

Support information

Peering into the formation of template-free hierarchical flower-like nanostructures of SrTiO_3

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The network parameters were obtained through the relation between the Bragg's law (Equation S1) and the equation that relates the interplanar distance with the network parameter a_0 to the planes hkl (Equation S2) for a cubic system.

$$d_{hkl} = \frac{n\lambda}{2\sin \theta} \quad (S1)$$

$$d_{hkl} = \frac{a_0}{\sqrt{(h^2 + k^2 + l^2)}} \quad (S2)$$

where $n = 1$, λ is the X-ray wavelength (1.54 Å) and θ is the Bragg angle ($2\theta \sim 32.4^\circ$). The Scherrer equation (Equation S3) was used to determine the average crystallite size D_{hkl} of the synthesized samples:

$$D_{hkl} = \frac{K\lambda}{B\cos \theta} \quad (S3)$$

where K is a constant (0.94) and B is the full width at half maximum of the diffraction peak of the plane (110).

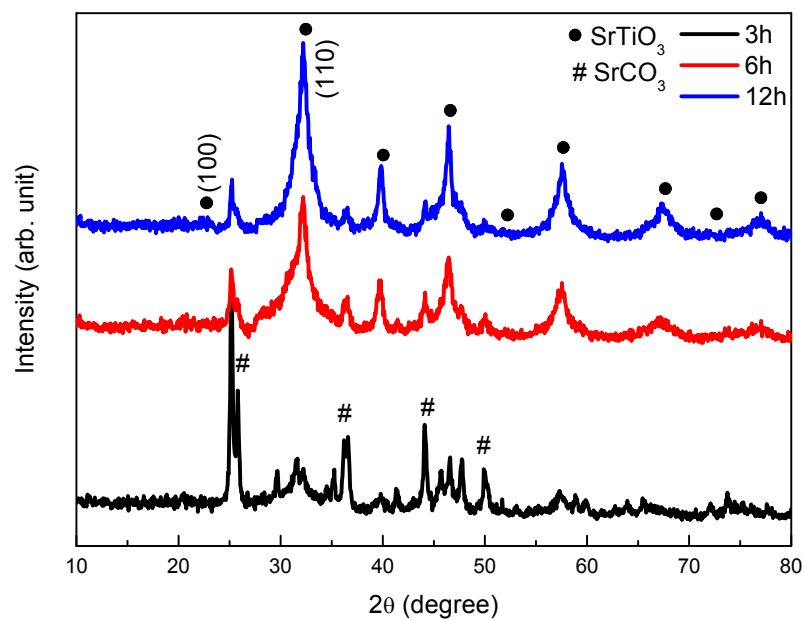


Figure S1. XRD pattern of as synthesized samples prepared at different solvothermal reaction times.

