Electronic Supplementary Material (ESI) for RSC Advances

A novel heterogeneous CdS nanoparticles/$NiTiO_3$ nanorod with enhanced visible-light-driven photocatalytic activity

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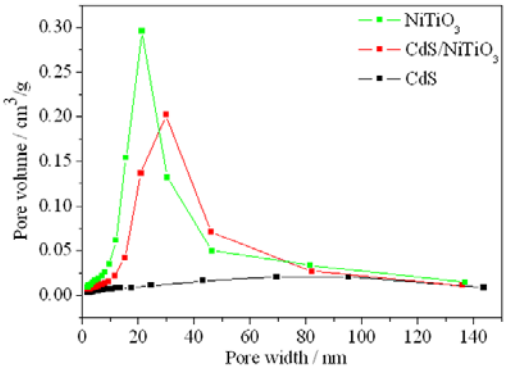

Figure S1. The average pores distribution of $NiTiO_3$ nanorods, CdS nanoparticles and heterogeneous CdS nanoparticles/$NiTiO_3$ nanorods.

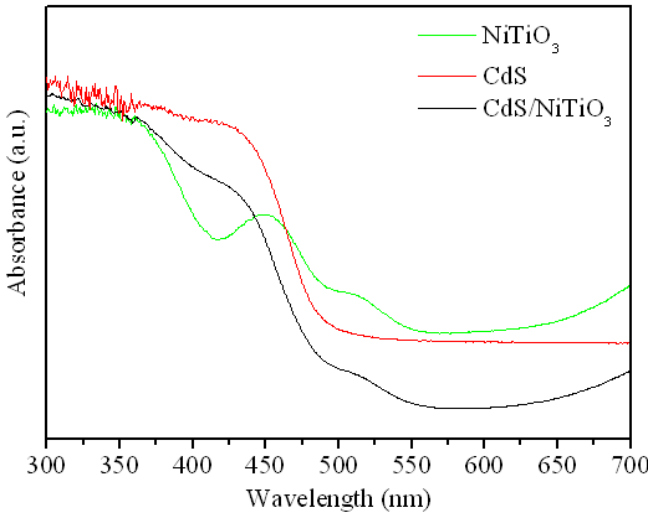

Figure S2. UV-vis diffuses reflection spectroscopy of $NiTiO_3$ nanorods, CdS nanoparticles and heterogeneous CdS nanoparticles/$NiTiO_3$ nanorods.

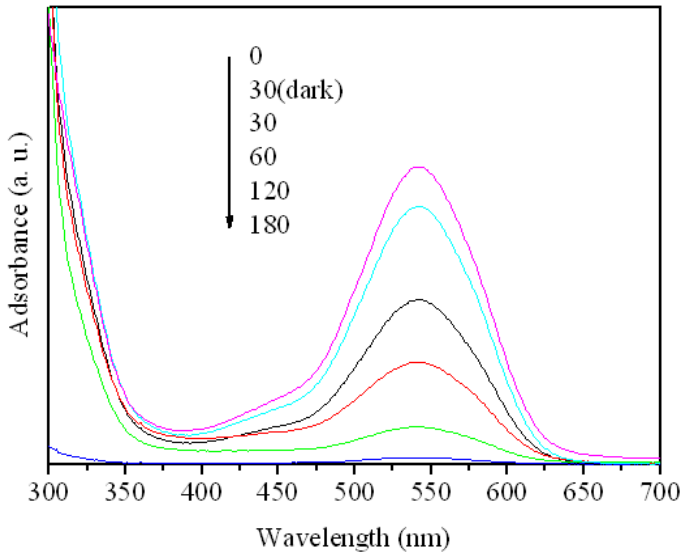

Figure S3. UV-vis spectra of aqueous solutions of Cr (VI) after photocatalytic reaction by the diphenylcarbazide method of heterogeneous CdS nanoparticles/$NiTiO_3$ nanorods for different times irradiation.

