Electronic Supporting Information (ESI)

In-situ construction of direct Z-scheme AgBr/α-Ag_2WO_4 heterojunction with promoted spatial charge migration and photocatalytic performance

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Table S1 The mass fraction in terms of AgBr or Br of various AgBr/AWO samples.

AgBr/AWO-Samples	3%	6%	13%	20%	24%
AgBr% (T)	3	6	13	20	24
Br% (T)	1.28	2.55	5.53	8.51	10.21
Br% (E)	1.22	2.37	5.92	8.24	9.61

"T" and "E" represent theoretical value and EDS experimental value, respectively.

Table S2 The rate constants (k) for degradation of RhB and phenol under different illumination conditions.

Samples	RhB simulated sunlight (min^{-1})	RhB visible light (min^{-1})	phenol visible light (min^{-1})
AWO (k_1)	0.08480	0.01240	0.00095
AgBr/AWO-20% (k_2)	1.05209	0.66223	0.02509
k_2/k_1	12.4	53.4	26.4

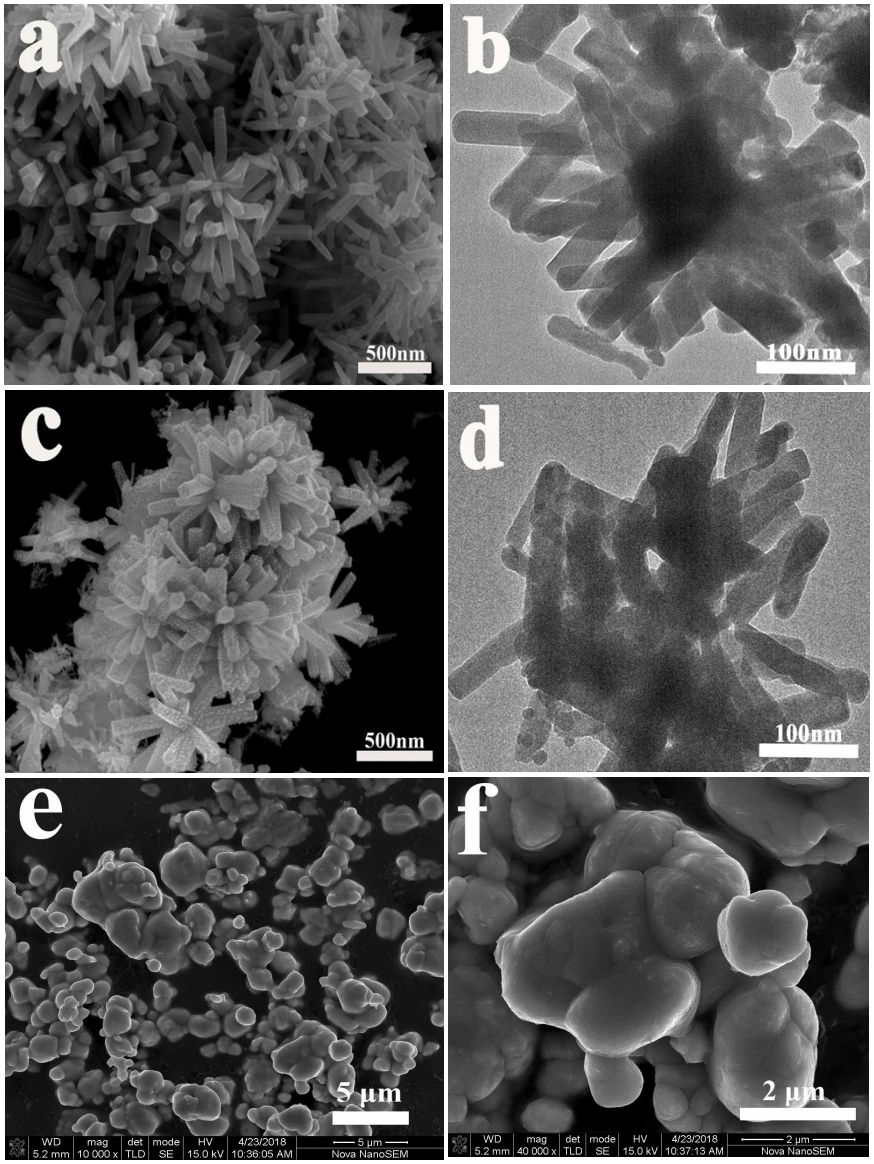

Fig. S1 (a, b) SEM and TEM images of AWO clusters, (c, d) SEM and TEM images of AWO AgBr/AWO-20%, and **(e-f) SEM images of AgBr microparticels.**

