Electronic Supplementary Information (ESI)

Rutile Nanowire Arrays: Surface Densities, Wettability and Photochemistry Tunable

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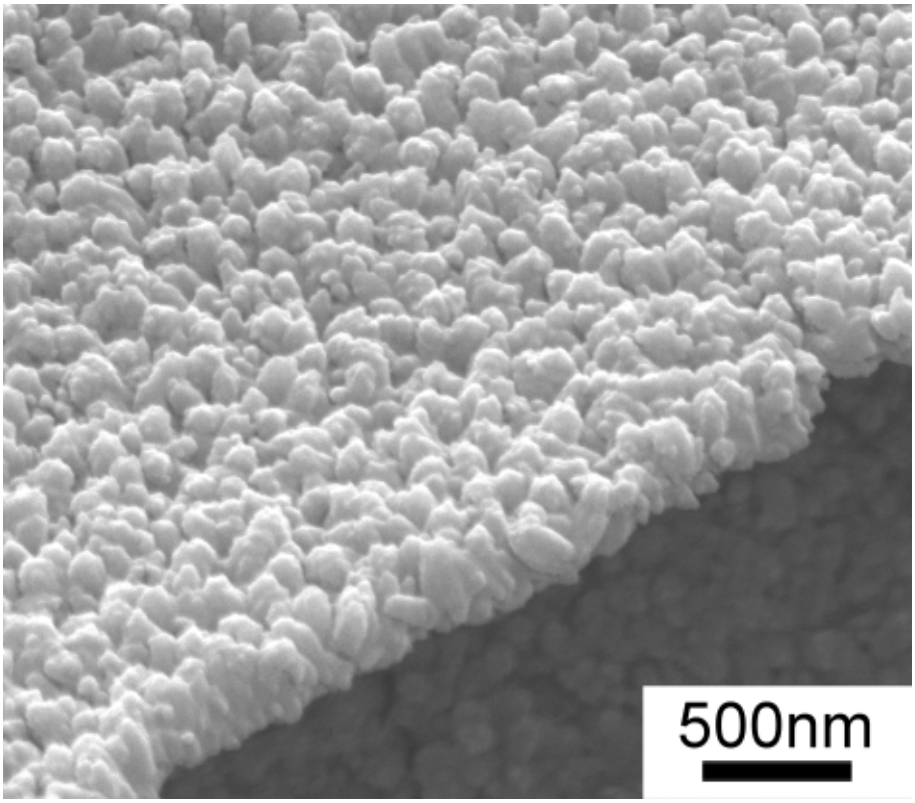

Fig. S1: The SEM image of the rutile nanowire arrays grown with 6.0 M HCl solution at 100 °C for 6.0 h.

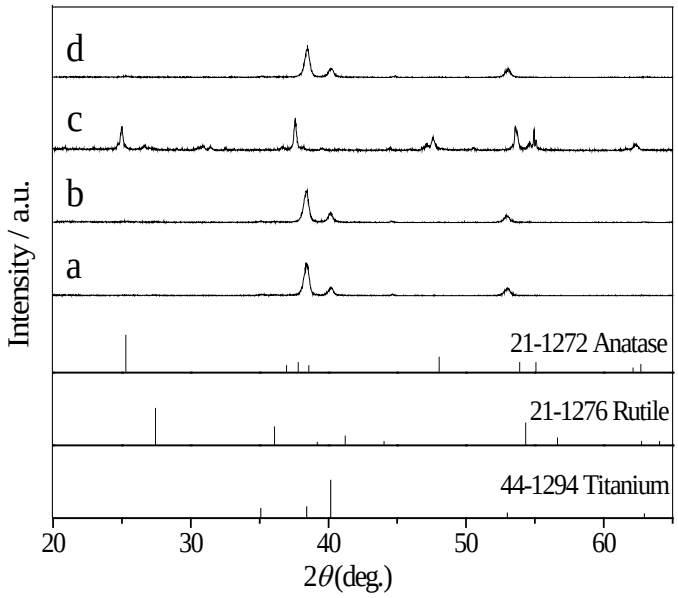

Fig. S2: XRD patterns of as-synthesized products hydrothermally treated by different acid vapors at 140 °C for 12 h. (a) 3.0 M H_2SO_4, (b) 6.0 M HNO_3, (c) 1% HF, (d) 6.0 M HAc. For the case of 1% HF (c), the obtained product after AVO treatment was found to be dominated by the anatase phase. For other cases (a, b and d), neither rutile nor anatase was detected, due to the less volatility of the acids used. It is known that under the solution phase hydrothermal conditions, the anatase is generally yielded when H_2SO_4, HNO_3 and HF are used while rutile can be obtained when HCl is used (Details can be sound from references, e.g., X. W. Wang, G. Liu, L.Z. Wang, J. Pan, G. Q. Lu, H.-M. Cheng, *J. Mater. Chem.*, 2011, **21**, 869–873; M. M. Wu, G. Lin, D. H. Chen, G. G. Wang, D. He,. S. H. Feng, R. R. Xu, *Chem. Mater.*, 2002, **14**, 1974-1980).

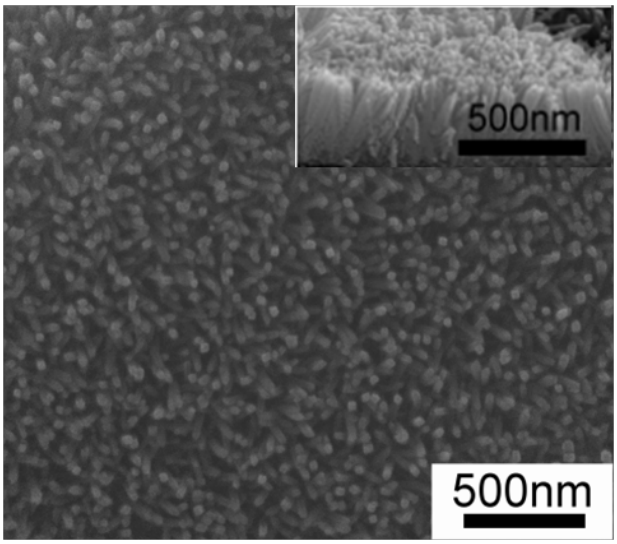

Fig. S3: The SEM image of the rutile nanowire arrays grown in the vapor of 6.0 M HCl solution at 140 °C for 3.0 h.