Supporting Information

Laser Modified Black Titanium Oxide Nanospheres and Their Photocatalytic Activities under Visible Light

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The luminescent spectrum of LED





Size histogram of raw TiO₂



Figure S3.

UV-Vis-NIR diffuse reflectance spectra of TiO₂:

(a) raw TiO_2 ; (b) TiO_2 -5; (c) TiO_2 -30; (d) TiO_2 -120



 $(C/C_0)_{dark}$ v.s. time:

(a) raw TiO₂; (b) TiO₂-60; (c) P25; (d) TiO₂-120





(a) P25; (b) raw TiO₂; (c) TiO₂-60; (d) TiO₂-120

Anatase (hkl) (nm)	Rutile (hkl) (nm)	Measured d-spacing (nm)			1.X	1	
(101) 0.3520		0.351	<				
	(110) 0.3247	0.310					
	(101) 0.2487	0.241		and all a			
	(111) 0.2188	0.211				5 1/nm	
(211) 0.1666	(211) 0.1687	0.162					-

Figure S6.

Analysis of the SAED electron diffraction patterns

Peak (eV)	FWHM	Area	Percentage
529.8	1.3	98538	83%
530.7	2.3	7704	7%
531.7	1.6	12159	10%

Table S1.

The parameters of the O1s peak of XPS

		Peak (eV)	FWHM	Area	Percentage
Ti 2p _{3/2}	Ti ⁴⁺	458.6	1.11	64909	88%
	Ti ³⁺	457.5	1.19	8800	12%
Ti 2p _{1/2}	Ti ⁴⁺	464.3	1.91	32077	88%
	Ti ³⁺	463.2	2.04	4362	12%

Table S2.

The parameters of the Ti2p peak of XPS