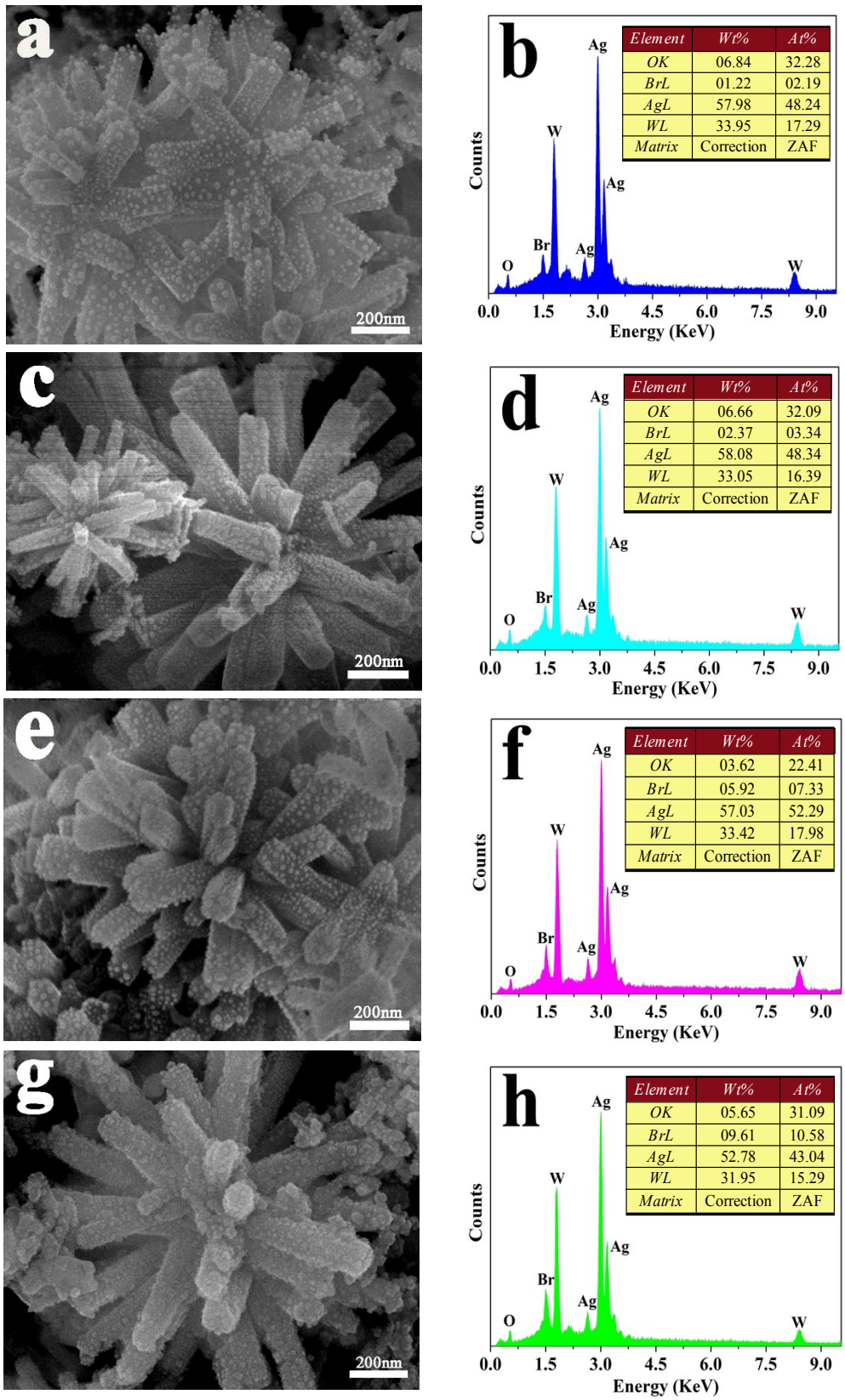

Fig. S2 SEM images and corresponding EDS of the samples: (a, b) AgBr/AWO-3%, (c, d) AgBr/AWO-6%, (e, f) AgBr/AWO-13% and (g, h) AgBr/AWO-24%.

