

Supplementary Material

Low temperature synthesis of TiO₂ nanoparticles with tuneable phase composition and their photocatalytic activity

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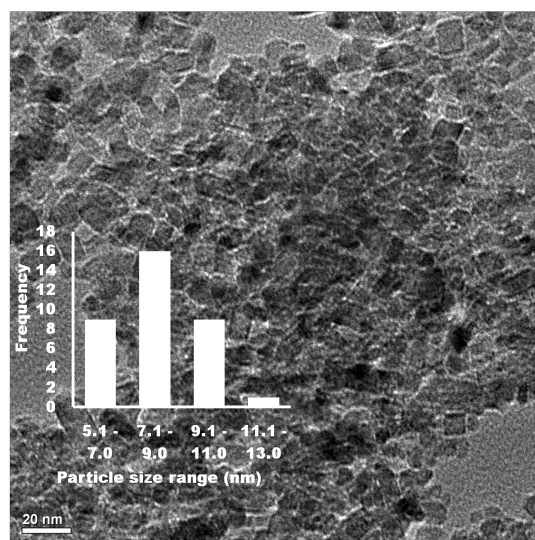


Figure S1. TEM image and associated size distribution (calculated from a total of 35 particles) of TiO₂ nanoparticles fabricated using 9 mM TiCl₄.

In relation to Figure S2, the sample TiO₂-36 is comprised of the rutile phase – no other crystalline phases are observed. Using the external standard method, the sample is calculated to be 100% crystalline within experimental error. However, there appears to be some significant anisotropic peak broadening, which suggests that the particles are elongated, probably along the [001] crystal direction. This is evidenced by the sharp (001) peak at ~63° 2θ.

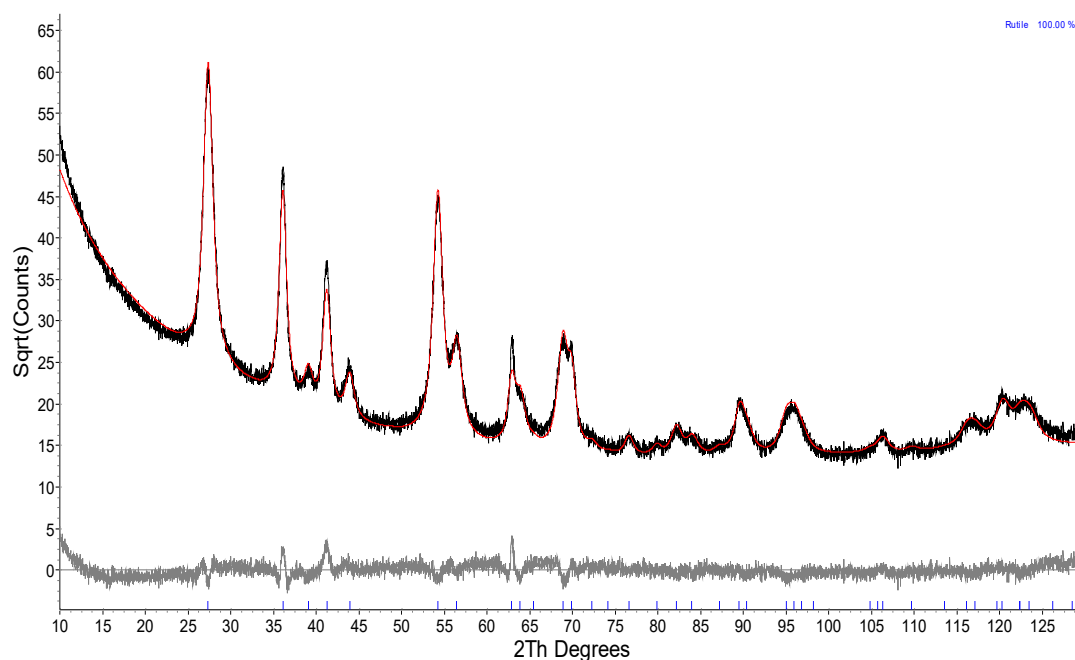


Figure S2. Room temperature PXRD pattern with the Rietveld fit of TiO₂-36 after 12 h of hydrothermal treatment. The weighted profile R factor (R_{wp}), which is a measure of the quality of the fit between the model (red curve) and the observed data (black curve), is 7.00%.

