

Multi-shelled Titania Hollow Sphere Fabricated by a Hard Template Strategy: enhanced photocatalytic activity

Yi Zeng^{ab}, Xi Wang^{ab}, Hao Wang^{ab}, Yang Dong^{ab}, Ying Ma^{*a}, and Jiannian Yao^{*a}

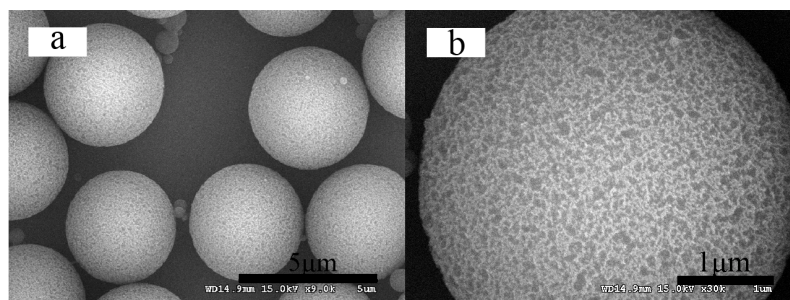


Figure S1. SEM images of PS-DVB spheres.

Table S1 Calculated crystalline sizes, weight fraction of anatase and rutile, and adsorbed amount of Rhodamine B after adsorption equilibrium of the three samples.

	Multishelled spheres	Sphere-in-sphere structures	Nanoparticles
Crystalline size of anatase ^a	18.0 nm	21.0 nm	20.4 nm
Crystalline size of rutile ^a	24.2 nm	26.2 nm	28.6 nm
Weight fraction of anatase ^b	50.1%	53.5%	51.4%
Weight fraction of rutile ^c	49.9%	46.5%	48.6%
Adsorbed Rhodamine B (μmol g ⁻¹)	0.97	1.02	0.92

^a Calculated by Scherrer equation;

^b Calculated by Spurr-Myers equation: $f_A = \frac{1}{1 + 1.26 \frac{I_R}{I_A}}$ ($\frac{I_R}{I_A}$ represents the ratio of the

intensity of the strongest rutile reflection to the intensity of the strongest anatase reflection);

^c The weight fraction of rutile is equal to $(1 - f_A)$.