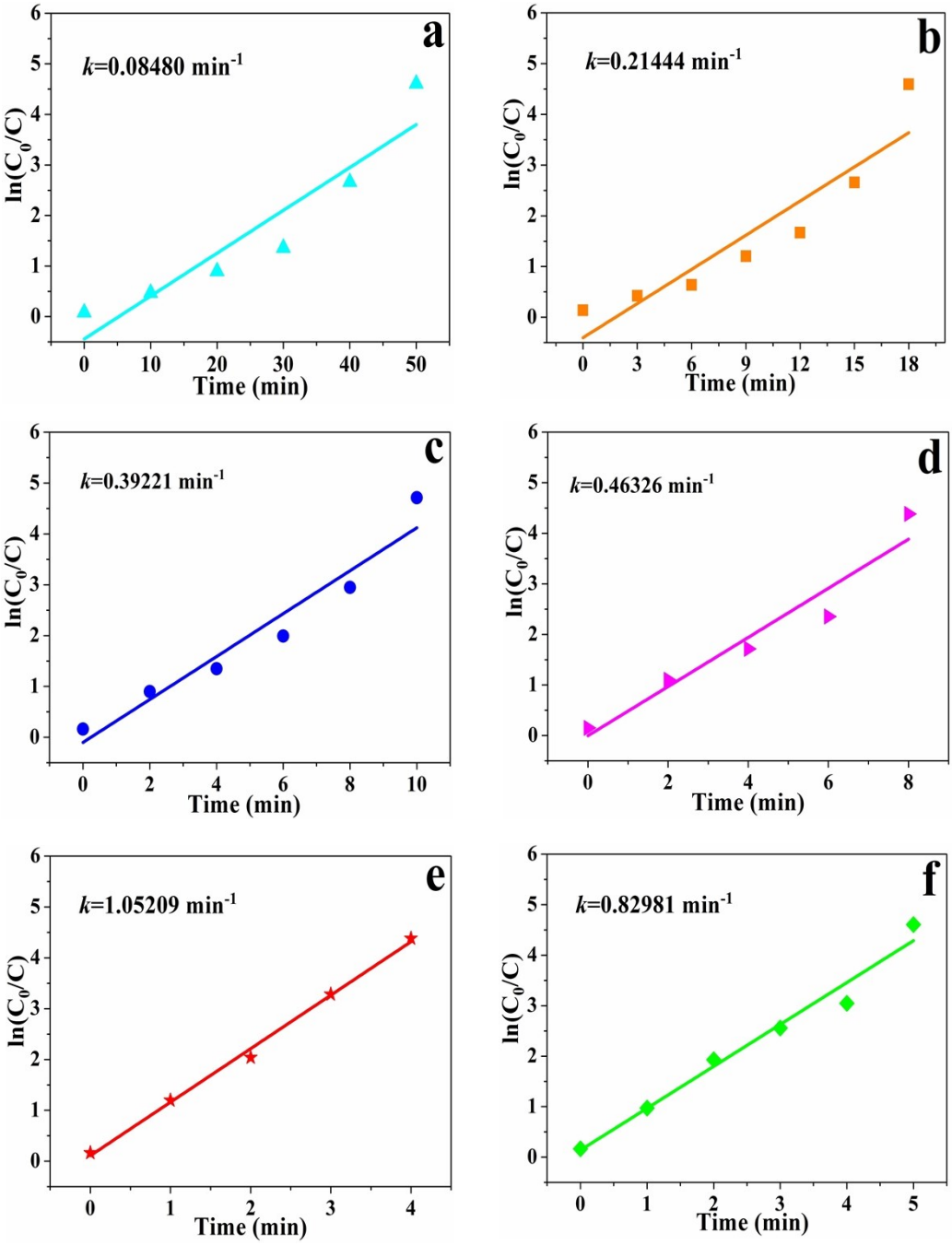

Fig. S3 The quasi-first-order kinetic curves of AWO-based samples towards RhB degradation under simulated sunlight: (a) AWO, (b) AgBr/AWO-3%, (c) AgBr/AWO-6%, (d) AgBr/AWO-13%, (e) AgBr/AWO-20%, and (f) AgBr/AWO-24%.

