

Electronic Supplementary Information (ESI):

Electrospun TiO₂ Nanofibers Integrating Space-separated Magnetic Nanoparticles and Heterostructures for Recoverable and Efficient Photocatalyst

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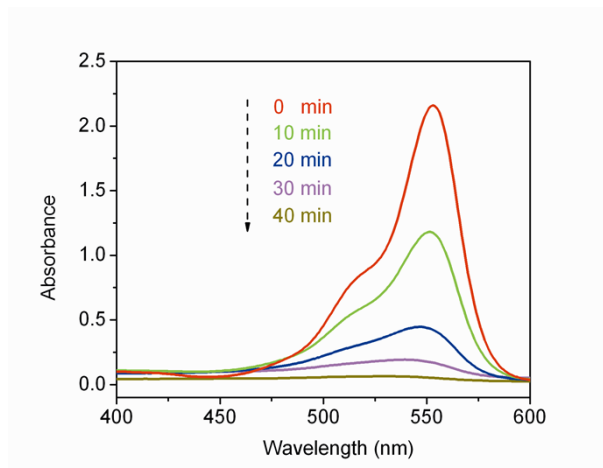


Fig. S1 UV-Vis absorption spectra of RhB during photocatalytic process for $\text{Fe}_3\text{O}_4@\text{TiO}_2/\text{CdS-2}$ nanofibers.

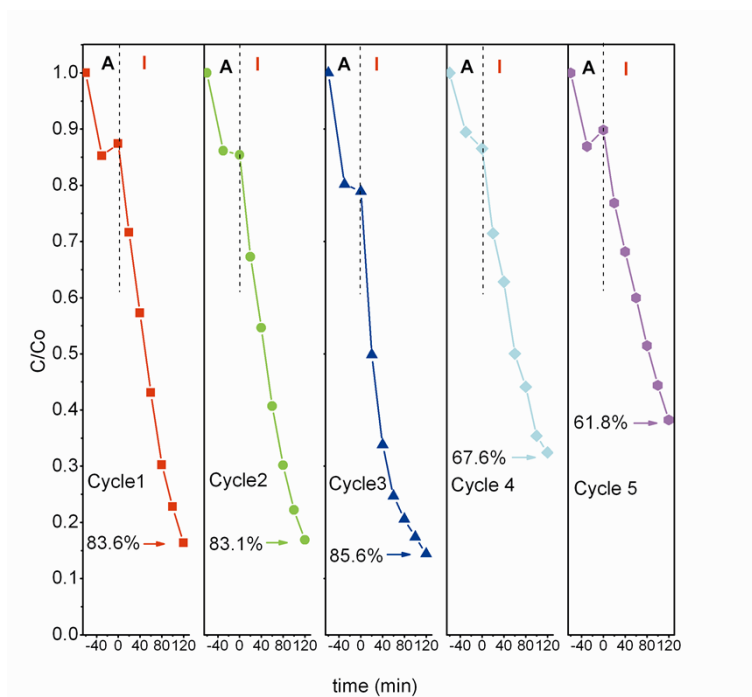


Fig. S2 Cycling stability of adsorption and photocatalytic activity of $\text{Fe}_3\text{O}_4@\text{TiO}_2/\text{CdS-3}$ nanofibers under simulated solar light irradiation by degrading the Rhodamine B (RhB) as a model organic pollutant ($\text{Fe}_3\text{O}_4@\text{TiO}_2/\text{CdS-3}$ nanofibers 20 mg and RhB 10 mg L⁻¹). A: Adsorption in the dark. I: irradiation under simulated solar light.

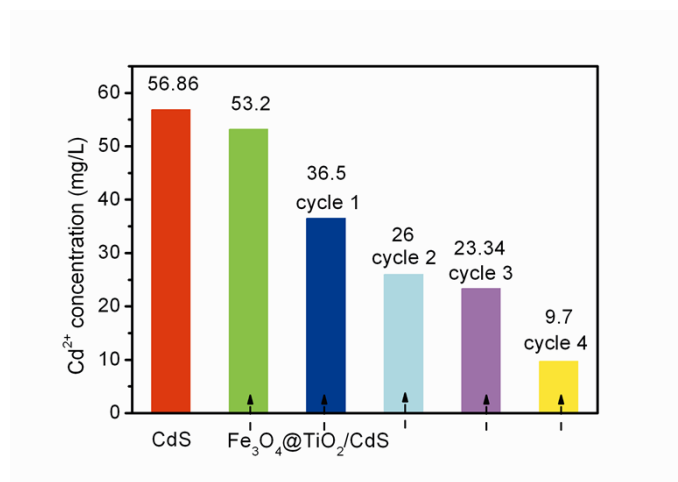


Fig. S3 Cadmium ion (Cd^{2+}) concentration ($C_{\text{Cd}^{2+}}$) in the solution after adsorption and solar light irradiation by ICP-AES. CdS control and $\text{Fe}_3\text{O}_4@\text{TiO}_2/\text{CdS}$ -3 nanofibers with CdS weight percent of 70 wt%. The amount of CdS and $\text{Fe}_3\text{O}_4@\text{TiO}_2/\text{CdS}$ -3 nanofibers as photocatalyst is 20 mg.

Table 1 Comparison of adsorption and photocatalytic activity of $\text{Fe}_3\text{O}_4@\text{TiO}_2/\text{CdS}$ nanofiber (NF) and control samples under UV, Visible light and Simulated Solar light irradiation.

	UV irradiation ^a		Visible light irradiation ^b		Solar light irradiation ^c	
	A†(%)	D†(%)	A(%)	D(%)	A(%)	D(%)
TiO ₂ NF	12.31	92.06	7.02	10.53	7.05	25.65
Fe ₃ O ₄ @TiO ₂ NF	10.37	97.86	6.63	11.67	5.95	42.56
Fe ₃ O ₄ @TiO ₂ /CdS-1 NF	7.35	93.55	6.44	71.27	8.43	71.61
Fe ₃ O ₄ @TiO ₂ /CdS-2 NF	18.28	94.23	34.29	78.61	12.87	94.78
Fe ₃ O ₄ @TiO ₂ /CdS-3 NF	21.08	97.65	6.44	90.45	12.38	92.55
CdS control	x	x	12.02	58.21	6.12	52.8

† A, Adsorption and P, photocatalysis

^a High pressure Hg lamp

^b Xe lamp with visible light cut-off filter (>400 nm)

^c Xe lamp with simulated solar light filter

NF: nanofiber