Supporting Information

Incorporation of cesium lead halide perovskite into g-C_3N_4 for photocatalytic CO_2 reduction

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Supplementary Figures and Tables

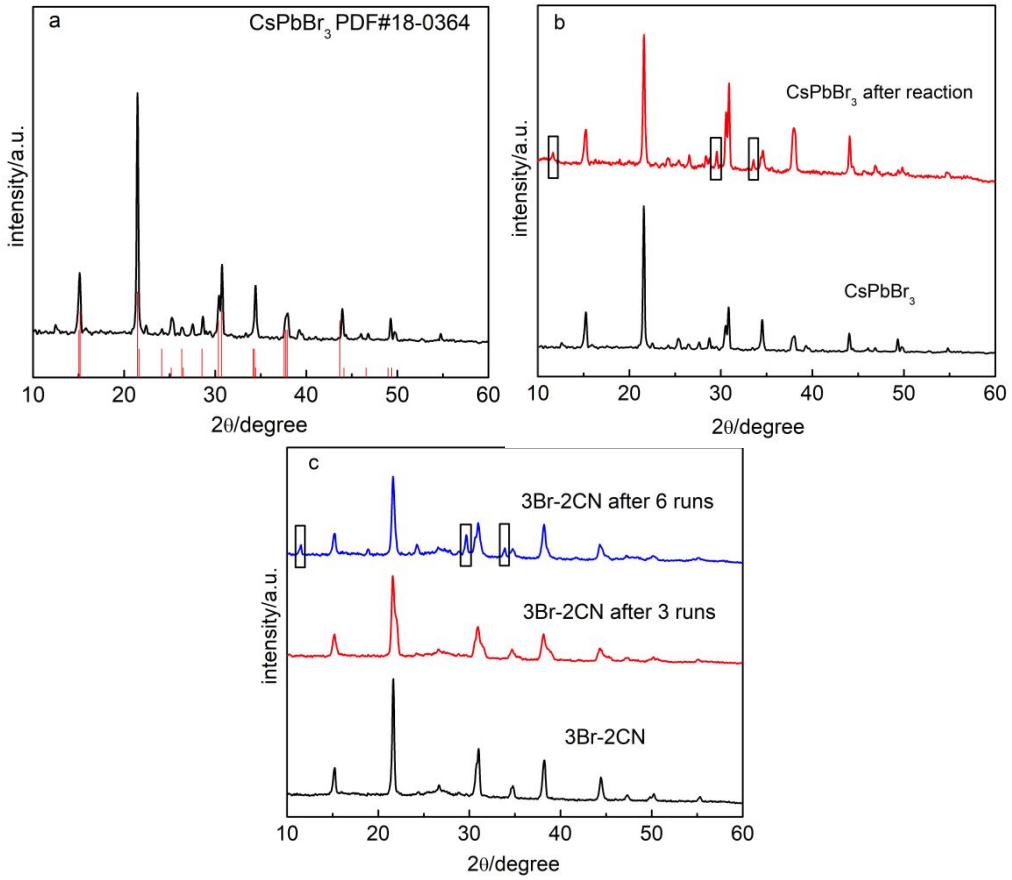


Figure S1. XRD pattern of (a) pure $CsPbBr_3$, (b) $CsPbBr_3$ before and after a 4 hours photocatalytic reaction, and (c) 3Br-2CN before and after three and six runs of photocatalytic reaction.

