Electronic Supplementary Information

Rutile TiO$_2$ mesocrystallines with aggregated nanorod clusters: extremely rapid self-reaction of the single source and enhanced dye-sensitized solar cells performance†

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**Figure captions**

**Fig. S1** High-magnification FESEM of the surface of individual rutile TiO$_2$ mesocrystalline prepared at 180 °C for 12 h.

**Fig. S2** The FESEM images of RTM at 150 °C for 10 min (a-b) and at 90 °C for 6 h (c-d).

**Fig. S3** Low- and high-magnification FESEM images of the RTM: (a, b) 150 °C, 10 min, (c, d) 150 °C, 48 h and (e, f) 180 °C, 48 h.

**Fig. S4** Low- and high-magnification FESEM images of the free-standing rutile TiO$_2$ nanorod arrays prepared at different temperatures: (a, b) 120 °C, (c, d) 150 °C and (e, f) 180 °C.

**Fig. S5** The FESEM image (a), TEM image (b-c) and XRD patterns of the RTM treated at 500 °C for 30 min.

**Fig. S6** The comparative transmittance spectra for the P25+mesocrystals composites, P25 and RTM only thin film.
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