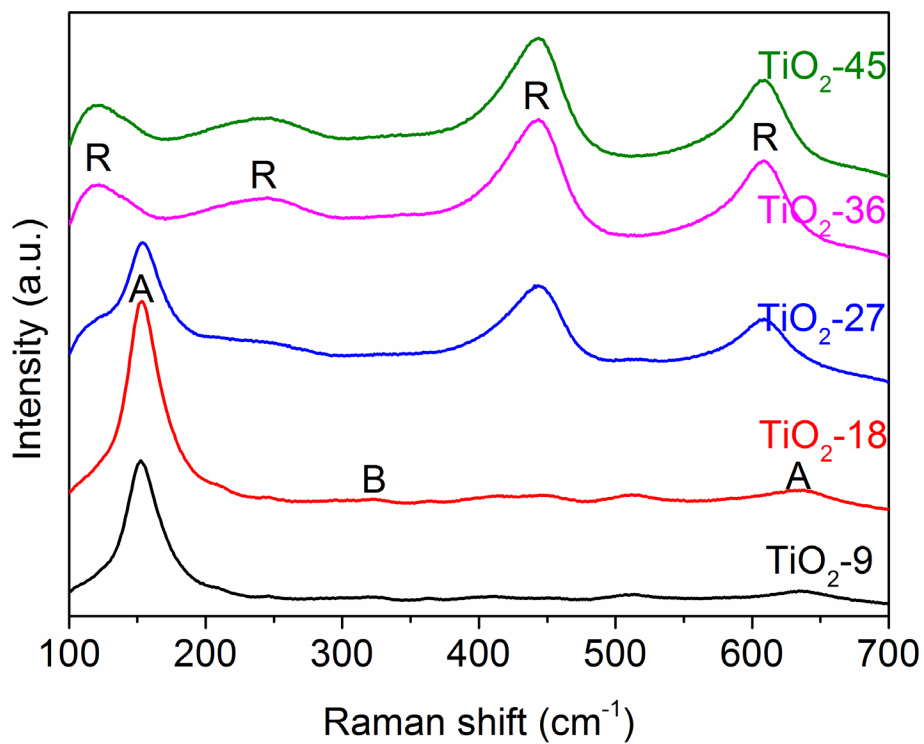


Figure S3. Raman spectra of samples hydrothermally treated at 90 °C for 12 h in which peaks are labelled with A: anatase, B: brookite and R: rutile.

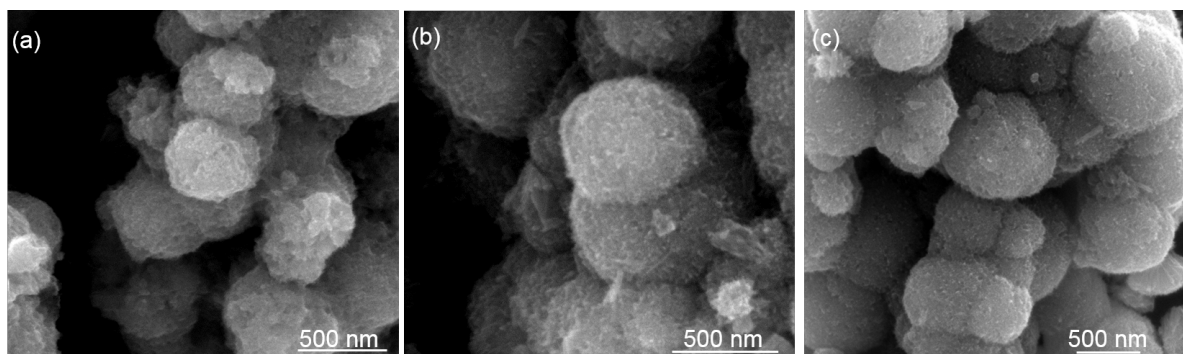


Figure S4. SEM images of (a) TiO₂-27, (b) TiO₂-36 and (c) TiO₂-45.