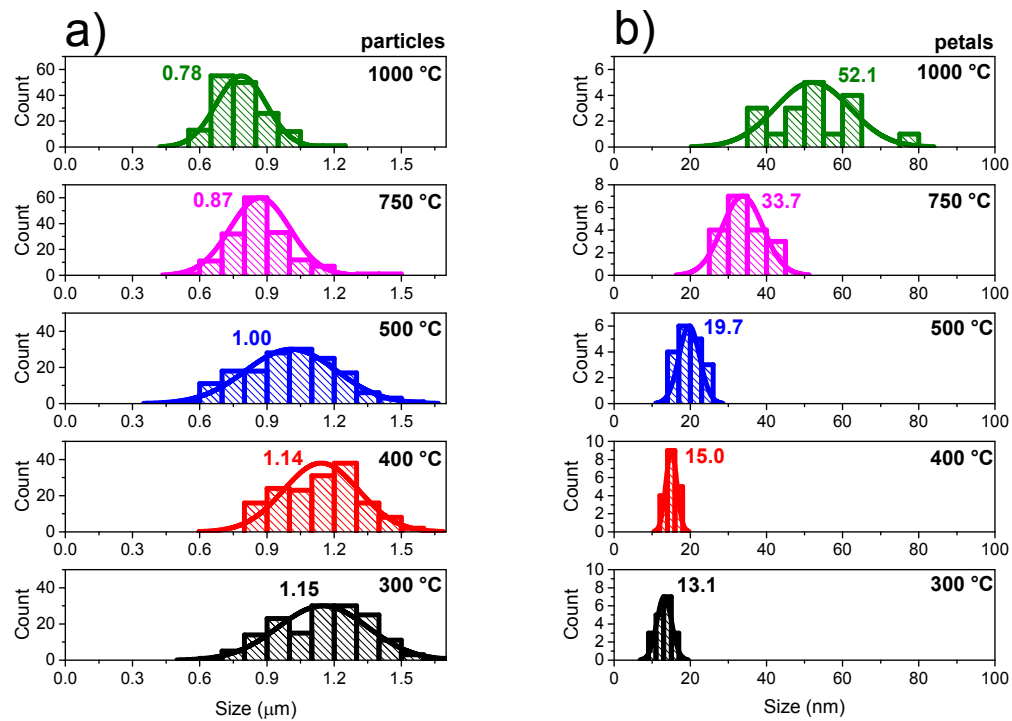


Figure S2. Size distribution of SrTiO_3 (a) flower-like nanostructures and (b) petals thickness after thermal treatment from 300 to 1000 °C.

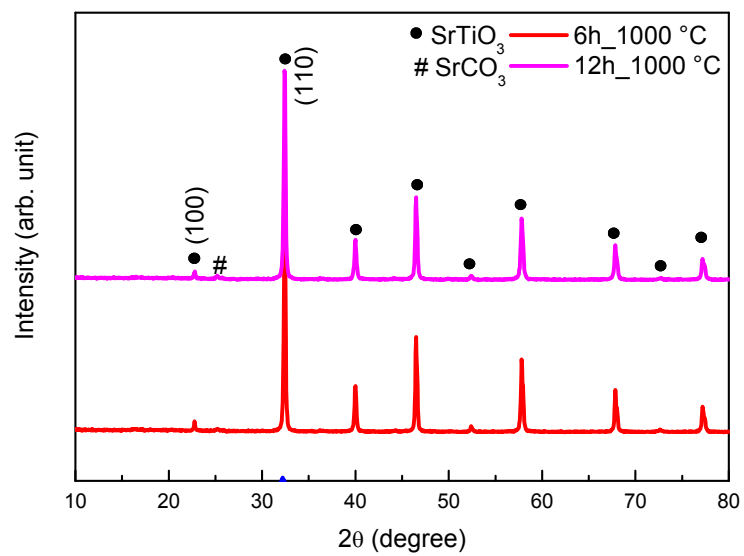


Figure S3. XRD pattern of SrTiO_3 nanoparticles obtained with 6 and 12 hours of solvothermal reaction after thermal treatment of 1000 °C.

