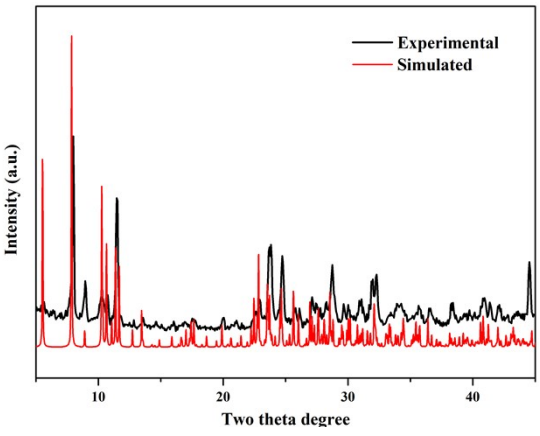
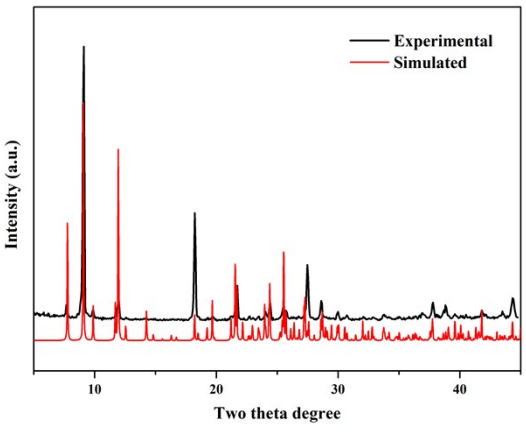
Supporting Information

Table S1 Crystal data for Pb^{2+} compound

Formula	$C_{18}H_{18}N_5O_2Pb_{1.5}I_6$
M	1408.56
T (K)	298(2)
Crystal system	Triclinic
Space group	P-1
a (Å)	9.6292(7)
b (Å)	11.1733(9)
c (Å)	16.5314(12) A
α (°)	80.121(2)
β (°)	73.431(2)
γ (°)	78.048(2)
V (Å^3)	1655.8(2)
Z	2
D_c (g cm^{-3})	2.825
μ (mm^{-1})	13.240
Reflections collected	19570
Unique reflections	6023
R_{int}	0.2157
Gof	1.179
R_1, $I>2\sigma(I)$	0.1173
wR_2, all data	0.3160



(a)



(b)

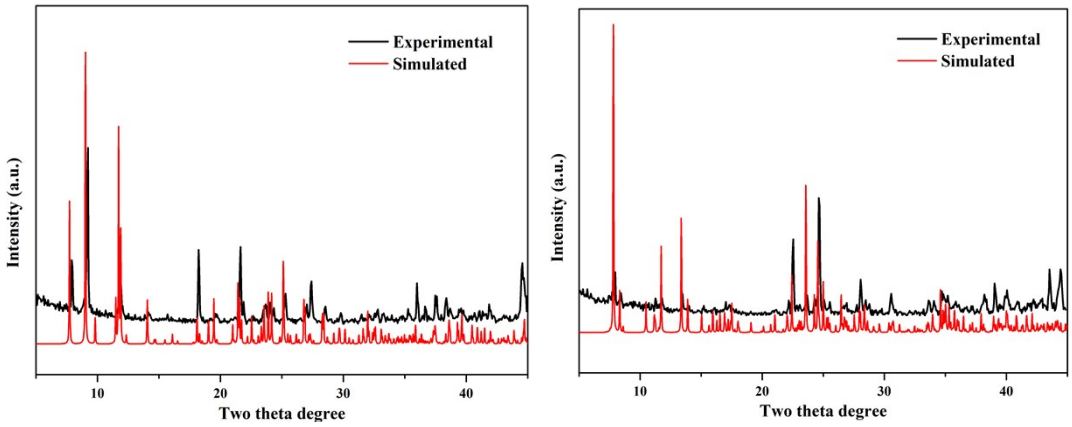


Fig. S1 Experimental and simulated powder XRD patterns for **1-4**.

