Supporting Information for

Controllable growth of vertically aligned heterophase TiO_2 nanocones under glycerol assisting toward photocatalytic water purification

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Figure captions

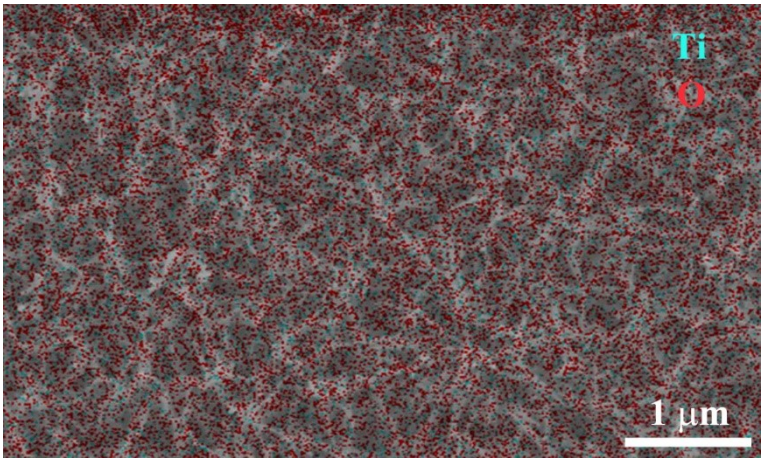

Figure S1. SEM image of TNCs on Ti substrates for test of the energy-dispersive X-ray spectroscopy (EDX) spectrum. The compositional uniformity of Ti and O elements from TNCs was confirmed by the uniform color contrasts.

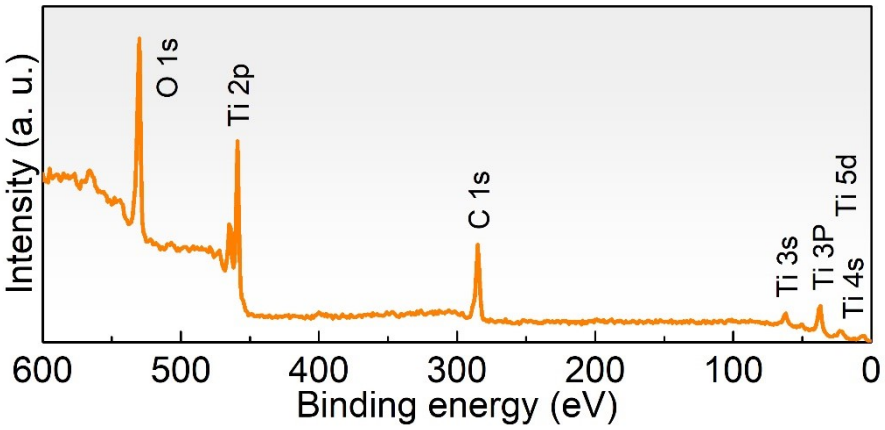

Figure S2. XPS survey scan of as-grown TNCs samples grown on Ti substrate. The chemical components of as-grown TNCs samples were confirmed by using the XPS analysis data. The atomic ratio of Ti and O elements is ~ 1:2, revealing the stoichiometric ratio of glycerol-assisted hydrothermal-grown TiO_2.

