Supporting Information

Facile preparation of yolk-shell structured Si/SiC@C@TiO_2 nanocomposites as highly efficient photocatalysts for degrading organic dye in wastewater

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Experimental

Preparation of stöber SiO_2 spheres. 0.6 mL of tetraethyl orthosilicate (TEOS) was added into the mixed solution of isopropyl alcohol (64 mL) and deionized water (26 mL). 1.3 mL of 30% ammonium solution was added into the above solution, followed by stirring for 1 h. Then 5 mL of TEOS were added dropwise into the solution at 35 ^{o}C for 2h. After centrifugation, the white solid was washed several times with water and ethanol, then collected and dried under vacuum at 70 ^{o}C.

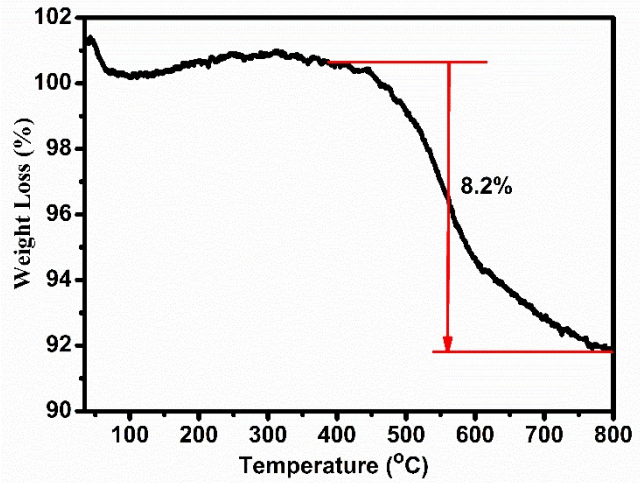

Fig. S1 TGA curve of YSSC spheres

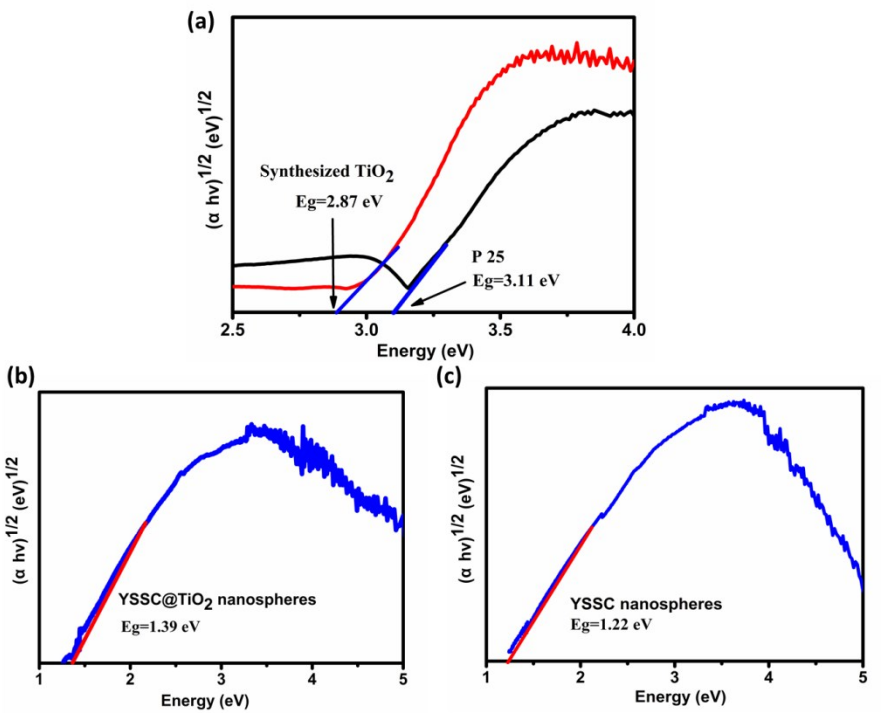

Fig. S2 Plots of $(\alpha hv)^{1/2}$ *vs* (hv) based on UV-Vis diffuse reflectance spectra

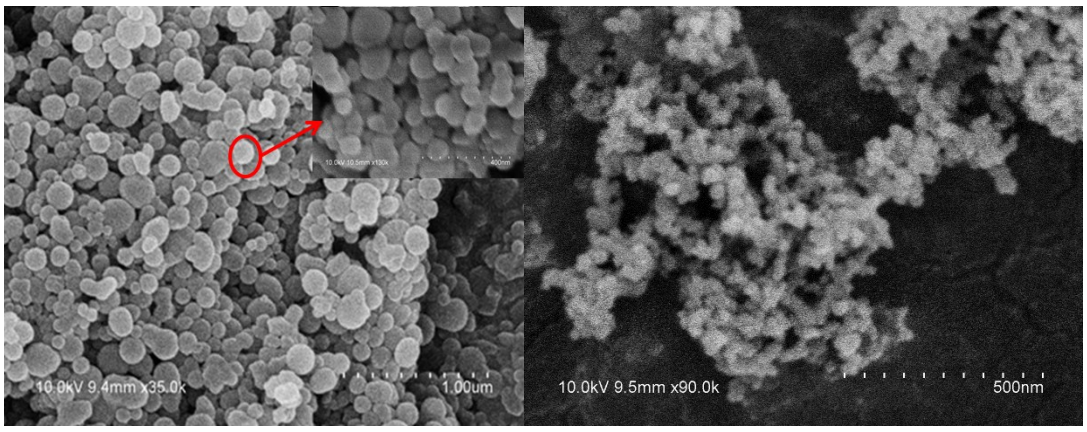

Fig S3. SEM images of synthesized TiO_2 (left, ~400 nm nanospheres formed by 60 nm nanobeans), and P25 (right, 80~100 nm nanoparticles)