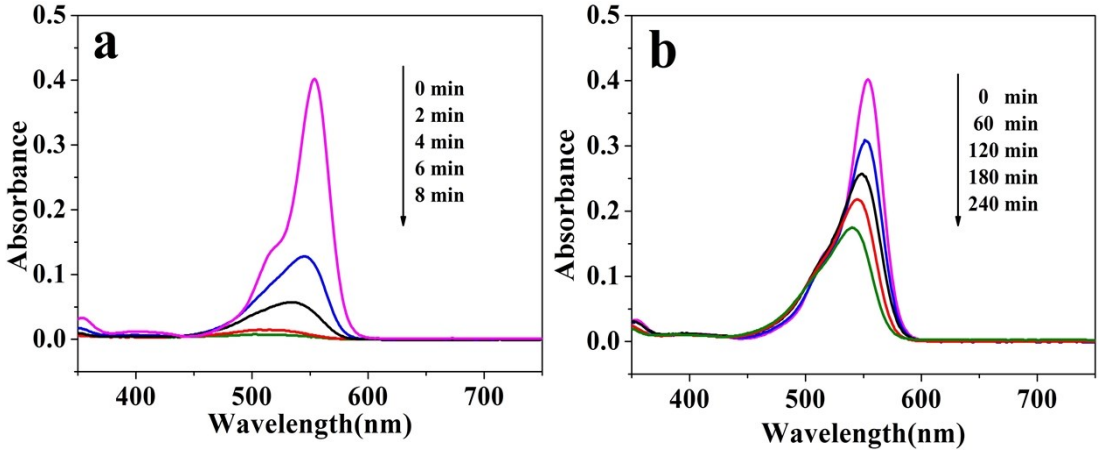

Fig. S4 Temporal UV-vis absorption spectra of RhB solution under visible light irradiation in the presence of (a) AgBr/AWO-20% and (b) AWO, respectively.

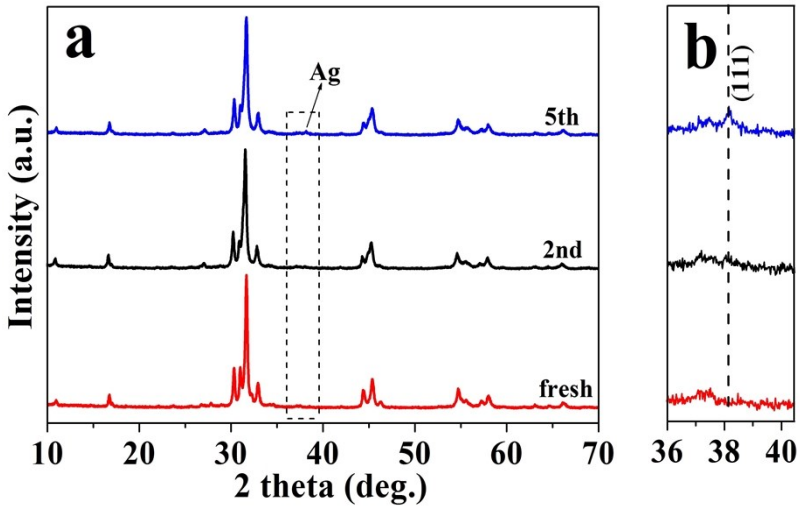

Fig. S5 (a) XRD spectra of AgBr/AWO-20% after repeated photocatalytic experiments, (b) enlarged diffractions peaks in 2θ of 36-38°.

