (top) and $\cos(\Delta)$ (bottom) for a Glass | TiO$_x$ (37 nm) | Ag (13 nm) | TiO$_x$ (42 nm) sample versus the electromagnetic spectra [250-1650] nm for five different incident angles ($55^\circ$ to $75^\circ$).
Figure S4- 2D (right) and 3D (left) images of the surface roughness of a 32 nm-thick monolayer of TiO$_x$ deposited on glass with a RMS roughness of 1.14 nm.

Figure S5- 2D images of the surface roughness (left) and surface potential (right) for the Glass $|\text{TiO}_x\ (37\ \text{nm}) | \text{Ag}\ (13\ \text{nm}) | \text{TiO}_x\ (42\ \text{nm})$ sample (same as Figure S3 and S6) with a RMS roughness of 1.58 nm and a work function of 4.55 eV.
Figure S6 – Measured, simulated and corrected simulated optical properties (R, T & A) for the Glass | TiO$_x$ (37 nm) | Ag (13 nm) | TiO$_x$ (42 nm) sample (same as Figure S3 and S5) versus wavelength of the incident light.