Electronic Supplementary Information (ESI)

Hierarchically plasmonic photocatalysts of Ag/AgCl nanocrystals coupled with single-crystalline WO_3 nanoplates

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Table S1 A summary of the synthetic parameters and photodegradation rate constants of the Ag/AgCl@WO_3 photocatalysts and some other samples for the purposes of comparative investigation

Sample name	$AgNO_3$ / mmol	WO_3		$R_{W/(W+Ag)}$ in mole (%)	Morphology of WO_3	Photoreduction time / min	[a] k / min^{-1}
		Mass / mg	Mole / mmol				
AA50pW5	1	50	0.22	18	Plate-like	5	0.27(2)
AA100pW5	1	100	0.43	30	Plate-like	5	0.29(3)
AA200pW5	1	200	0.86	46	Plate-like	5	0.52(6)
AA400pW5	1	400	1.73	63	Plate-like	5	0.127(3)
AA200pW10	1	200	0.86	46	Plate-like	10	0.35(3)
AA200pW30	1	200	0.86	46	Plate-like	30	0.25(2)
AA200pW0	1	200	0.86	46	Plate-like	0	0.081(4)
AA200rW5	1	200	0.86	46	Rod-like	5	0.123(8)
AA200cW5	1	200	0.86	46	Particulate	5	017(2)
WO_3 nanoplates	0	/	/	100	Plate-like	/	~0
Commercial WO_3 powders	0	/	/	100	Particulate	/	~0
Ag/AgCl (AA5)	1	0	0	0	/	5	0.020(7)

[a] $-dC/dt = kC \Rightarrow \ln(C/C0) = \ln(A/A_0) = -kt$ + constant, where C and A are the concentration and absorbance of the RhB aq. solution with a visible-light irradiation (≥ 420 nm) of t / min, respectively; t ranges 0~3 min for the RhB cases (30 mg of photocatalyst in 30 mL of 10 mg mL^{-1} RhB aq. solutions).