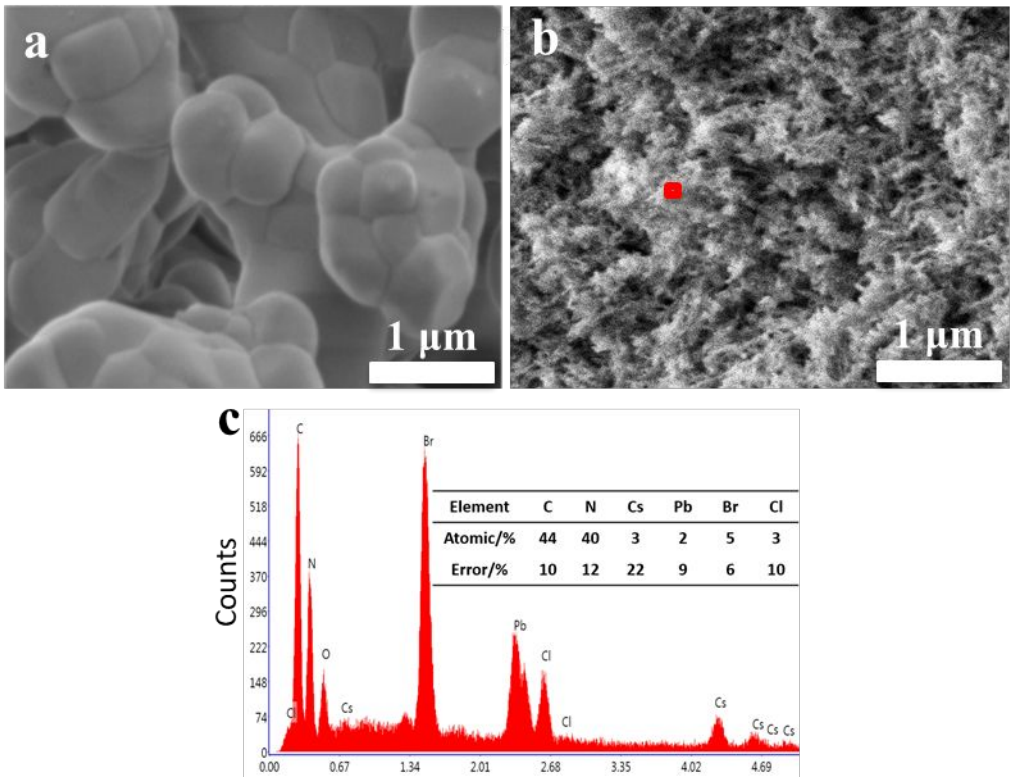


Figure S2. Typical SEM images of (a) $CsPbBr_3$, (b) 3Br-2CN after 4 hours photocatalytic reaction and (c) corresponding EDS result of the selected region in (b).

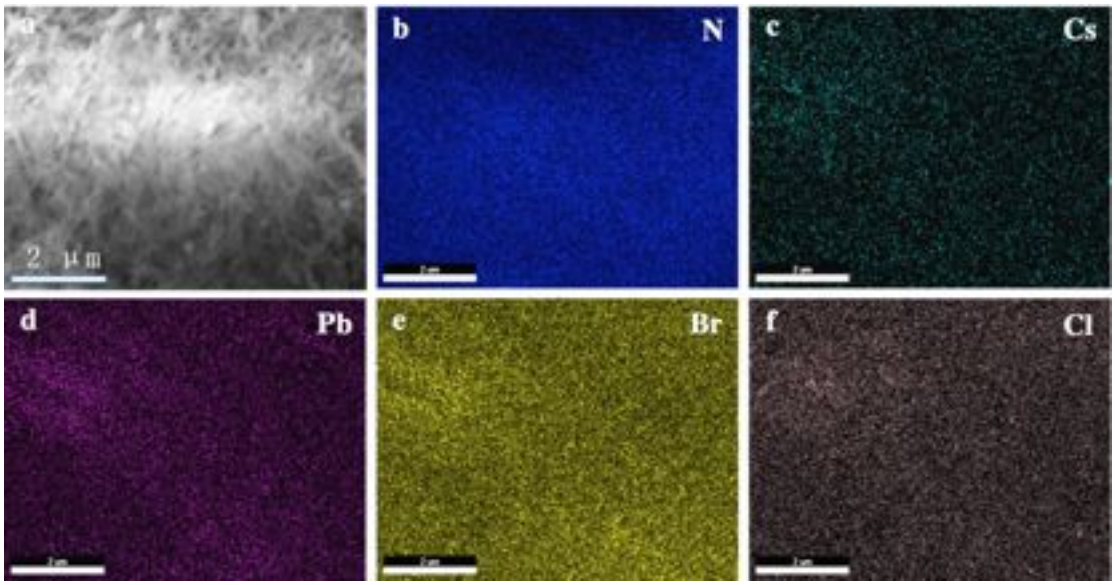


Figure S3. SEM image (a) and the corresponding element mappings (b-f) of 3Br-2CN.

