Electronic Supplementary Material (ESI) for RSC Advances.

Electronic Supplementary Information

Micron-scale rodlike scattering particles for light trapping in nanostructured thin film solar cells

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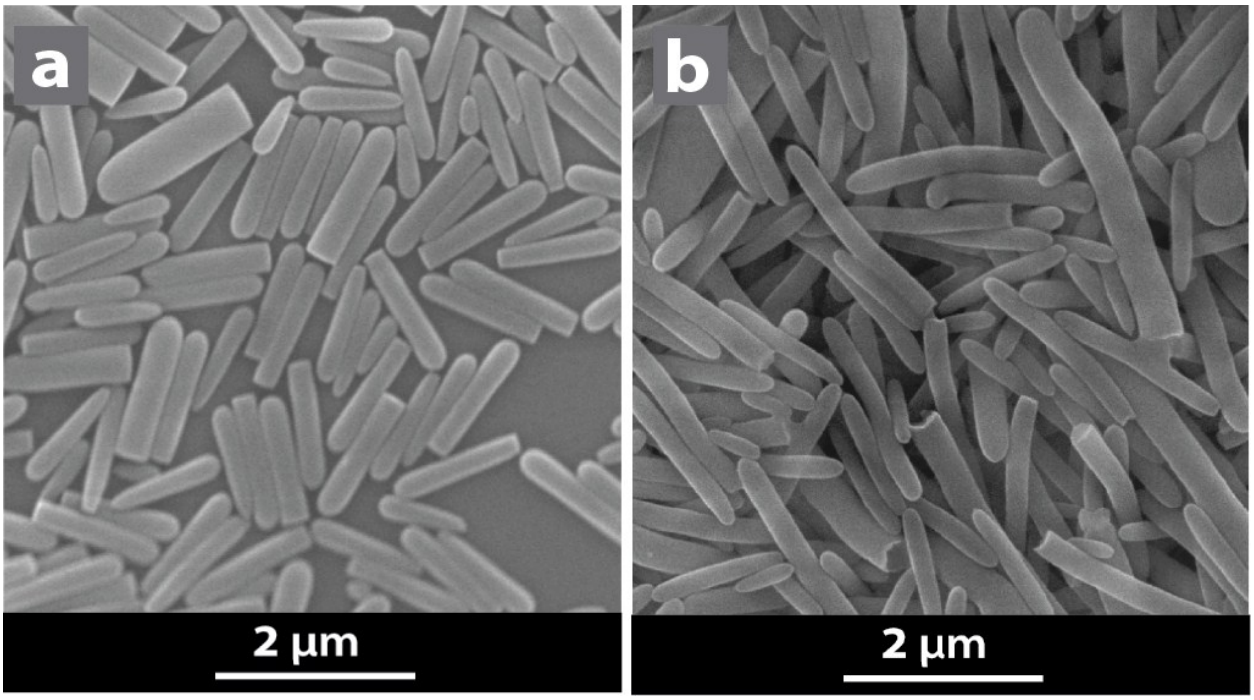

Fig. S1 SEM images of (a) 1.7 µm- and (b) 2-3 µm-long silica rods. We can see that the longer rods tend to bend and break. We observed that this leads to cracks in the layer after they are embedded in the mesoporous TiO2 layer.