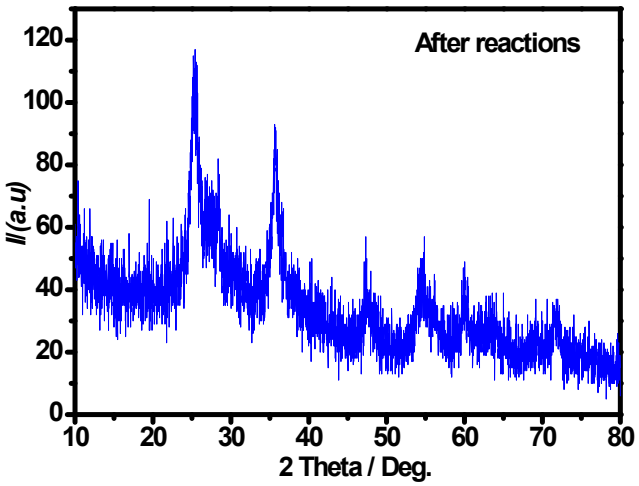

Fig. S4 PXRD pattern of YSSC@TiO_2 spheres after catalytic reactions

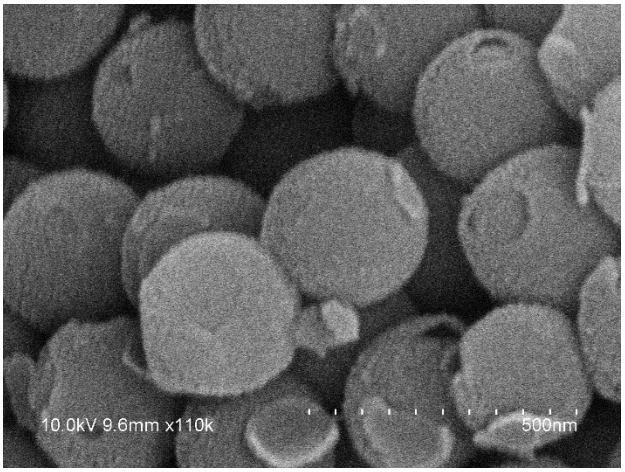

Fig. S5 SEM image of YSSC@TiO_2 spheres after catalytic reactions.

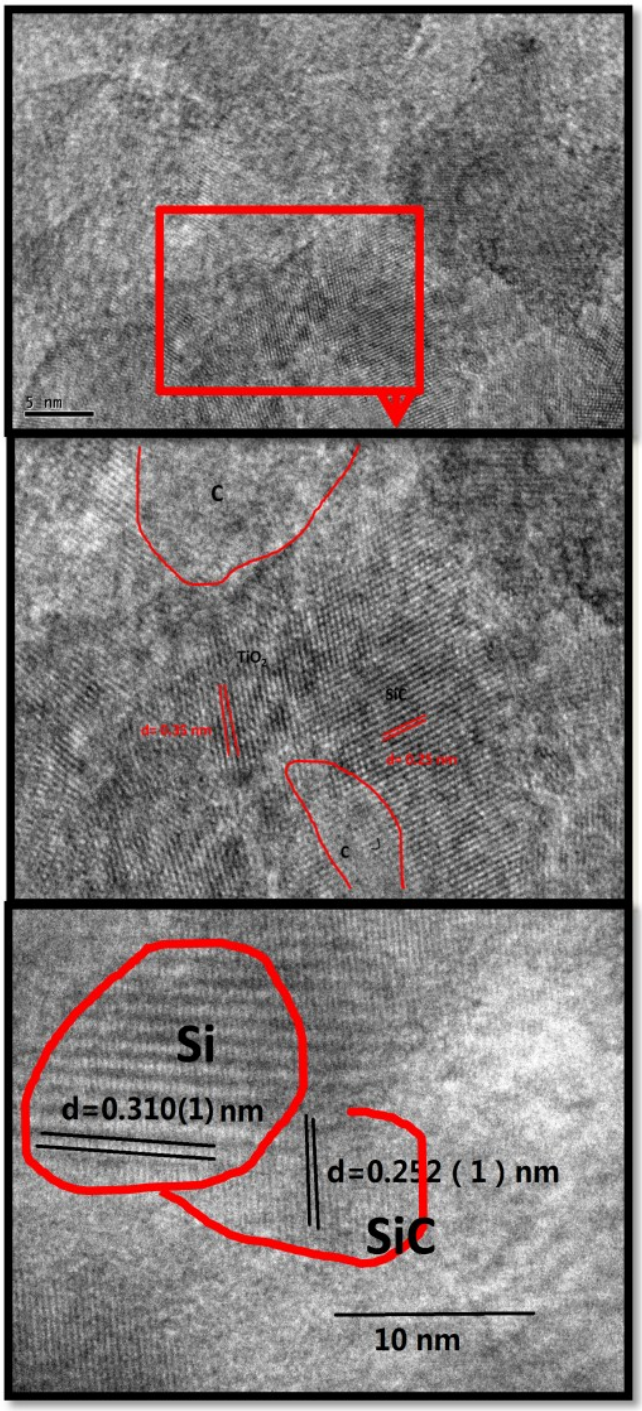

Fig. S6 TEM image of YSSC@TiO_2, showing the co-existence of TiO_2, C, SiC and Si.