Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.


Support information

# Two-dimensional Black phosphorus modified $Cs_2AgBiBr_6$ with Efficient Charge Separation for Enhanced Visible-light Photocatalytic $H_2$ Evolution

Kunpeng Song[1, 2*], Jiaojiao Gou[1], Lin Wu[1], and Chunmei Zeng[1, 2*]

[1]*College of Chemistry and Chemical Engineering, China West Normal University, Shida Road, Nanchong, 637009, China.*

[2]*Chemical Synthesis and Pollution Control Key Laboratory of Sichuan Province, China West Normal University, Nanchong, 637009, China.*

[*] Corresponding author.

*E-mail address*: song19880405@126.com; melzeng@163.com

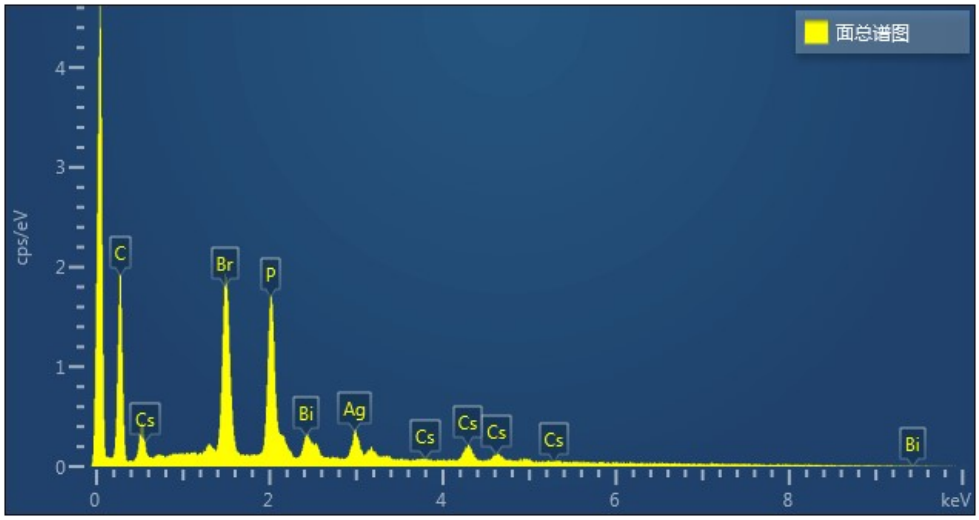


Fig. S1 EDX energy spectrum of catalyst 10 % BP/CABB

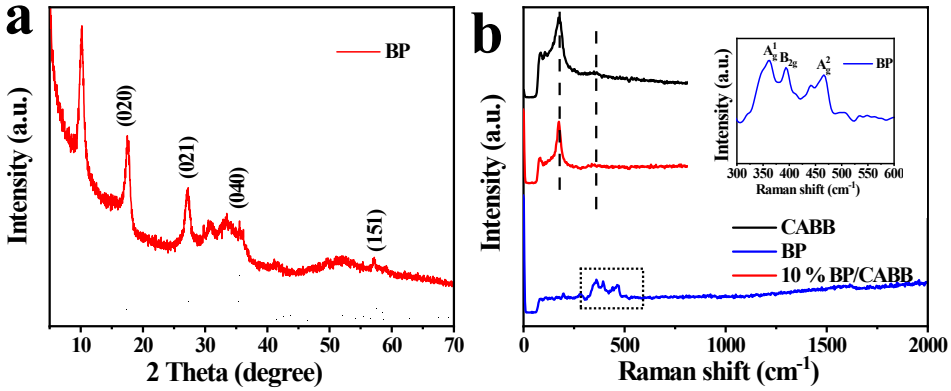


Fig. S2 (a) XRD pattern and standard card of BP; (b) Raman patterns of the obtained CABB, BP and BP/CABB and enlarge map in dotted line box in Raman patterns.