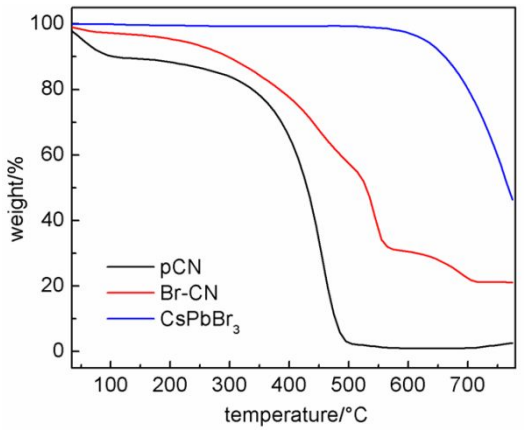
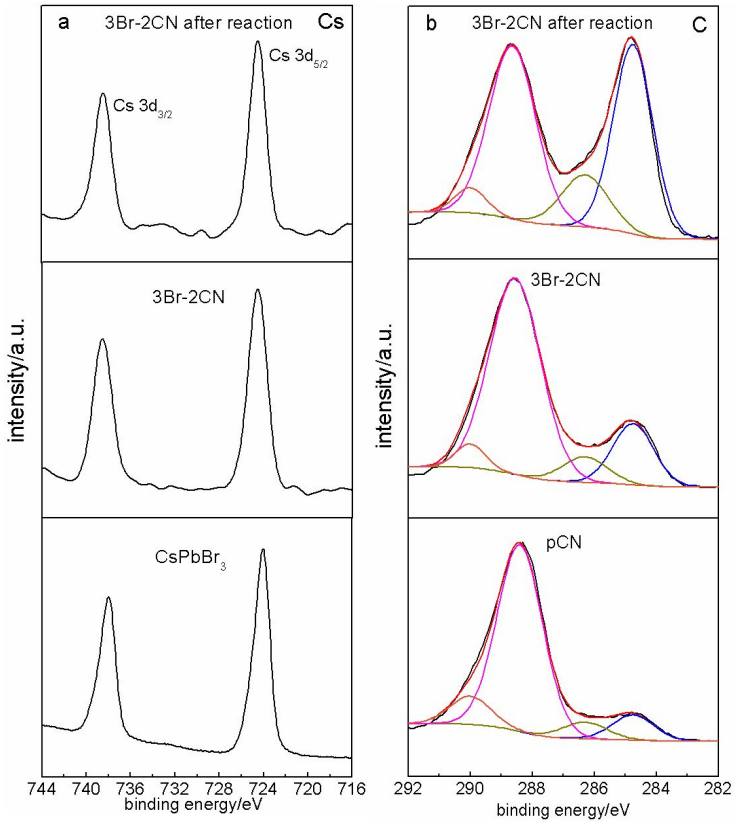


Figure S4. TGA thermograms for pure $CsPbBr_3$, pCN and the composite Br-CN.



