Electronic Supplementary Material (ESI) for Energy & Environmental Science

Self-cleaning, broadband and quasi-omnidirectional antireflective structures based on mesocrystalline rutile TiO_2 nanorod arrays

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Supporting Information

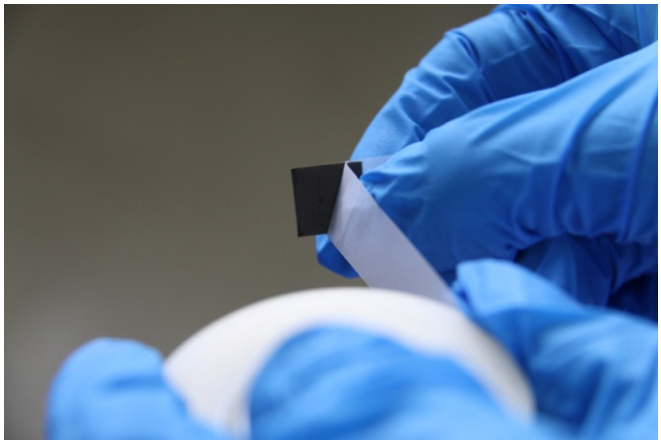

Fig. S1 Optical photograph of the Ti foil with rutile TiO_2 nanorod arrays showing the peel-off test. The Ti foil with rutile TiO_2 nanorod arrays was heated in boiling aqueous NaCl solution (1M) for 2h, and then a scotch tape was employed to peel off the TiO_2 nanorod arrays. No TiO_2 nanorod arrays were peeled off from the Ti substrate, indicating an effective adhesion of the TiO_2 layer.

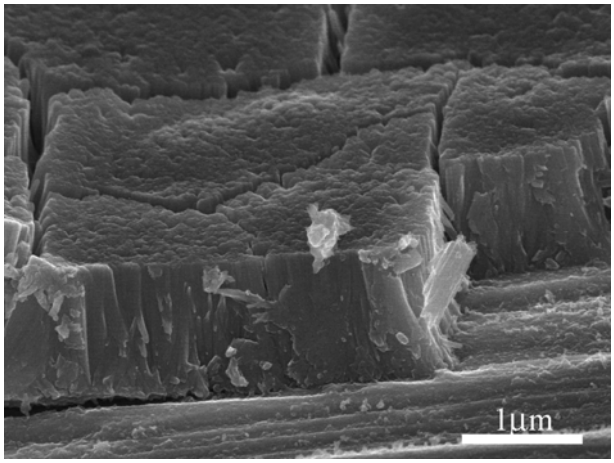

Fig. S2 SEM image of rutile TiO_2 thin films grown on Ti foils at 100 ºC for 20 h.

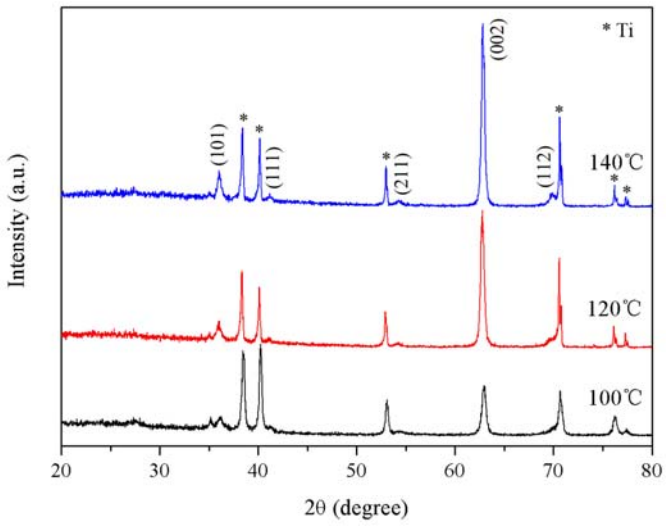

Fig. S3 XRD patterns of rutile TiO_2 nanorod arrays grown on Ti foils at different temperatures for 20 h.