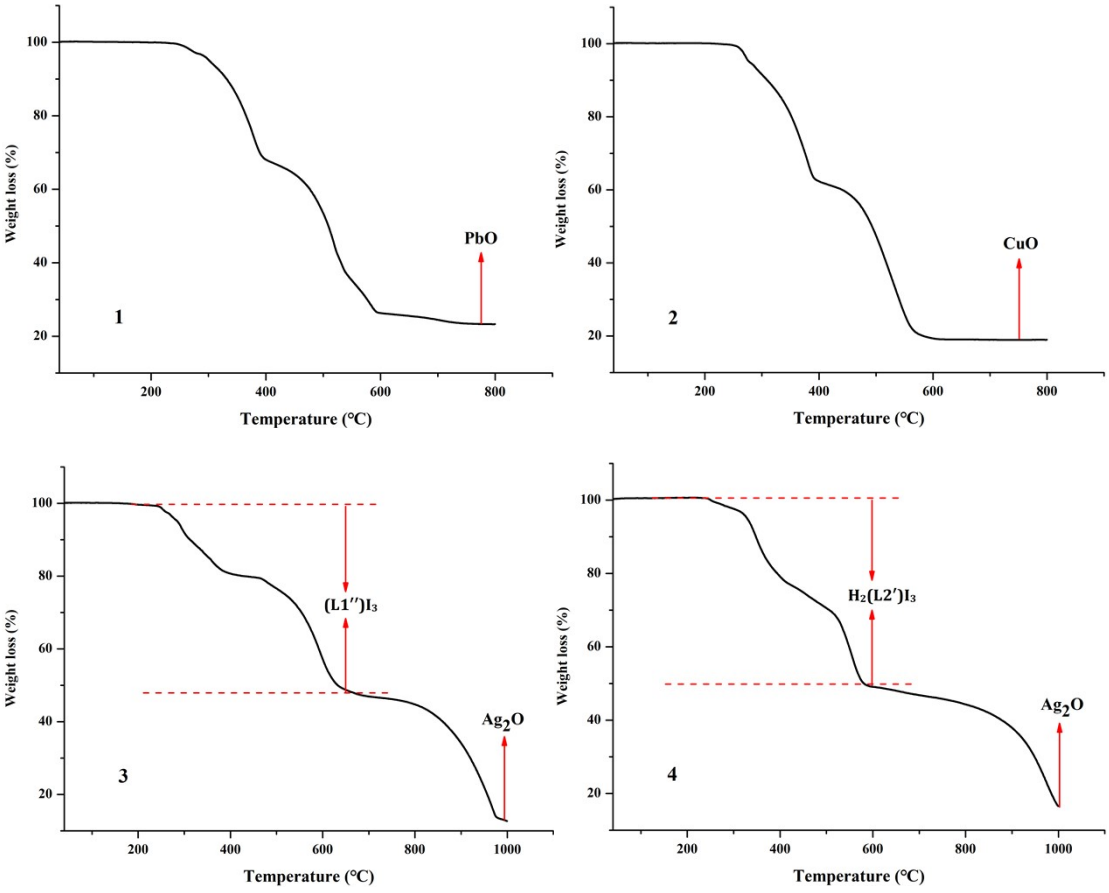


Fig. S2 TG curve of **1-4**.

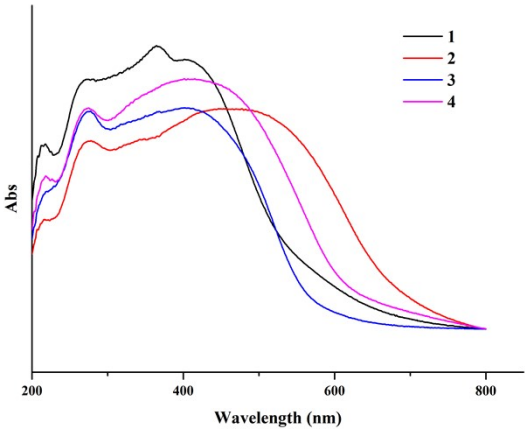


Fig. S3 Solid-state UV-Vis reflectance spectra of **1**-**4**.