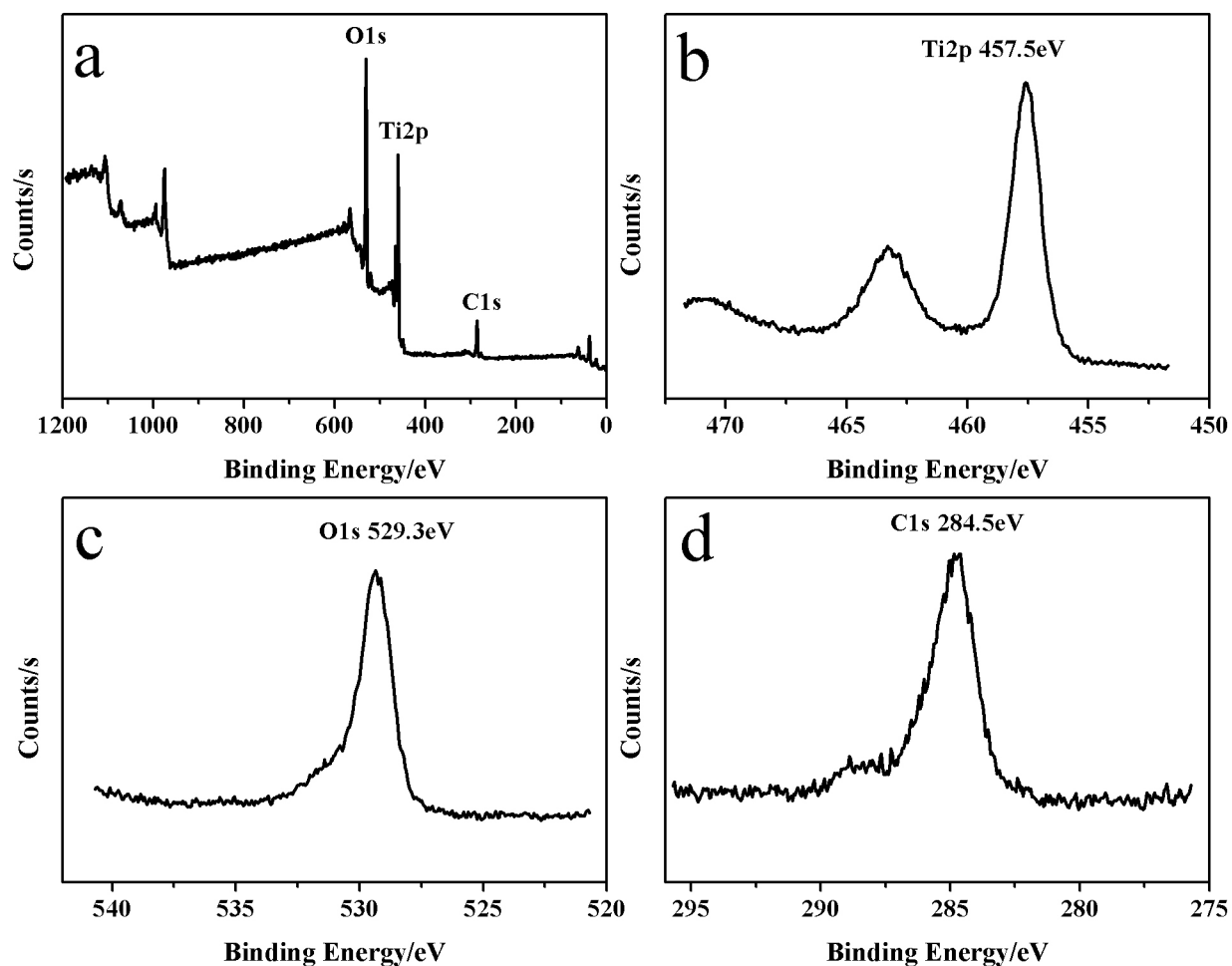


Figure S2. XPS spectra of multi-shelled spheres (a) survey spectrum;(b) Ti2p;(c) O1s;(d);C1s.

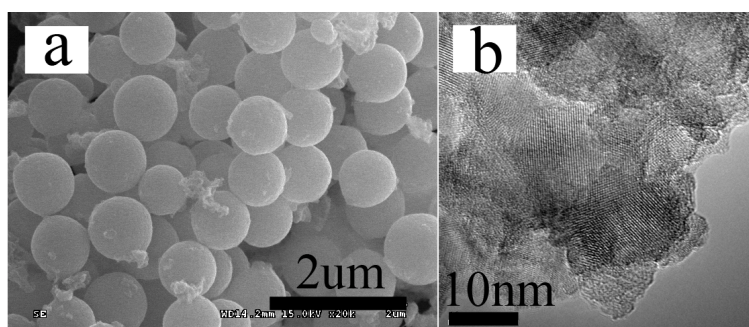


Figure S3. SEM images of (a) sphere-in-sphere structures; (b) nanoparticles.

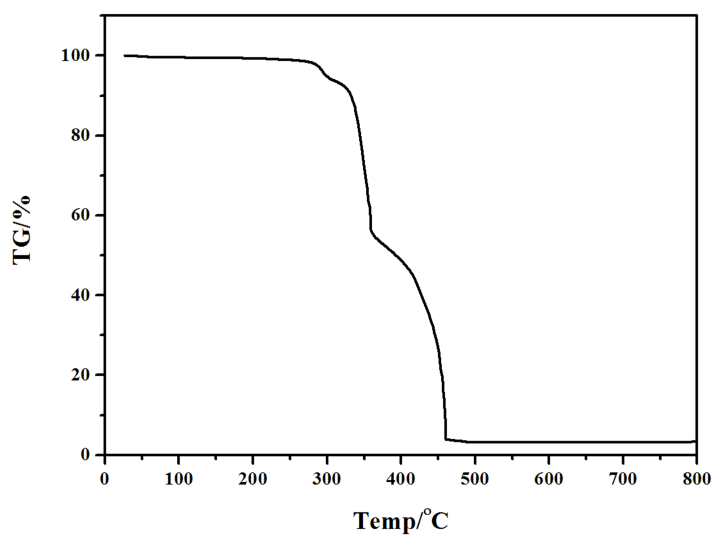


Figure S4. TGA analysis of titania/polymer composite spheres.

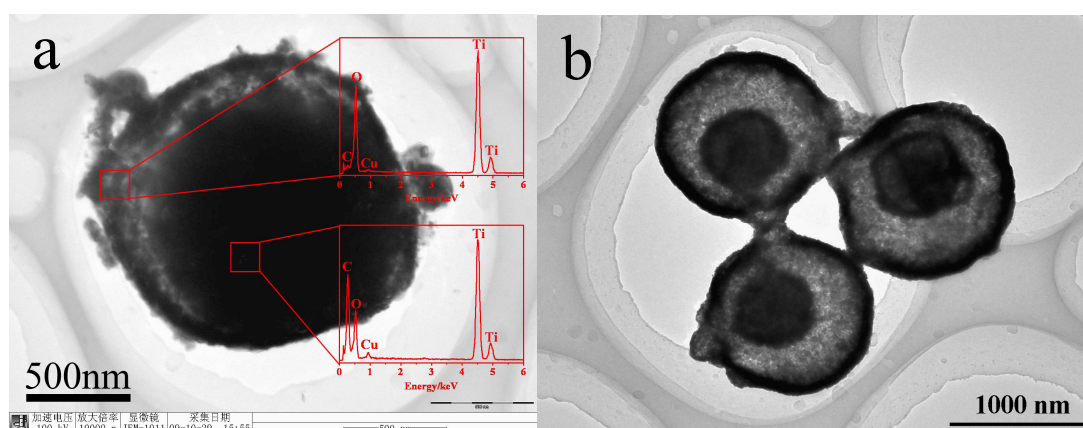


Figure S5. TEM images and EDS spectra (inset, a) of intermediate products which were obtained by calcination of titania/polymer composite microspheres for 5 min following procedure I.