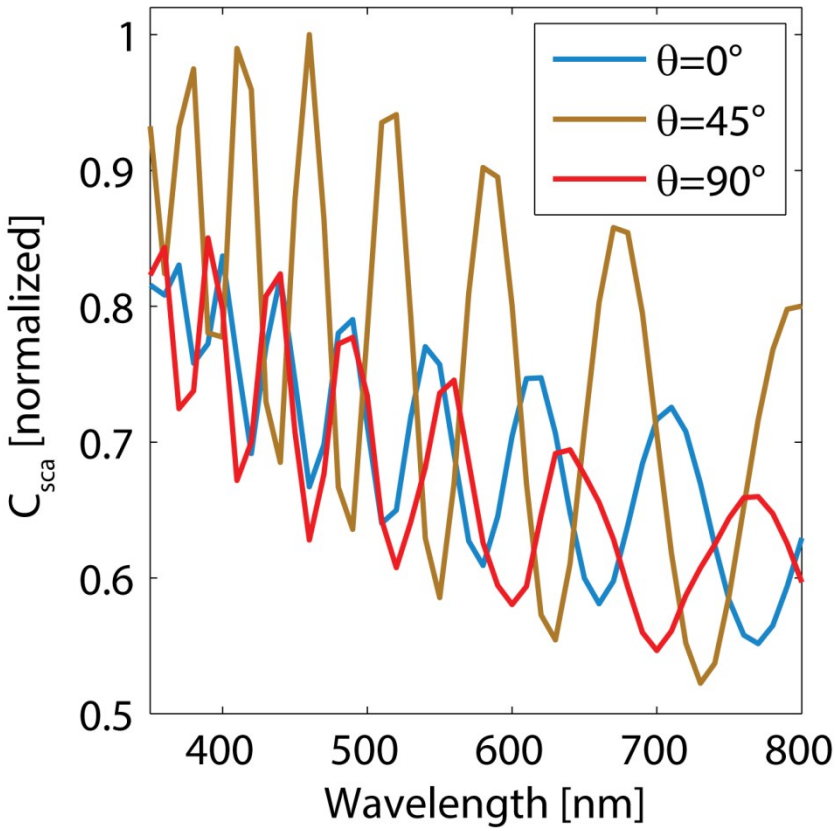

Fig. S2 Normalized scattering cross-section (C_{sca}) of the silica rod embedded in the TiO_2 mesoporous layer under different angles of light incidence. The data shows the average of transverse electric (TE) and transverse magnetic (TM) light incidence.

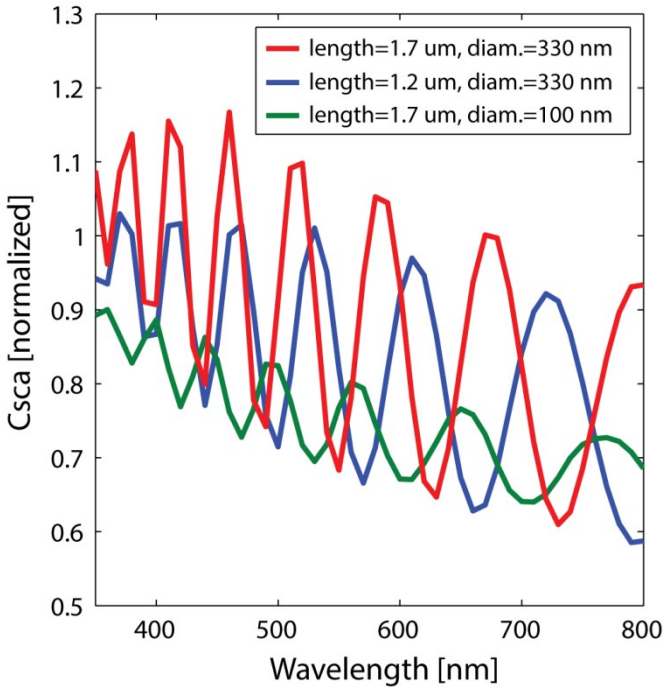

Fig. S3 Normalized scattering cross-section (C_{sca}) of the silica rod embedded in the TiO_2 mesoporous layer under 45° light incidence with different rod length and diameter. The data shows the average of transverse electric (TE) and transverse magnetic (TM) light incidence.