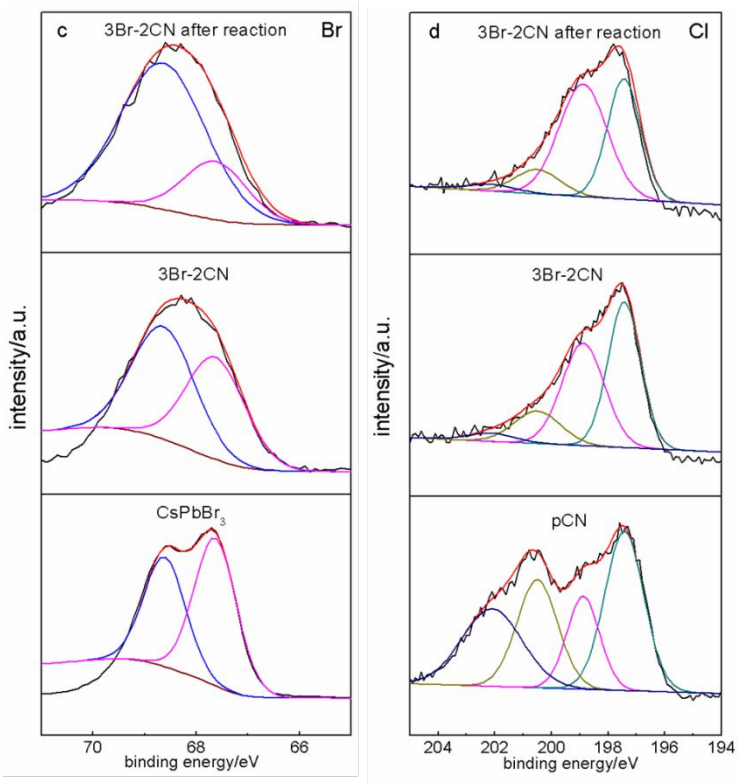


Figure S5. XPS spectra of $CsPbBr_3$ and 3Br-2CN: (a) Cs 3d, (b) C1s, (c) Br 3d and (d) Cl 2p.

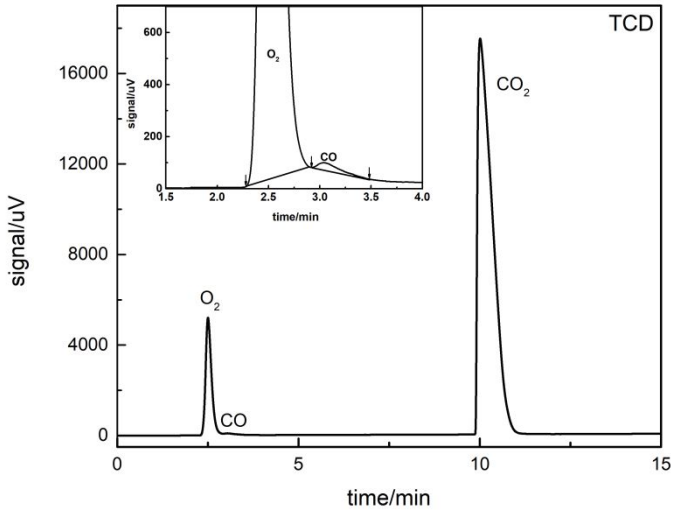


Figure S6. A typical GC chromatogram of the 3Br-2CN composite.

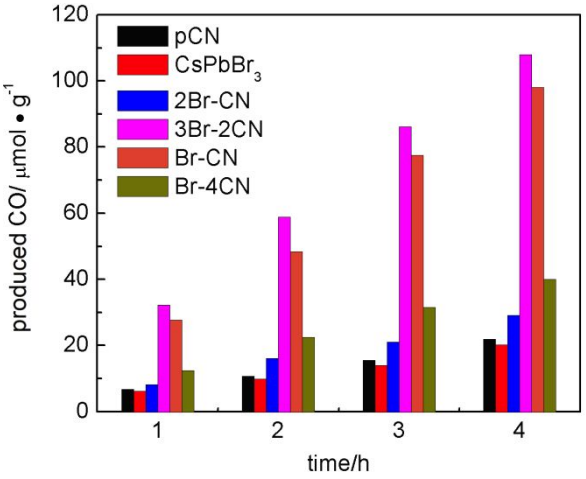


Figure S7. Time-dependent CO generation over synthesized pCN, $CsPbBr_3$ and $CsPbX_3$/g-C_3N_4 catalysts.