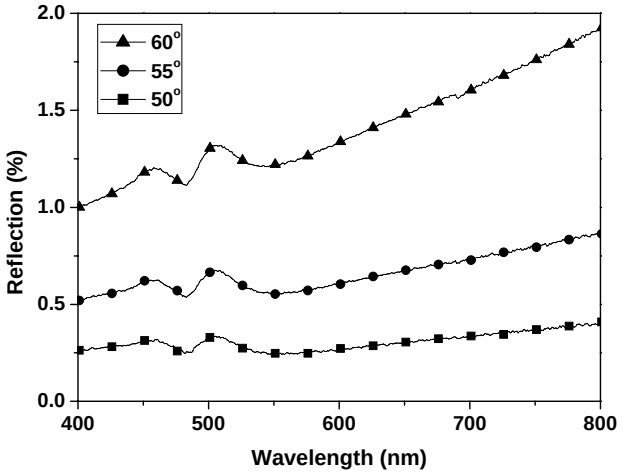

Fig. S4 Specular reflectance spectra of rutile TiO_2 nanorod arrays grown on Ti foils for 20 h at incidence angles in the range 50–60°.

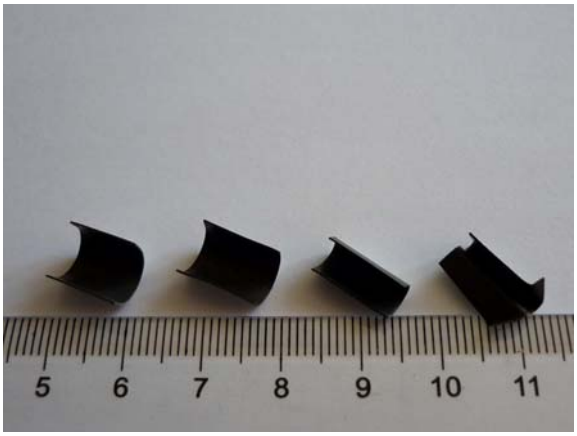

Fig. S5 Optical photograph of shaped Ti foils after hydrothermal growth of rutile TiO_2 nanorod arrays.

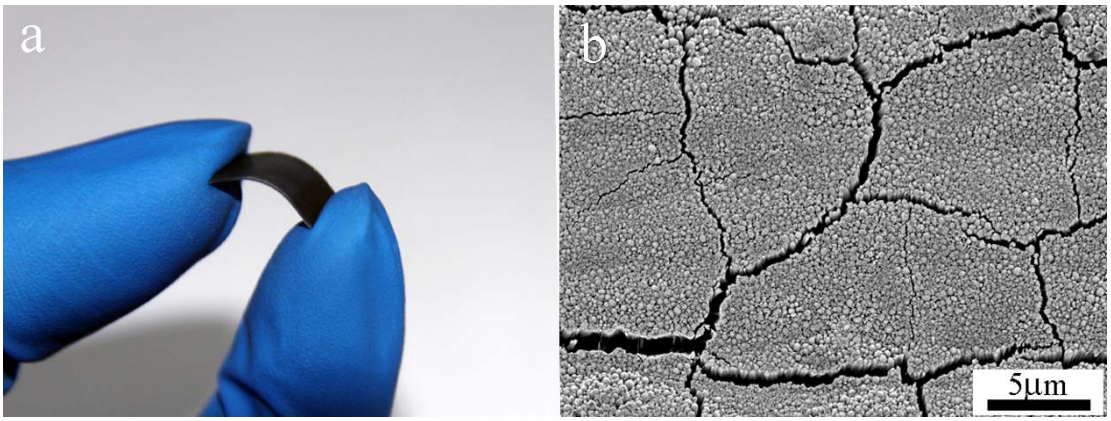

Fig. S6 Optical photograph (a) and SEM image (b) of the Ti foil with rutile TiO_2 nanorod arrays, which was bended after the hydrothermal growth.