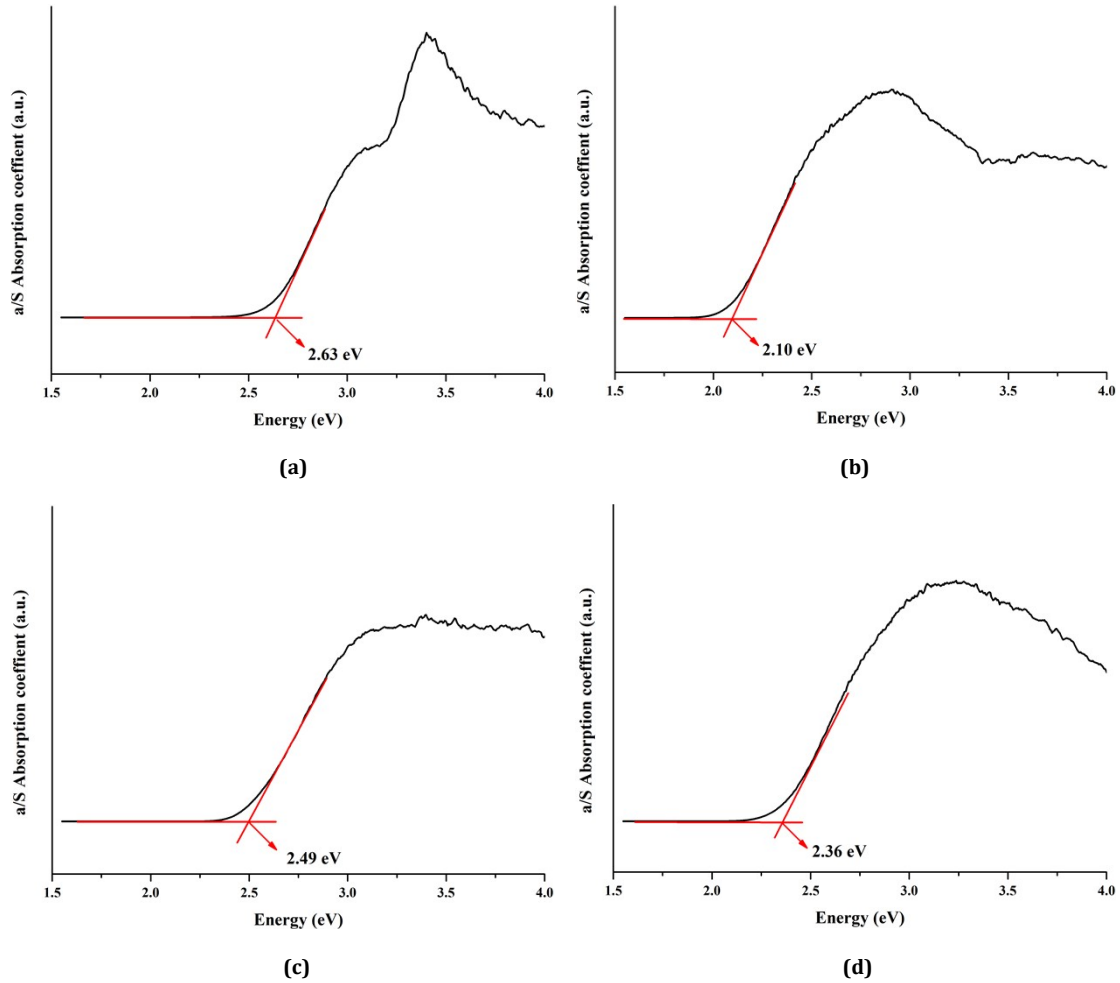


Fig. S4 Solid-state optical absorption spectra of **1**-**4**.