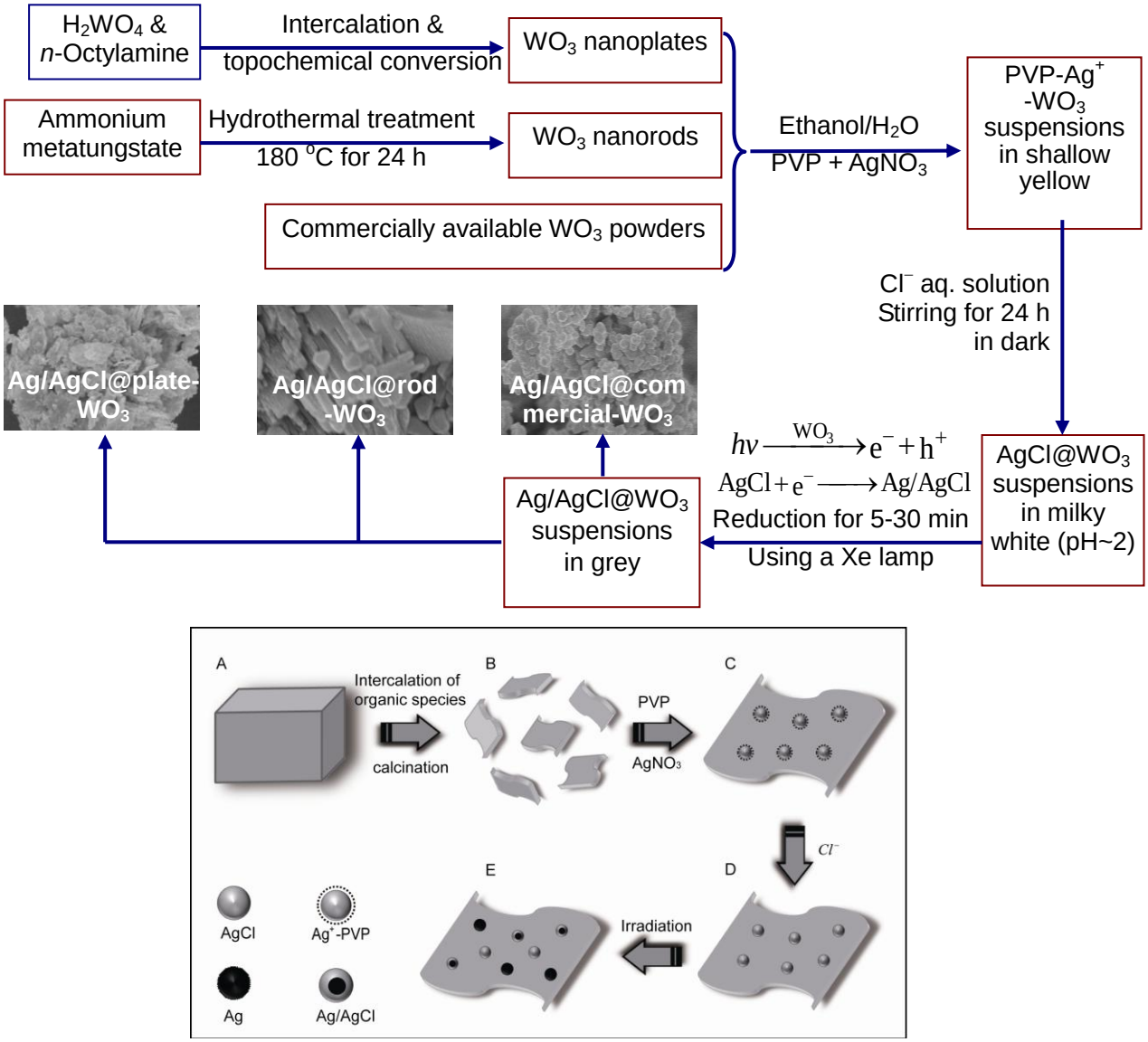

Fig. S1 (a) The synthetic processes for the hierarchical Ag/AgCl@WO_3 photocatalysts with various WO_3 substrates; (b) a schematic of the synthesis of Ag/AgCl@plate-WO_3 photocatalysts.

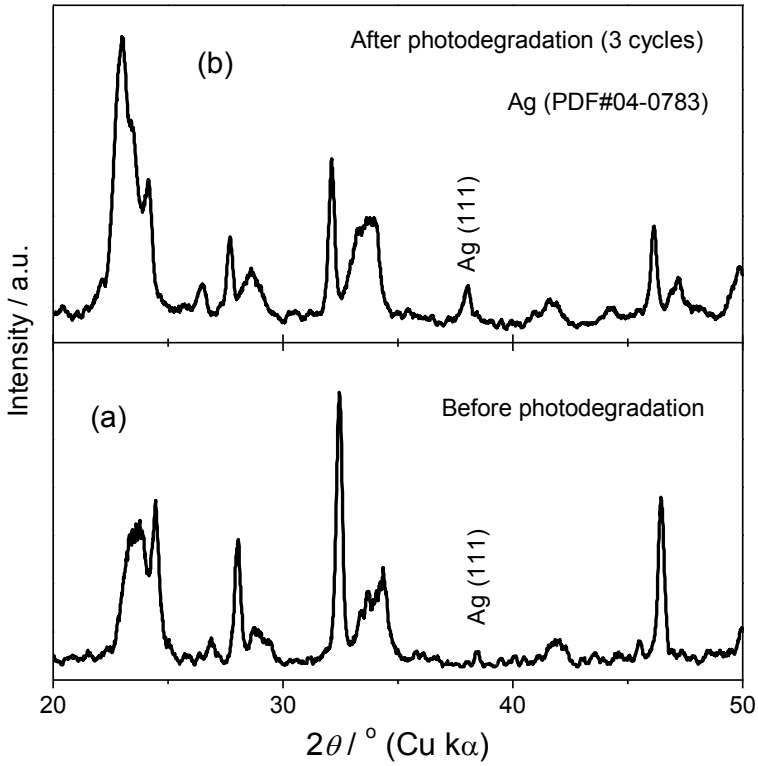

Fig. S2 The XRD patterns of the Ag/AgCl@plate-WO_3 (AA200pW5) sample (a) before and (a) after the photodegrading RhB aq. solutions under visible light irradiation.