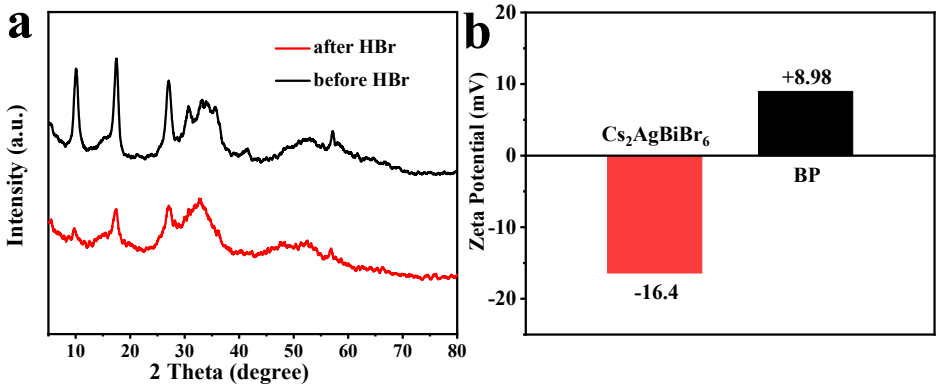


Fig. S3 (a) XRD patterns of BP before and after being immersed in HBr aqueous solution for 12 h; (b) Zeta potentials of $Cs_2AgBiBr_6$ and BP.