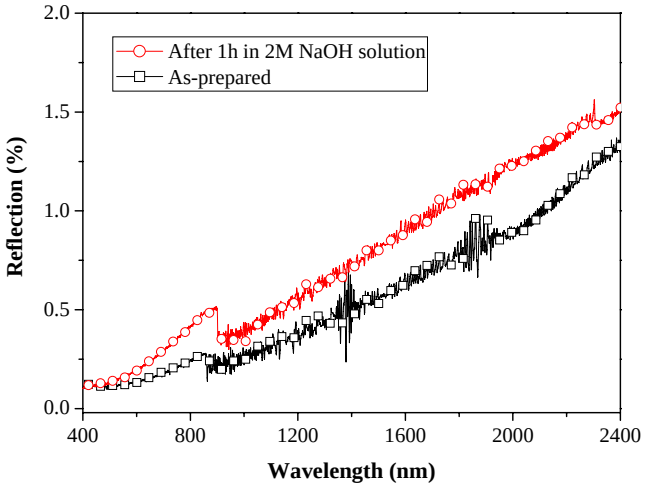

Fig. S7 Specular reflectance spectra of rutile TiO_2 nanorod arrays on Ti foil before and after immersed in 2M NaOH solution for 1h.

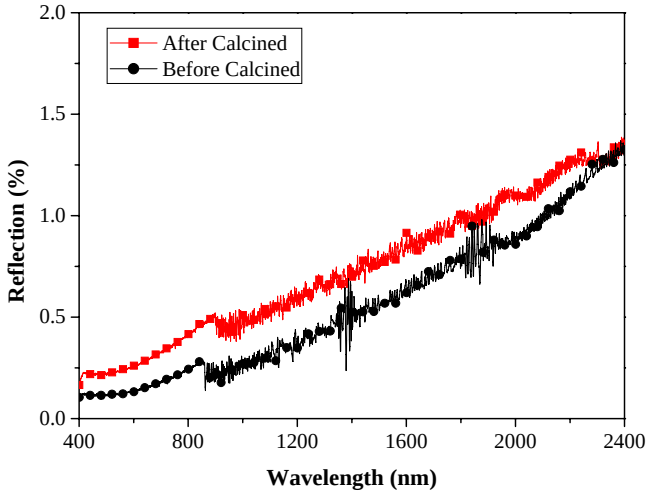

Fig. S8 Specular reflectance spectra of rutile TiO_2 nanorod arrays grown on Ti foil before and after calcination at 500ºC.

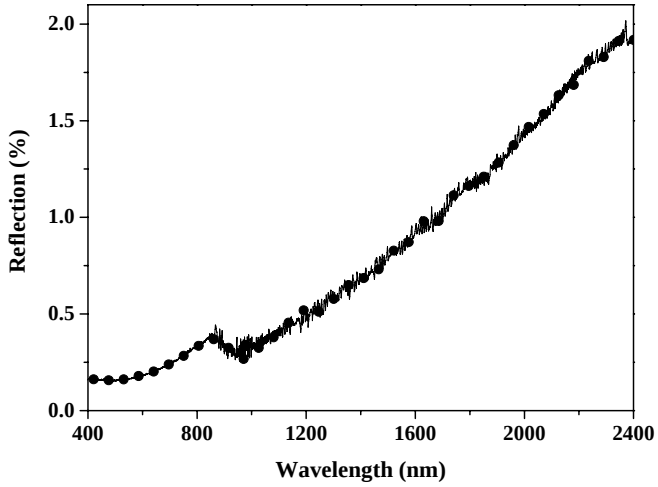

Fig. S9 Specular reflectance spectrum of fluorosilane-modified rutile TiO_2 nanorod arrays grown on Ti foil.