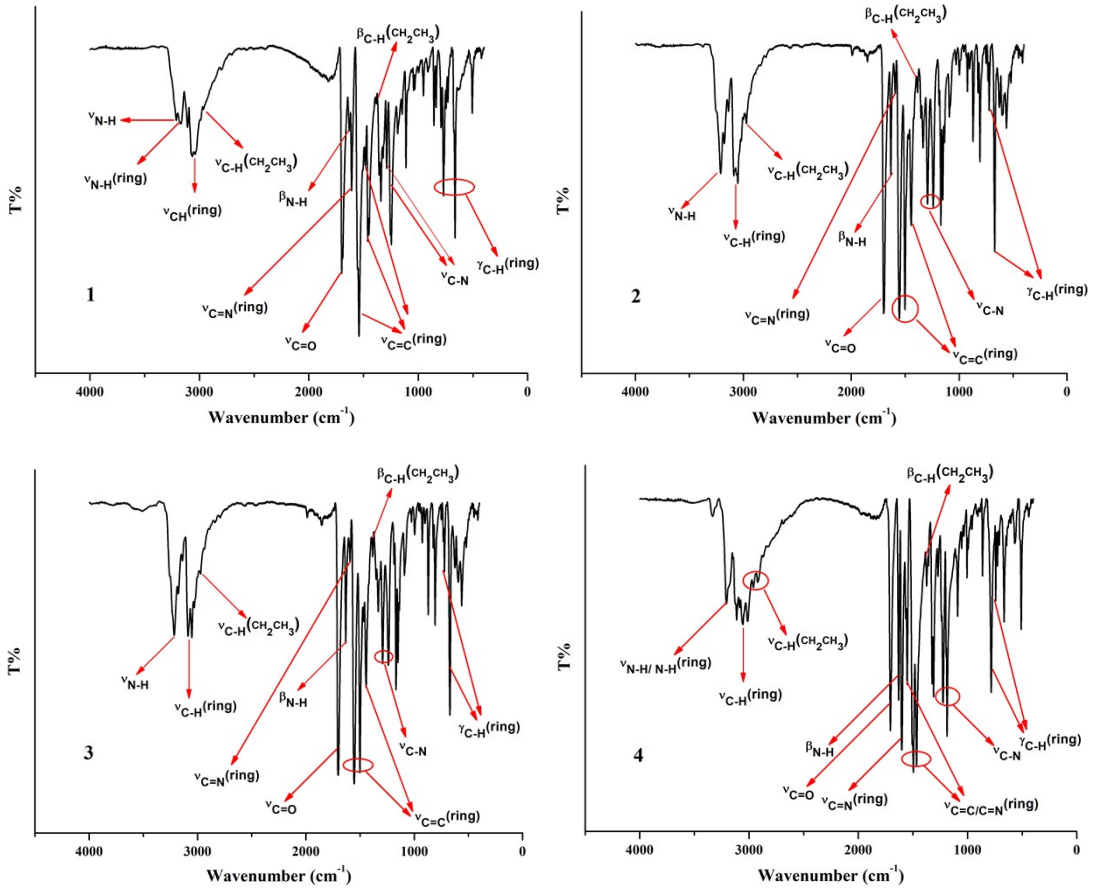


Fig. S5 IR spectra for **1**-**4**.