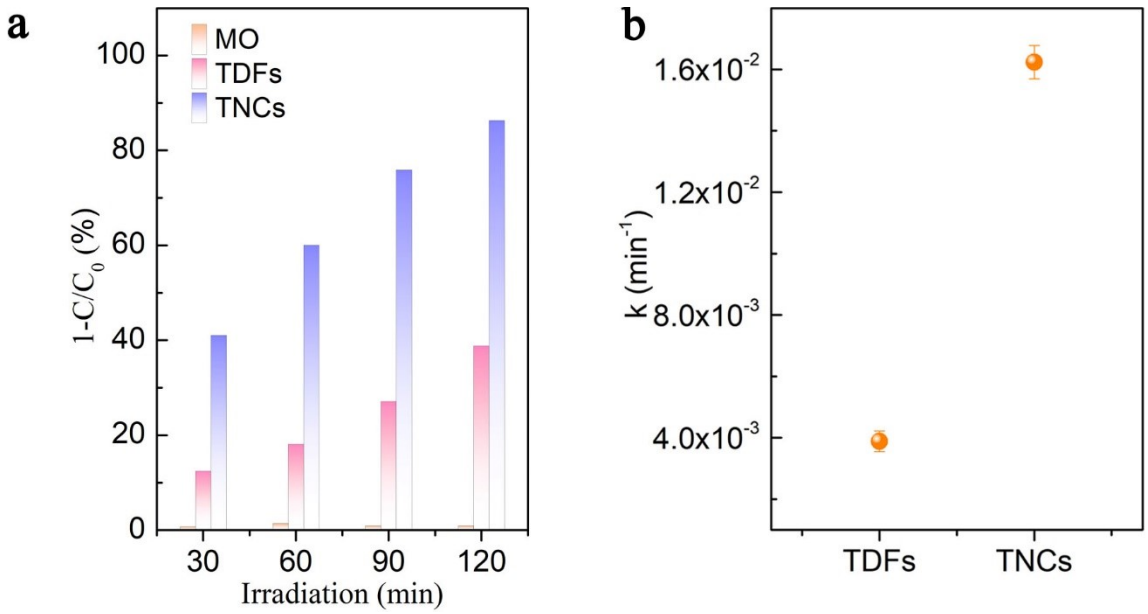

Figure S3. Photodegradation kinetic curves and photodegradation rates of MO by TDFs and TNCs. a) Photodegradation efficiency of MO by TDFs and TNCs under simulated sunlight irradiation, revealing nanocone structure can significantly improve the photocatalytic efficiency. b) Photodegradation rates of the TDFs and TNCs. The TNCs (K = 0.01624 min^{-1}) show a more rapid photodegradation process compared to TDFs (K = 0.00389 min^{-1}).

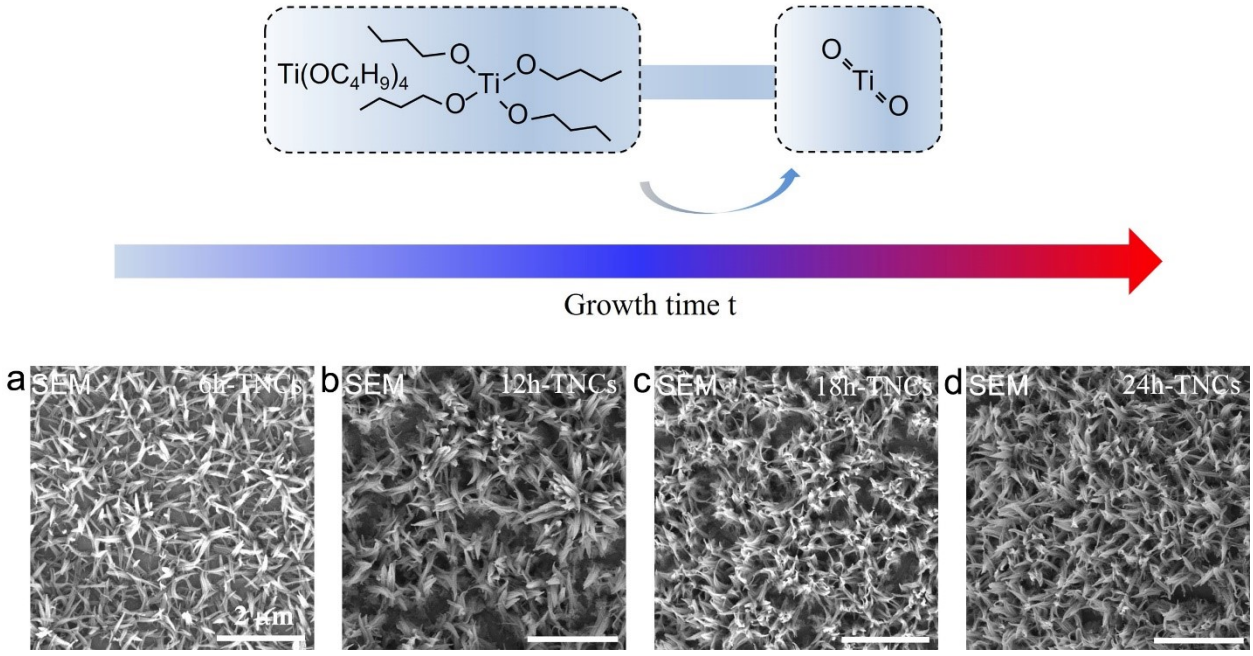

Figure S4. Morphology evolution of TNCs depending on the growth time. (a-d) The low magnification of top-view SEM images of t-TNCs grown on Ti substrate (t = 6 h, 12 h, 18 h, 24 h), revealing the uniform distribution of the samples.