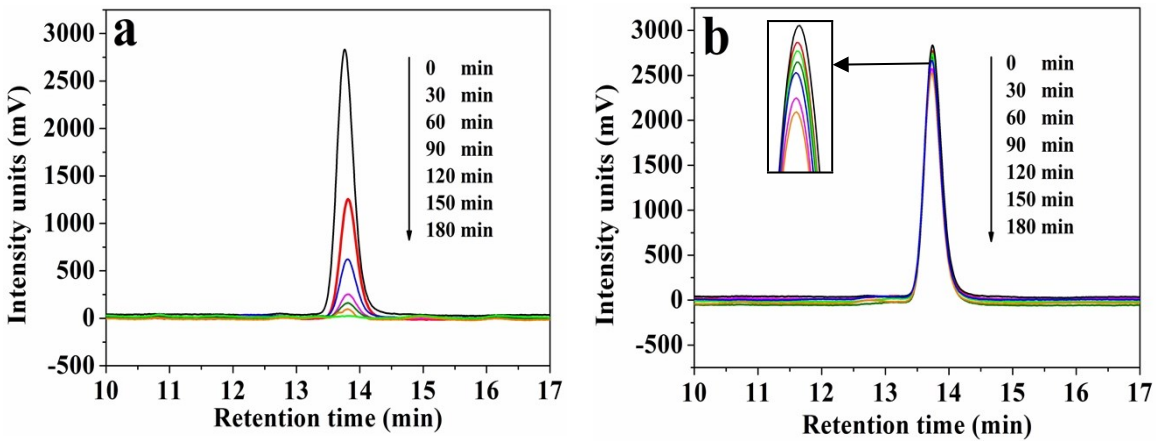

Fig. S6 Temporal HPLC spectra of phenol under visible light irradiation in the photocatalysis of (a) AgBr/AWO-20% and (b) AWO, respectively.

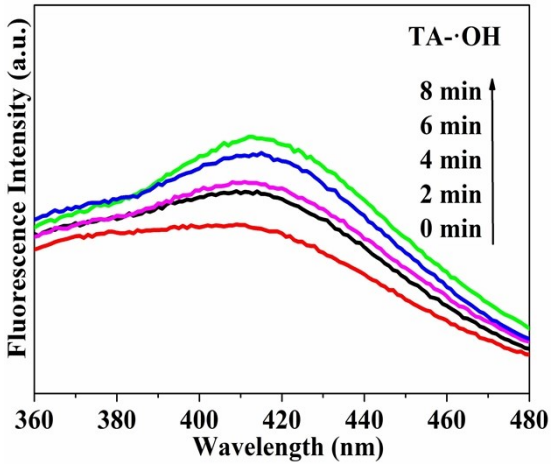

Fig. S7 PL spectral changes with irradiation time in TA solution of 5×10^{-4} M over AgBr/AWO-20% (ex: 305 nm)

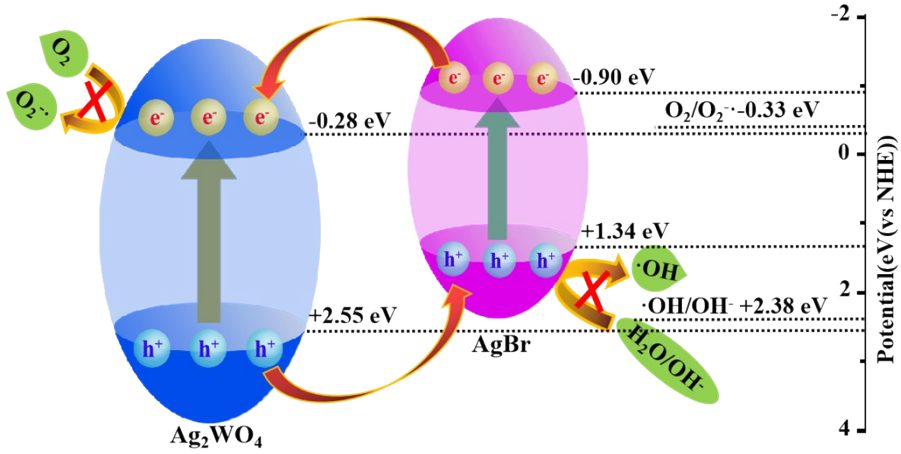

Fig. S8 Schematic illustration **for the impossible generation of O_2^{-}· and ·OH in a hypothetic** II-type AWO/AgBr heterojunction.