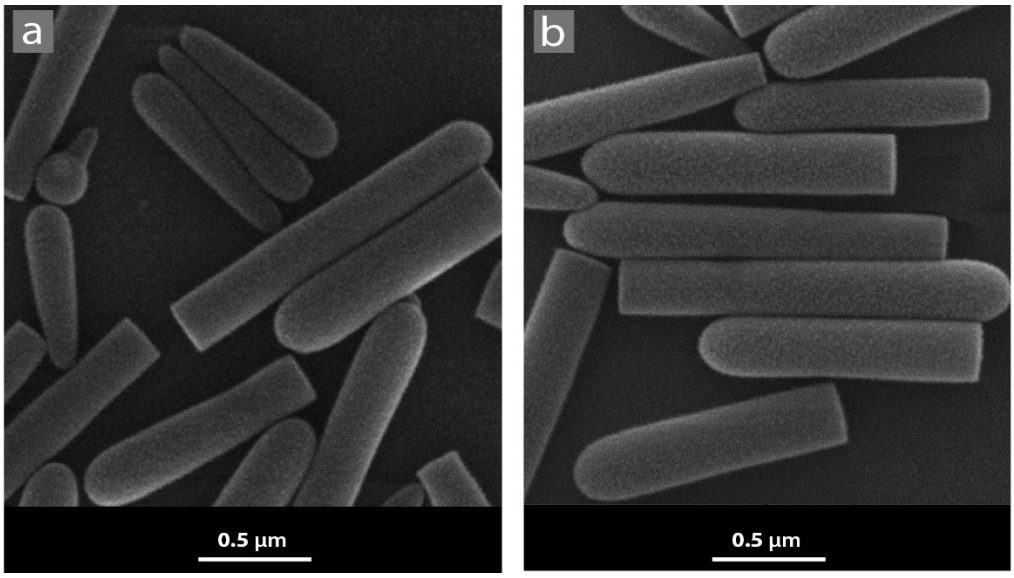

Fig. S4 a) SEM images of silica rods were centrifuged a) once and b) five times to remove small rods and make particles size distribution narrow.

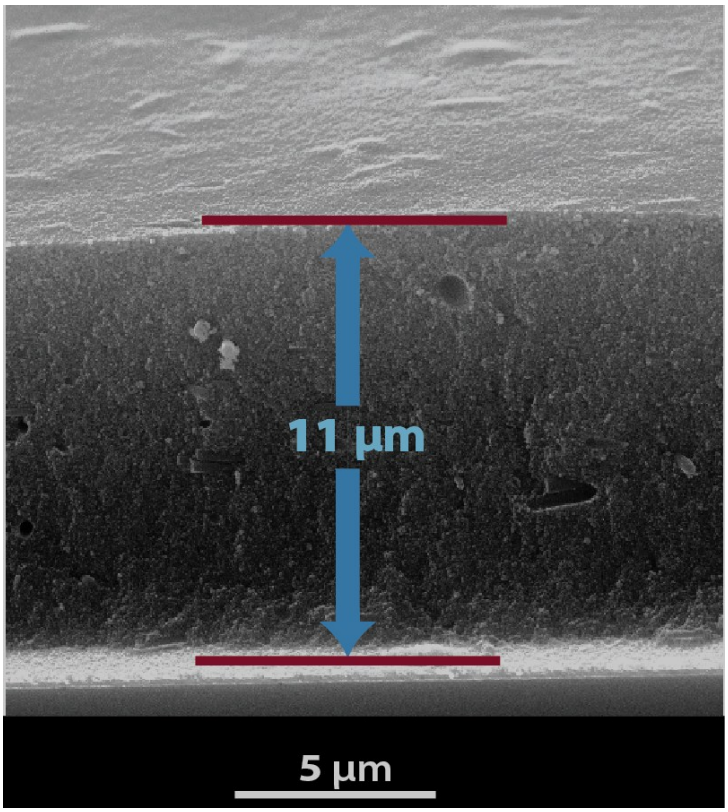

Fig. S5 SEM cross-sectional image of a mesoporous TiO_2 layer with embedded silica rods used for estimation of film thickness.