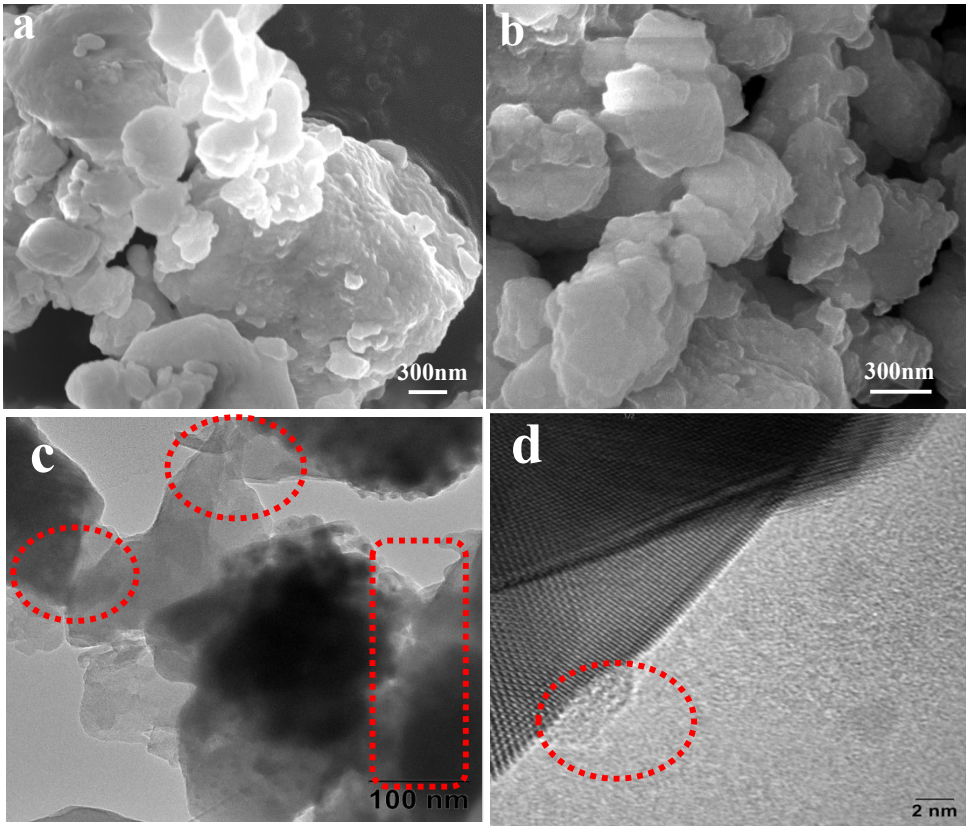


Fig. S4 SEM patterns of (a) CABB and (b) BP. (c, d) TEM images of 10% BP/CABB

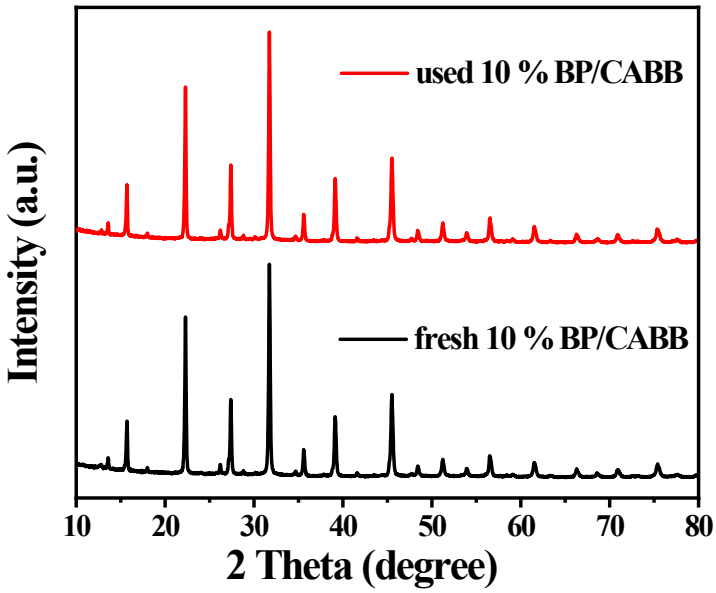


Fig. S5 XRD pattern of the 10 % BP/CABB composite before and after the photochemical reaction.

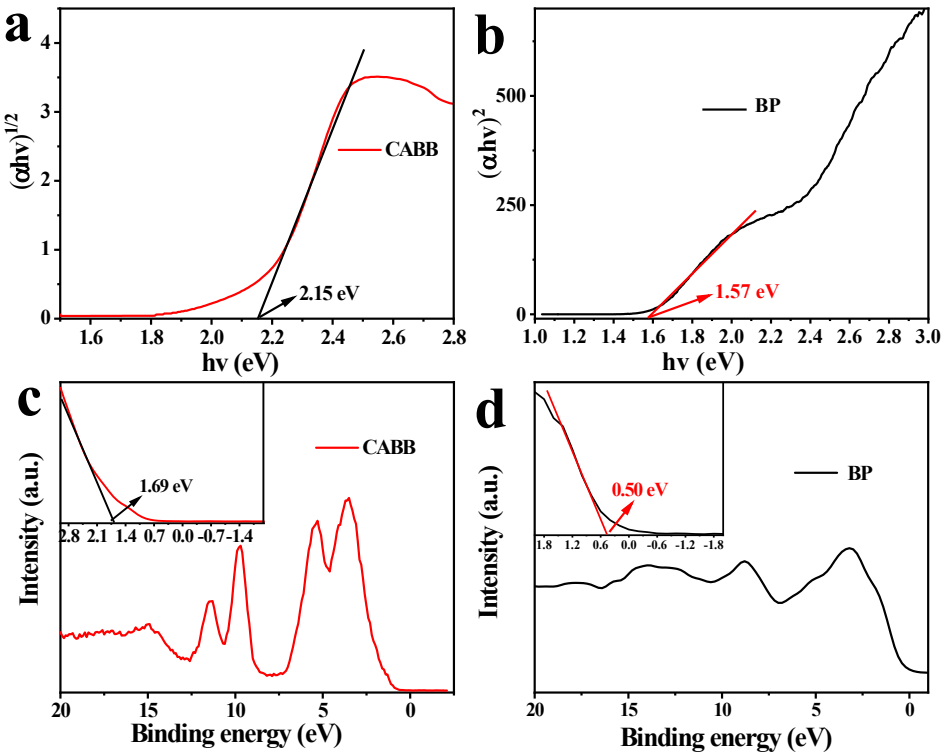


Fig. S6 The corresponding Tauc plots of (a) CABB and (b) BP; Valence band spectrum of (c) CABB and (d) BP.

Table S1 Element content of catalyst 10 % BP/CABB test by EDX.

| element | apparent concentration | wt% | wt% Sigma | standard sample |
|---|---|---|---|---|
| C | 0.14 | 31.24 | 0.47 | C Vit |
| P | 0.28 | 11.24 | 0.22 | GaP |
| Br | 0.24 | 20.74 | 0.33 | KBr |
| Ag | 0.11 | 10.84 | 0.40 | Ag |
| Cs | 0.13 | 14.18 | 0.56 | Cs (v) |
| Bi | 0.09 | 9.76 | 0.48 | Bi |