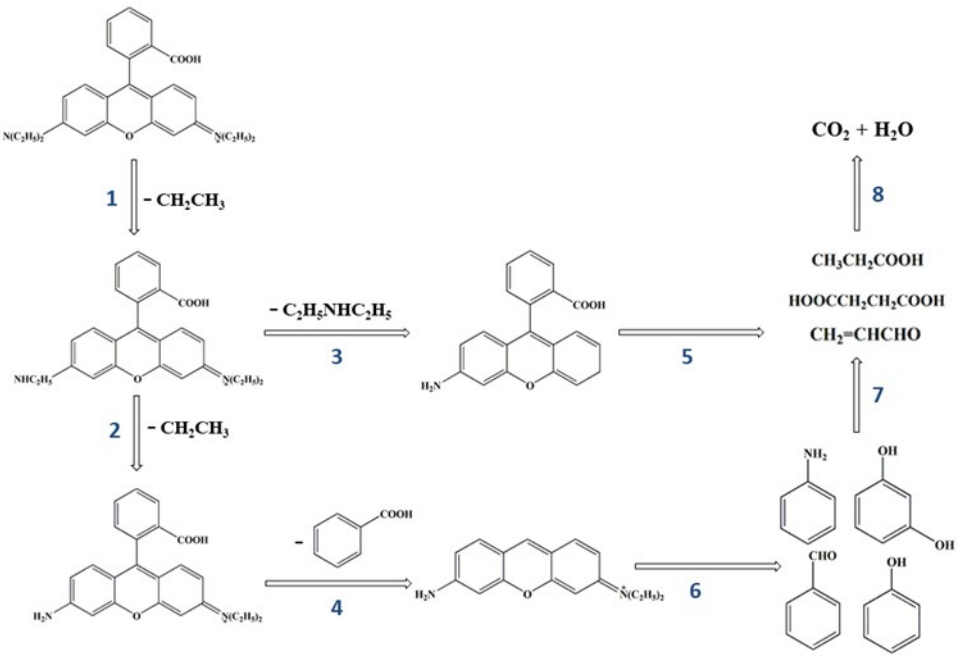


Fig. S6 Photodegradation pathway of RhB.

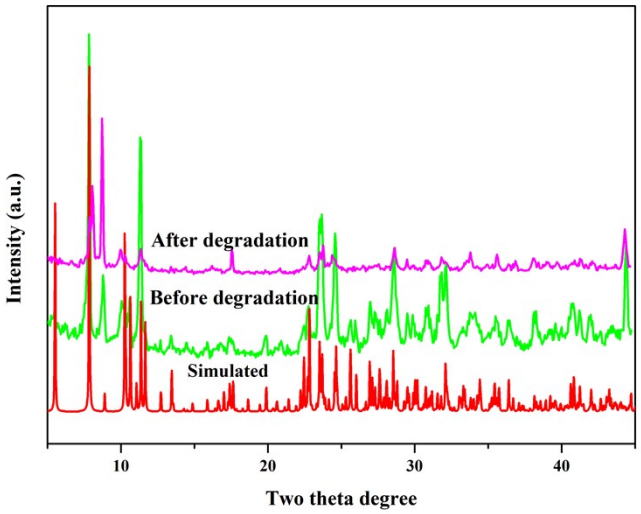


Fig. S7 Powder XRD patterns of **1** before and after degradation.