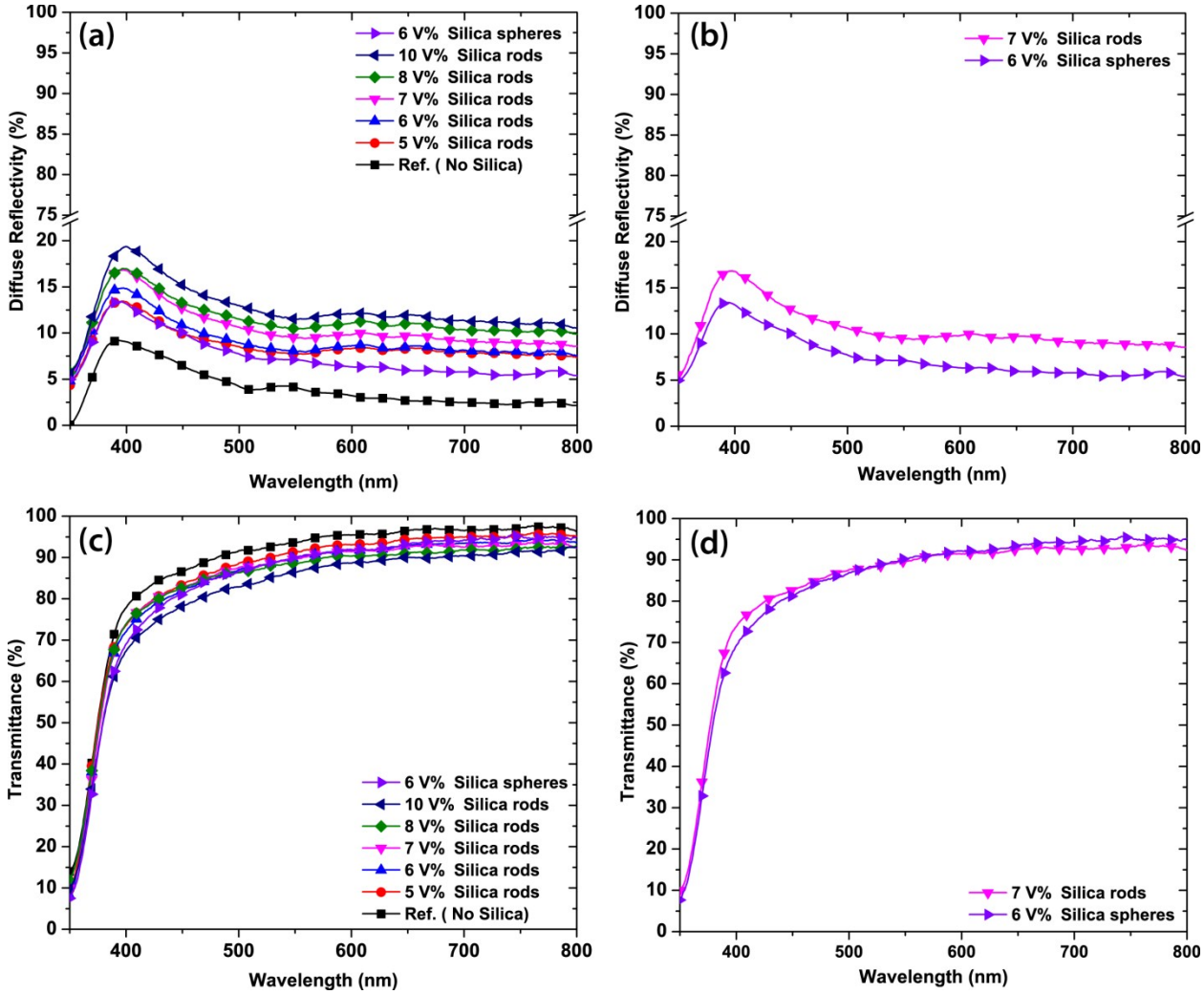

Fig. S6 a) Diffuse reflectance and b) diffuse transmittance spectra of screen-printed layers before dye-loading.