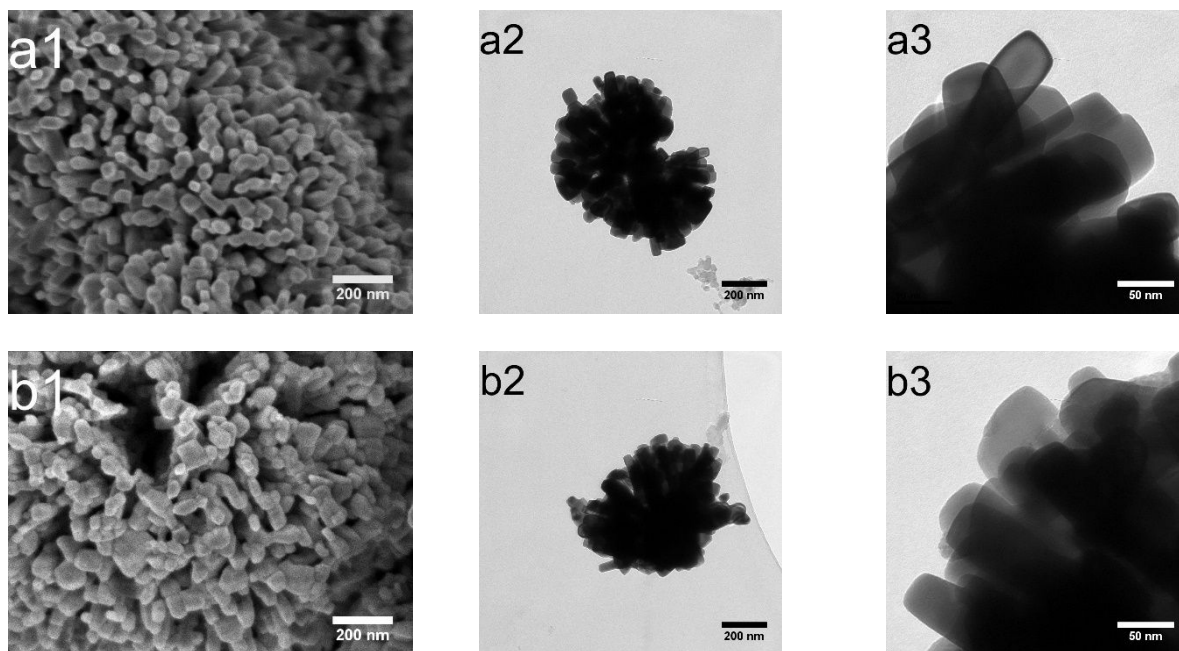


Figure S4. SEM (1) and TEM (2-3) images of SrTiO_3 nanoparticles obtained with (a) 6 and (b) 12 hours of solvothermal reaction after thermal treatment of 1000 °C.

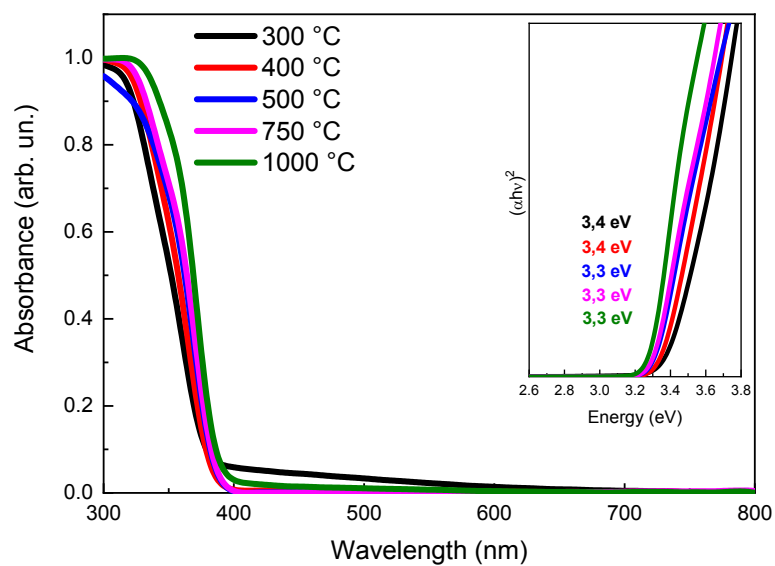


Figure S5. Absorption spectra in the UV-Vis region of SrTiO₃ nanoparticles after thermal treatment from 300 to 1000 °C. Inset: Tauc plot.

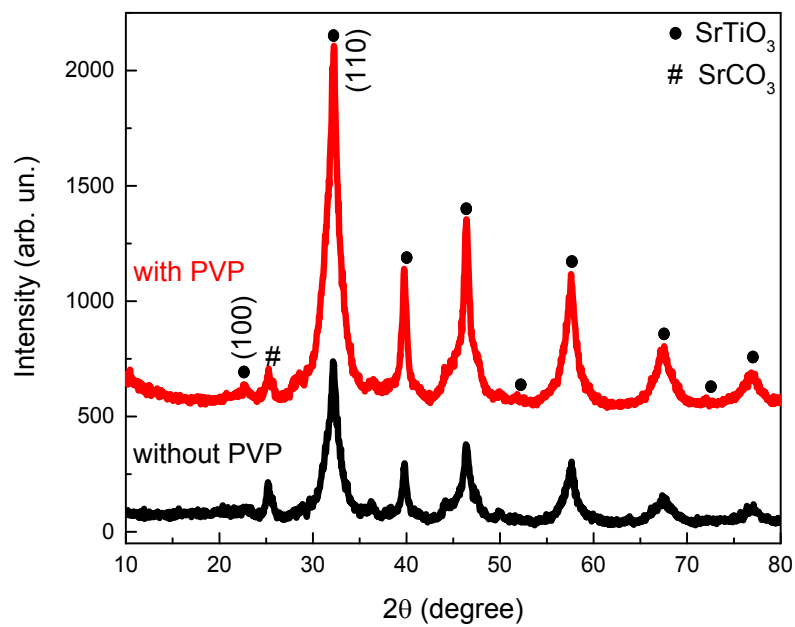


Figure S6. XRD pattern of SrTiO_3 nanoparticles obtained with 12 hours of solvothermal reaction in presence and absence of PVP.