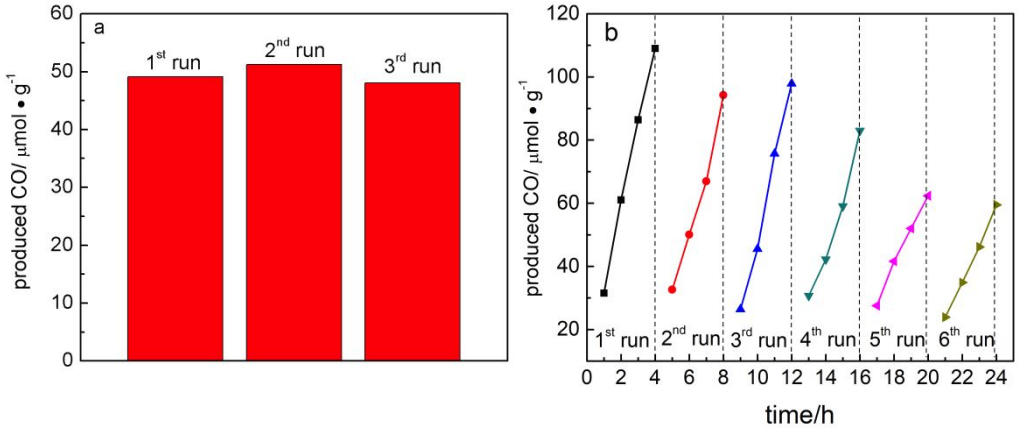


Figure S8. Stability test of CO_2 photoreduction on 3Br-2CN (a) in an acetonitrile/water solution for three consecutive runs of 2 hours each; (b) six consecutive runs of recycling photocatalytic tests for 24 hours.

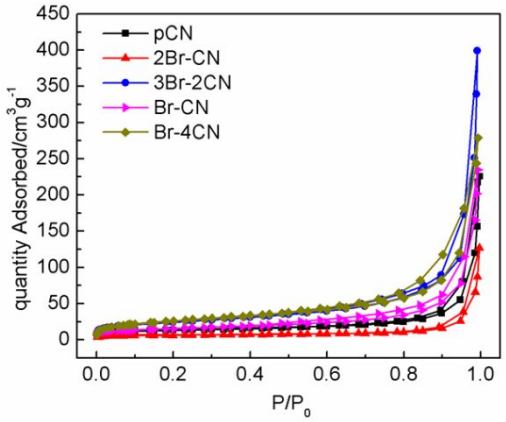


Figure S9. N_2 adsorption-desorption isotherms of pCN and all $CsPbX_3$/g-C_3N_4 composites.

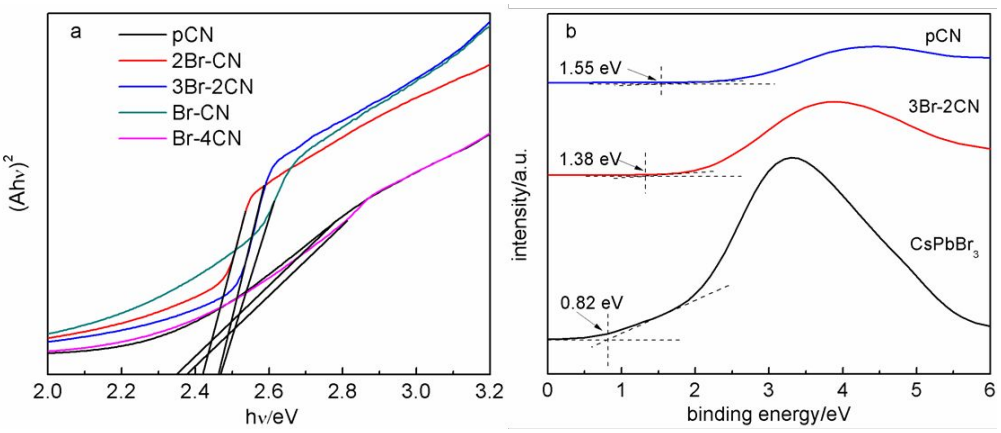


Figure S10. (a) Tauc plots of pCN and $CsPbX_3$/g-C_3N_4 samples. The band gap energies of the photocatalysts, listed in Table 1, were estimated by Kubelka-Munk transformation. Each bandgap is determined by the intersection point of the corresponding dashed tangent line and the horizontal axis; (b) Valence band XPS spectra of pCN, $CsPbBr_3$ and 3Br-2CN.