Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics

ELECTRONIC SUPORTTING INFORMATION

FOR

The Importance of the TiO_2/Quantum Dots Interface in the Recombination Processes of Quantum Dot Sensitized Solar Cells

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The four different types of CdSe sensitized QDSSCs where electrically characterized by spectrophotometer, i-V curve and incident photon to current efficiency (IPCE).

A transmittance spectrum was recorded with Carry 500 scan UV-VIS-NIR scanning spectrophotometer (Varian, USA) in the range of 400-800 nm.

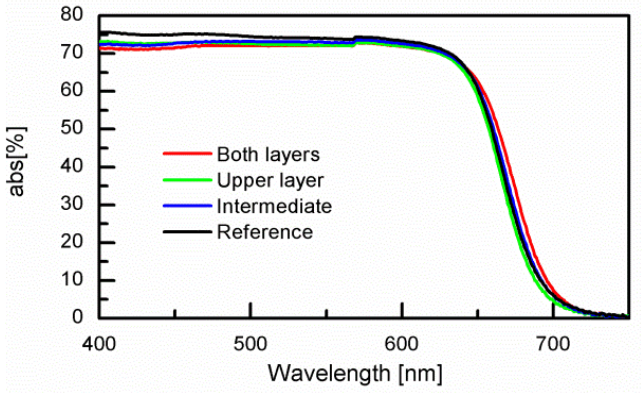

Figure 1: Transmittance spectrum for the four different types of MgO coated electrodes showing that the use of MgO coating does not affect the growth of the CdSe QDs on the mesoporous electrode.

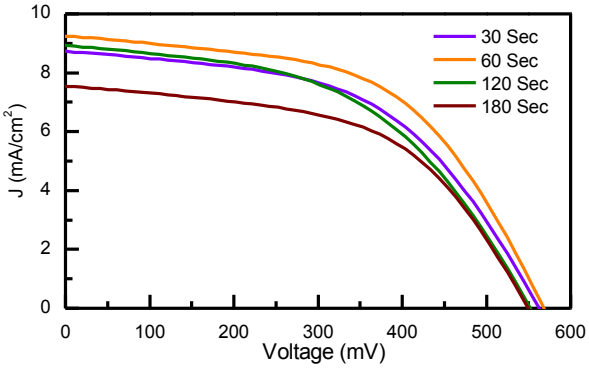

Figure 2: i-V curves comparison of four different types of MgO coated electrodes at different deposition durations. 60 sec (2nm) of MgO deposition exhibit the best result. Above this point there is a decrease in all parameters due to poorer electron transfer from the QDs throw the MgO layer to the TiO_2.

Incident photon to current efficiency (IPCE) measurements was performed employing a 250 W Xenon lamp with a monochromators and Keithley controlled by a computer.

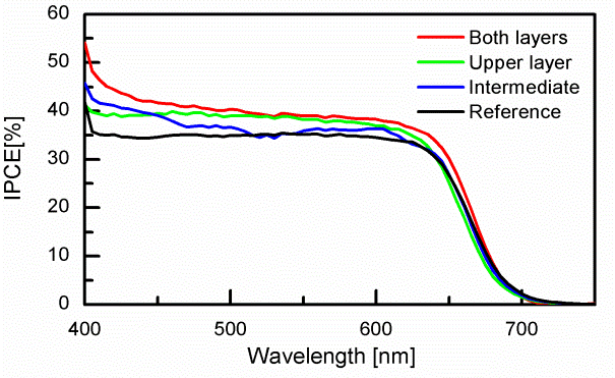

Figure 3: IPCE comparison of the MgO coated electrodes reveal higher photocurrents compared to the reference electrode exhibit the advantage of using the MgO coating as a recombination inhibitor.