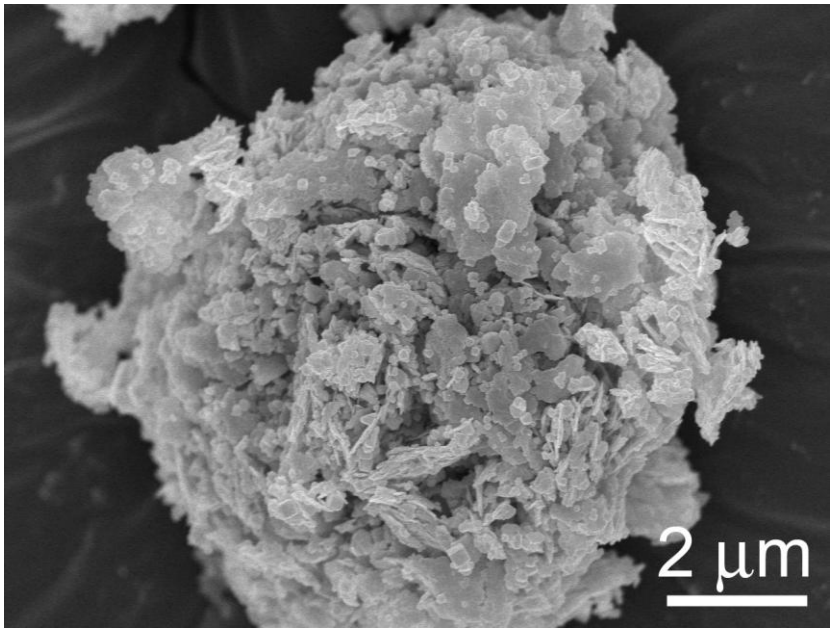

Fig. S3 A typical SEM image of the Ag/AgCl@plate-WO_3 (AA200pW5) sample after the photodegrading RhB aq. solutions under visible light irradiation.