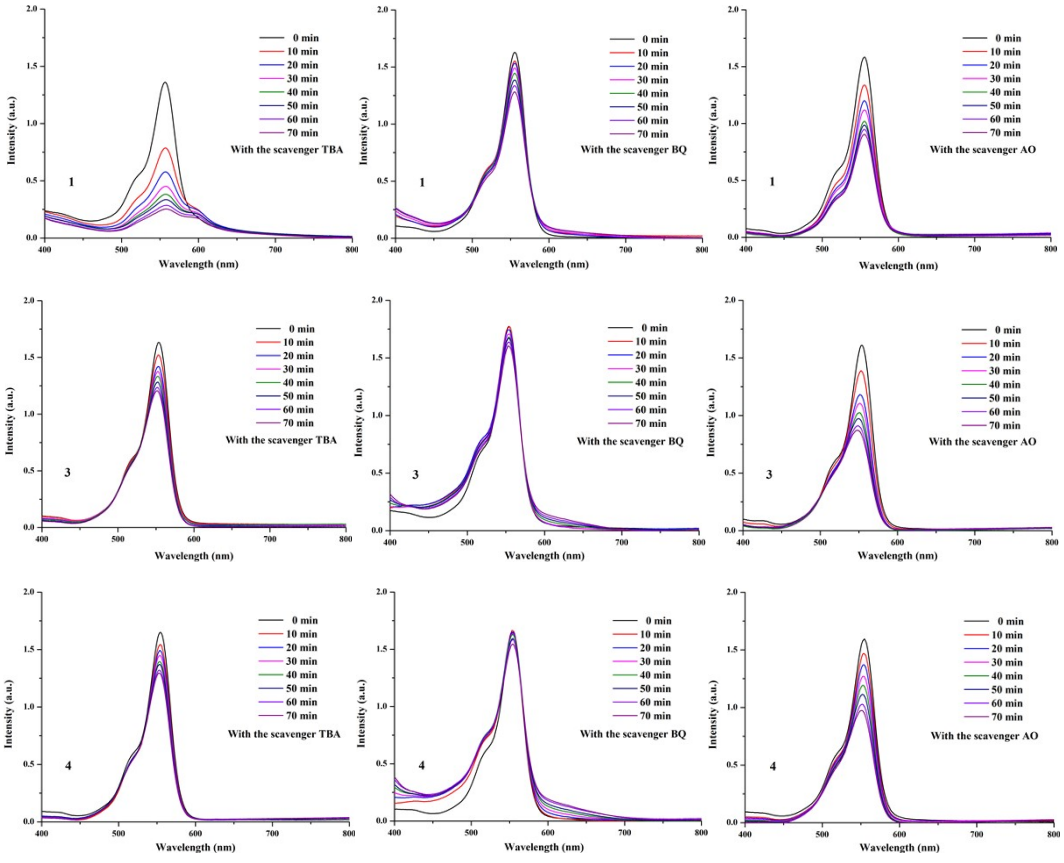


Fig. S8 Uv-Vis spectra of **1**, **3** and **4** for active species trapping experiments.

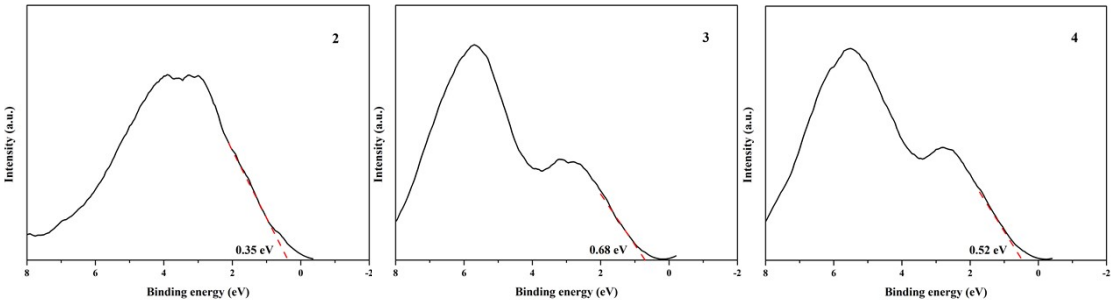


Fig. S9 Estimated XPS HOMO spectra of **2**-**4**.

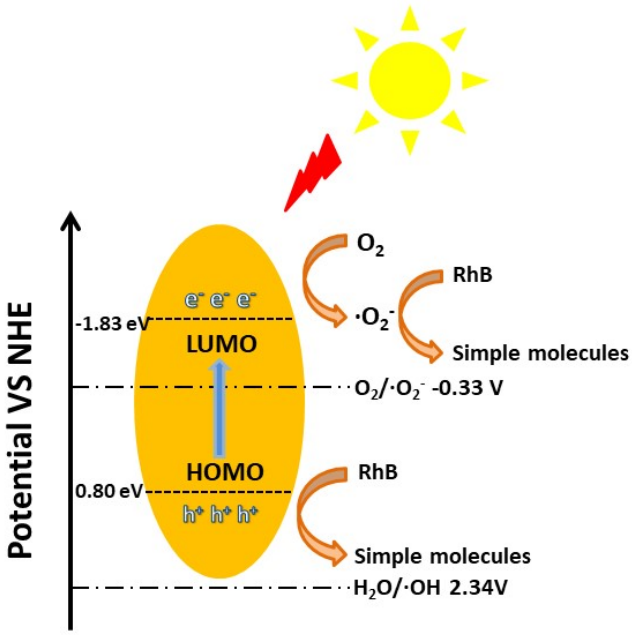


Fig. S10 Photocatalytic mechanism based on XPS for **1**.