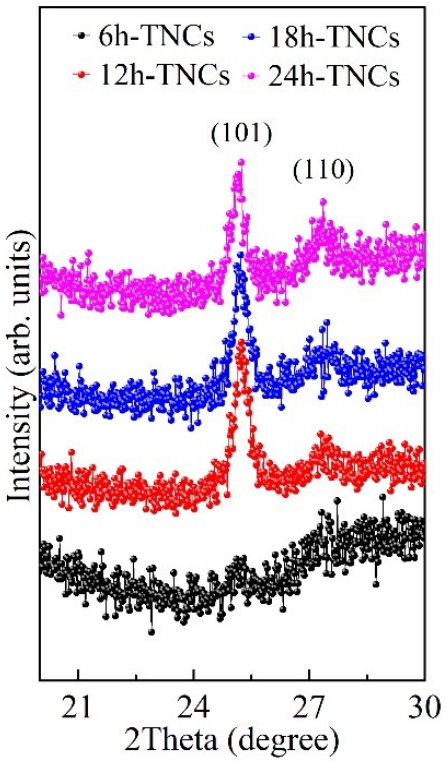

Figure S5. Determination of heterophase components of t-TNCs on Ti substrates by using XRD characterization, confirming that the heterophase is composed of TiO_2 anatase phase and rutile phase.

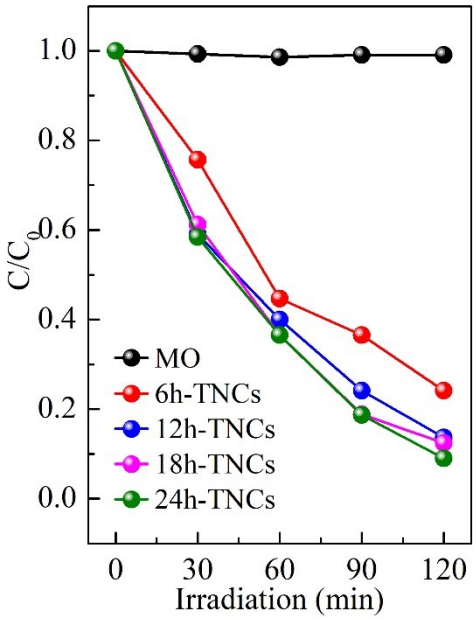

Figure S6. Photodegradation kinetic curves of MO by t-TNCs under simulated sunlight irradiation, the C_0 and C are the initial and reaction concentrations of the MO aqueous solution, respectively.

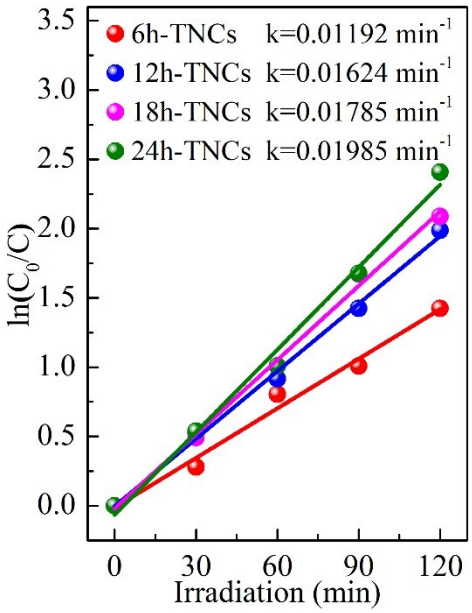

Figure S7. Photodegradation rates of MO by t-TNCs under simulated sunlight irradiation, the C_0 and C are the initial and reaction concentrations of the MO aqueous solution, respectively, K is the rate constant.