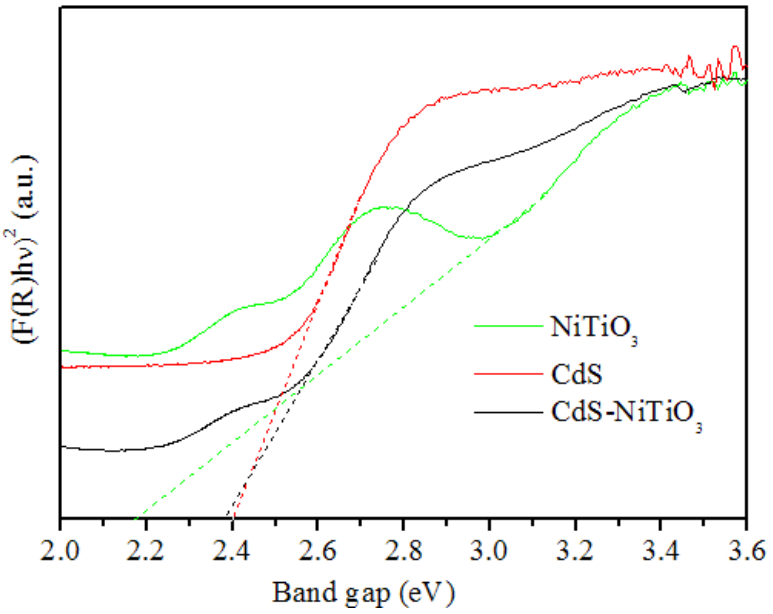

Figure S4. Plots of $(F(R)h\nu)^2$ versus $(h\nu)$ for obtaining the band gaps of $NiTiO_3$ nanorods, CdS nanoparticles and heterogeneous CdS nanoparticles/$NiTiO_3$ nanorods.

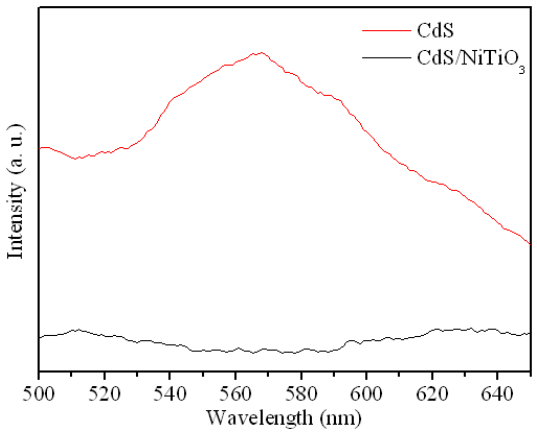

Figure S5. PL spectra of CdS nanoparticles and heterogeneous CdS nanoparticles/$NiTiO_3$ nanorods.

Table S1.The band gap and conductor band data with respect to Absolute Vacuum Scale (AVS) for common semiconductors.

Semiconductors	CdS	$NiTiO_3$	TiO_2	ZnO	$SrTiO_3$	$KTaO_3$
Band gap (eV)	2.4	2.18	3.2	3.2	3.4	3.5
Conductor band (eV)	-3.98	-4.70	-4.21	-4.19	-3.24	-3.57

The band structure data was obtained form Ref. 17.

Table S2. The Concentration of Cd^{2+} in the solution after 1h irradiation of photocatalytic reduction of Cr (VI).

Reaction	Photocatalytic reduction of Cr(VI)	
Samples	$CdS/NiTiO_3$	CdS
Concentration of Cd^{2+} in the solution after 1h irradiation of photocatalysis	0.063 mg/L	1.134 mg/L

It was measured by atomic absorption spectrometry (AAS, Thermo Elemental SOLAAR-M, limit of identification: 5 μg L^{-1}). The samples were centrifuged and filtered through 0.22 μm nominal pore-size membrane filters prior to analysis.