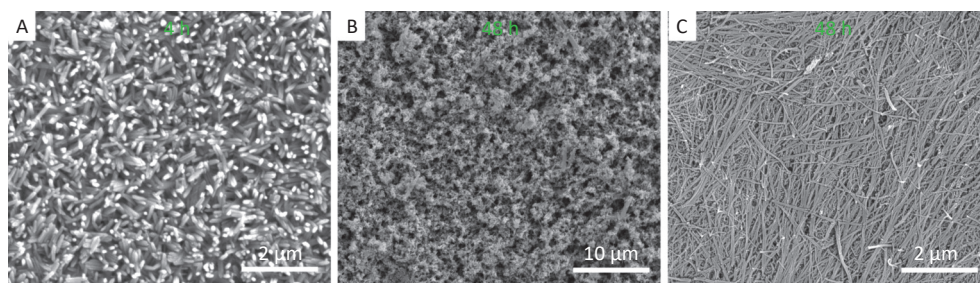
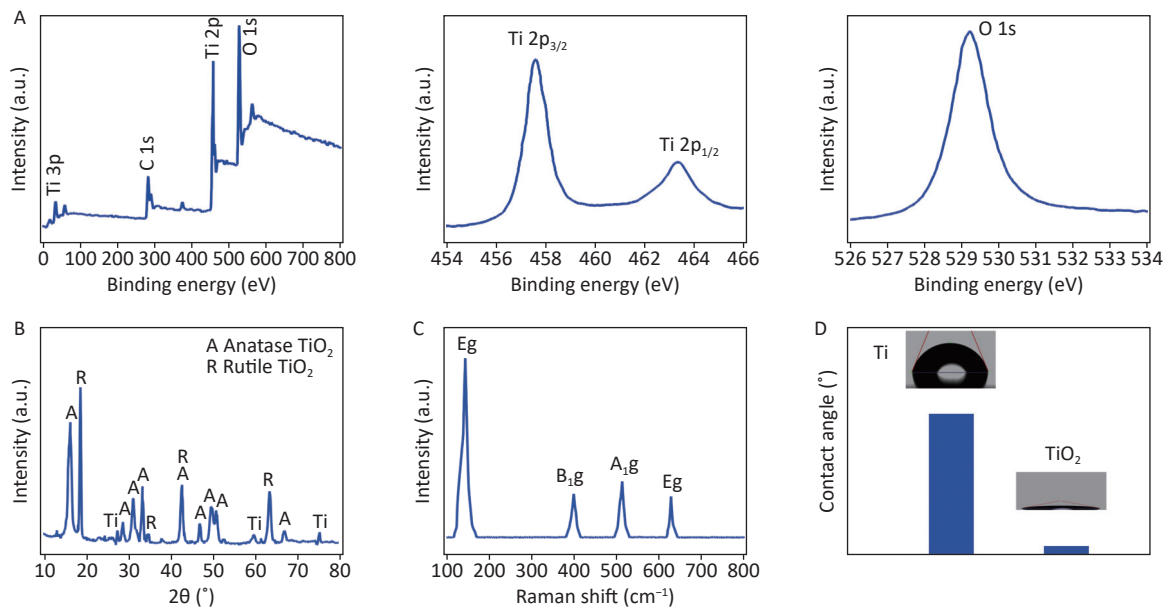


Supplementary Figure S1. Synthesis process of TiO_2 nanopikes. (A) ultrasonic pre-cleaning in a solution of deionized water, acetone, and 2-propanol (1:1:1 volume ratio); (B) polishing in HCl solution at 80 °C for 30 min; (C) hydrothermal synthesis at a low temperature of 220 °C for 4–48 h; (D) synthesis of $H_2Ti_2O_5 \cdot H_2O$; (E) synthesis of TiO_2 nanopikes.



Supplementary Figure S2. FESEM images of TiO_2 nanopikes. (A) FESEM imaging of TiO_2 nanopikes grown for 4 h; (B) magnified top view FESEM image of TiO_2 nanopikes grown for 4 h; (C) tilt-view FESEM image of TiO_2 nanopikes grown for 48 h. FESEM, field emission scanning electron microscopy.



Supplementary Figure S3. Structural investigation of TiO₂ nanopikes grown for 4 h. (A) XPS survey spectra and high-resolution Ti 2p and O 1s spectra; (B) XRD pattern; (C) Raman spectra; (D) water contact angles of Ti and TiO₂ nanopike surfaces. XPS, X-ray photoelectron spectroscopy; XRD, X-ray diffraction.