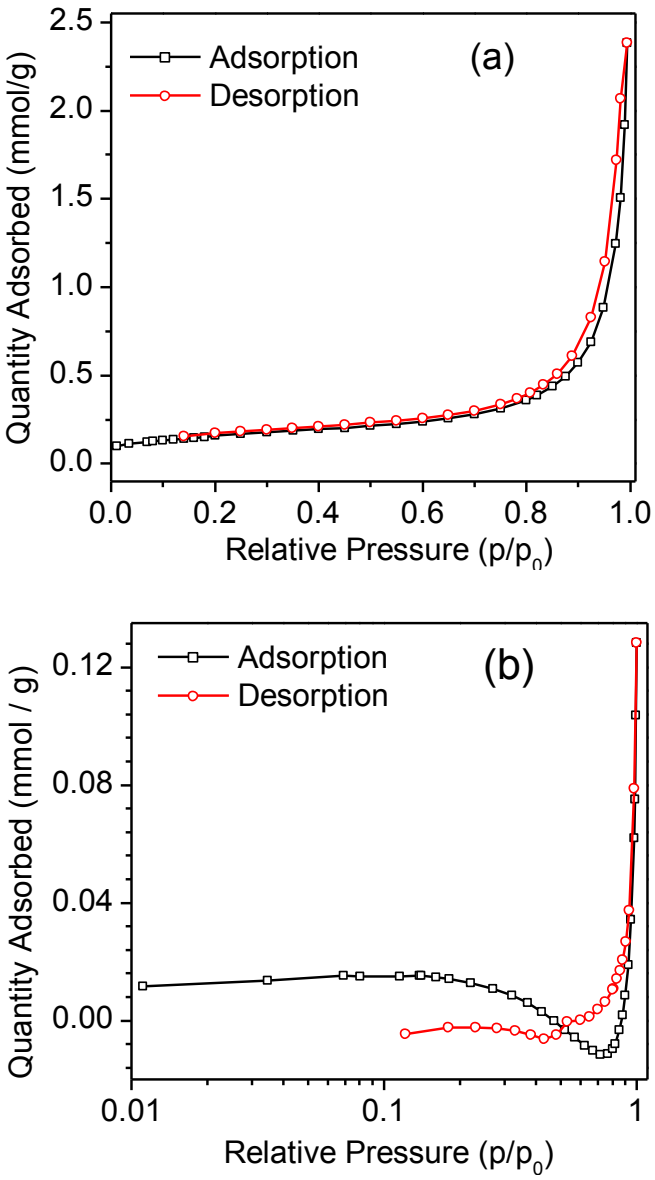

Fig. S4 N_2 adsorption–desorption isotherms of (a) Ag/AgCl@plate-WO_3 (AA200pW5) and (b) Ag/AgCl@rod-WO_3 (AA200rW5) photocatalysts.

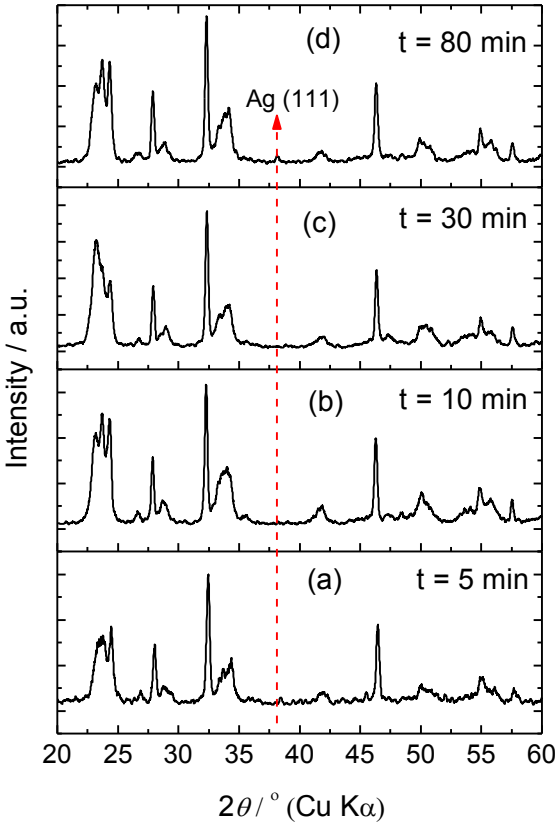

Fig. S5 XRD patterns of Ag/AgCl@plate-WO_3 samples with various photoreduction times (*t*): (a) *t* = 5 min, (b) *t* = 10 min, (c) *t* = 30 min and (d) *t* = 80 min.

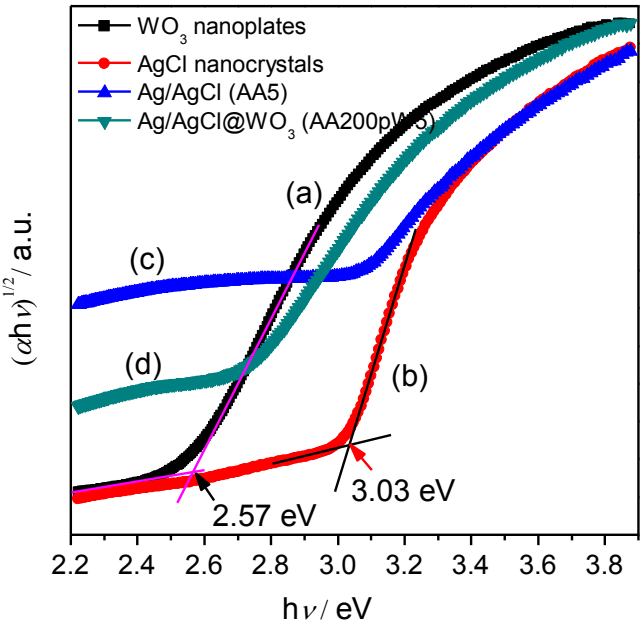

Fig. S6 Plots of $(\alpha h\nu)^{1/2}$ vs. $h\nu$ according to the UV-vis DR spectra of (a) WO_3 nanoplates, (b) AgCl, (c) Ag/AgCl (AA5), and (d) Ag/AgCl@plate-WO_3 (AA200pW5).