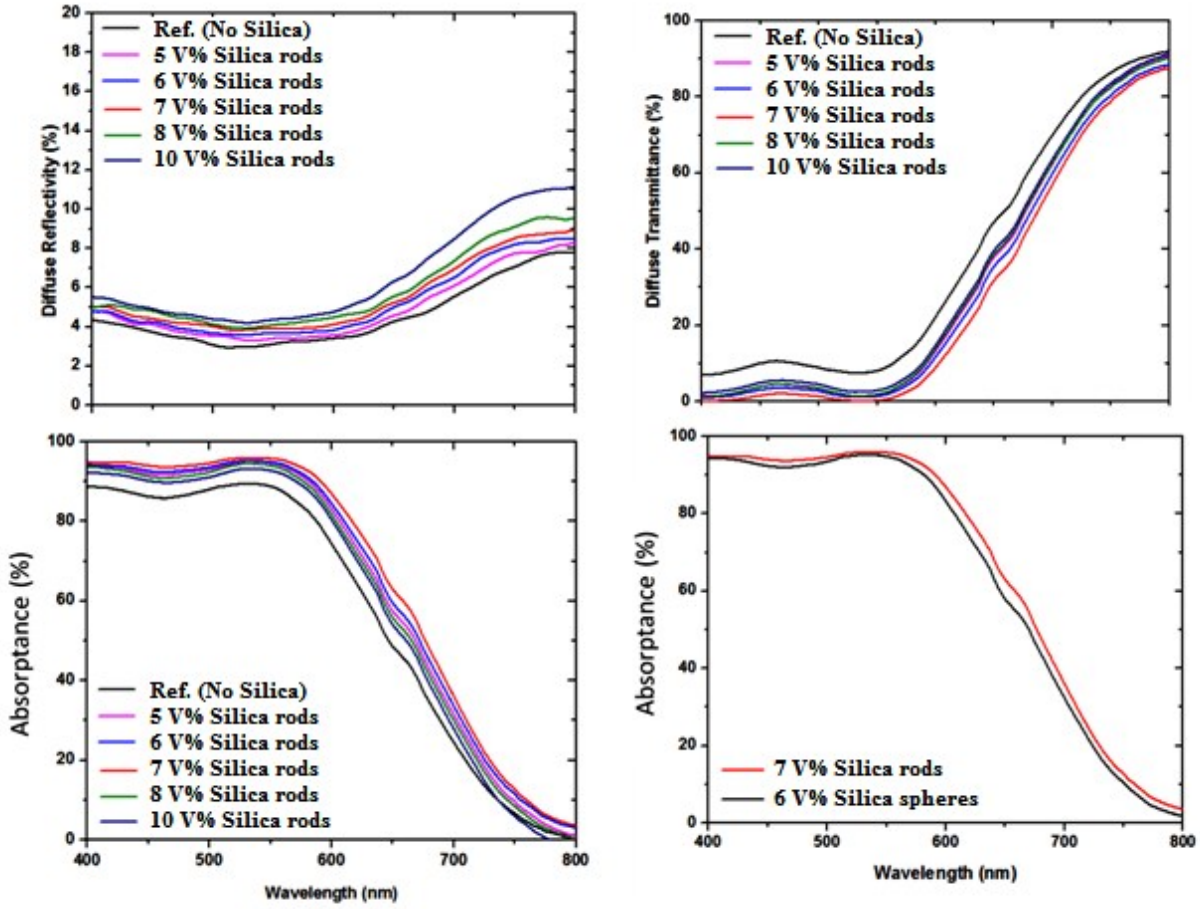

Fig. S7 Diffuse reflectance, diffuse transmittance, and optical absorptance of the dye sensitized layers.