Supplementary Information

Photocatalytic hydrogen production from water under visible light irradiation using dye-sensitized attapulgite nanocrystal photocatalyst

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Table S1. Comparison of the QE for hydrogen evolution.

Reference	**Photocatalyst**	**Photosensitizer**	**Incident light**	**QE (%)**
This work	**8 wt% Ag/ATP**	**Eosin Y**	**>450 nm**	**10.8 (at 483 nm)**
Ref. 1	1 wt% Pt, Ru, Rh/ Ti-MCM-41 Zeolite	Eosin Y	>420 nm	12 (>420 nm)
Ref. 2	7 wt% Pt/Reduced graphene oxide	Eosin Y	>420 nm	4.2 (>420nm)
Ref. 3	$Co(dmgH)_2(py)Cl$	Eosin Y	>450 nm	4 (at 530 nm)
Ref. 4	7% Pt/g-C3N4	Eosin Y	>420 nm	18.8 (>420 nm)

Although the estimated QE of the Ag/ATP photocatalysts are still not very high, their potential to allow the easily scalable and abundant reserve of natural clays motivated our continued efforts.

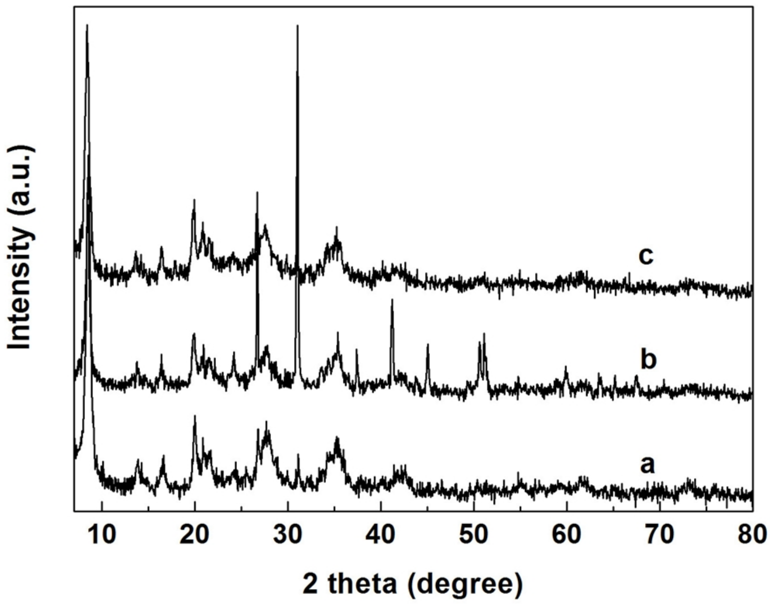

Fig. S1 XRD patterns. (a) Purified ATP. (b) Raw ATP mineral. (c) Purified ATP after cycling measurements of hydrogen generation.

XRD patterns of purified ATP and its raw mineral are displayed in Figure S1. We can not find structure information of purified ATP in Bruker XRD database, but it is quite similar to previous report [5]. According to this report, other impure peaks in Figure S1b are mainly assigned to quartz. By comparing sample a and c, it is evident that there is nearly no change in the crystal structure of ATP after cycling measurements of hydrogen generation.

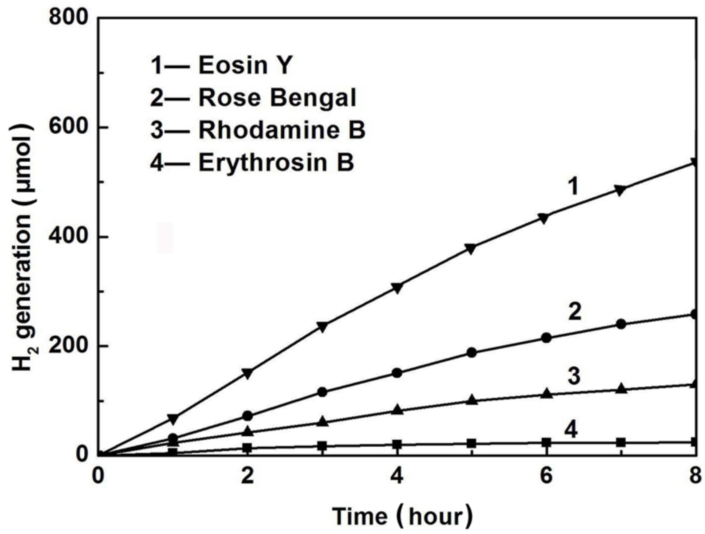

Fig. S2 Stable hydrogen evolution from water reduction by different organic sensitizers under visible light

Comparison of different organic sensitizers under visible light for hydrogen evolution from water reduction in the ATP system is listed in Figure S2, indicating Eosin Y (EY) presents best ability.

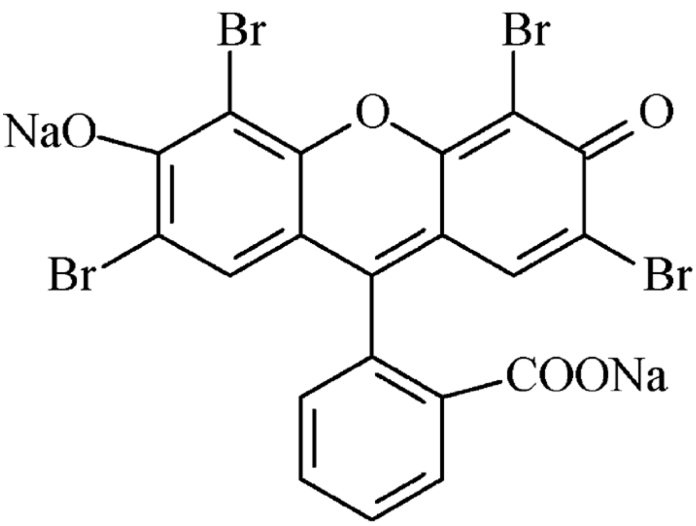

Fig. S3 Structure of EY

Figure S3 shows EY molecular structure. There is a π-type conjugate system in EY, which cruses a strong absorption of visible light.

References

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