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## **Supplementary Information**

Water-Driven Boost of the Visible Light Photocatalytic Performance of

Cs<sub>2</sub>AgBiBr<sub>6</sub> Double Perovskite Nanocrystals

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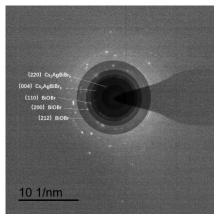


Figure S1. SAED pattern of water soaked Cs<sub>2</sub>AgBiBr<sub>6</sub> NCs.

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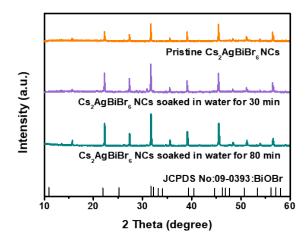


Figure S2. XRD patterns of Cs<sub>2</sub>AgBiBr<sub>6</sub> NCs soaked in water for 30 min and 80 min when the volume ratio of anhydrous ethanol to water was 10:0.

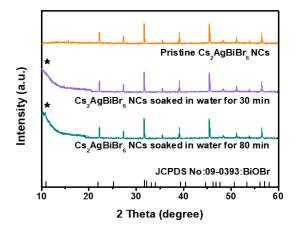


Figure S3. XRD patterns of Cs<sub>2</sub>AgBiBr<sub>6</sub> NCs soaked in water for 30 min and 80 min when the volume ratio of anhydrous ethanol to water was 8:2.

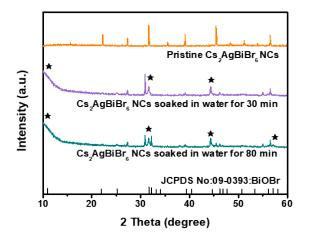


Figure S4. XRD patterns of Cs<sub>2</sub>AgBiBr<sub>6</sub> NCs soaked in water for 30 min and 80 min when the

volume ratio of anhydrous ethanol to water was 1:1.

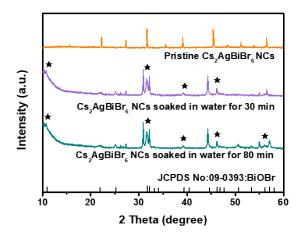


Figure S5. XRD patterns of Cs<sub>2</sub>AgBiBr<sub>6</sub> NCs soaked in water for 30 min and 80 min when the volume ratio of anhydrous ethanol to water was 2:8.

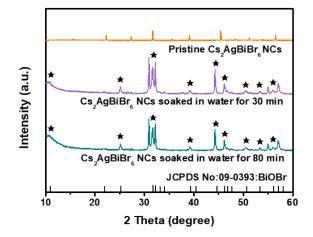


Figure S6. XRD patterns of Cs<sub>2</sub>AgBiBr<sub>6</sub> NCs soaked in water for 30 min and 80 min when the volume ratio of anhydrous ethanol to water was 0:10.

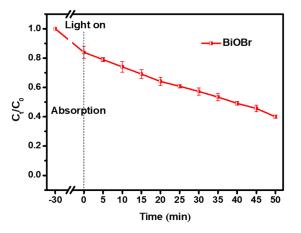


Figure S7. Plots of  $C_t/C_0$  versus the irradiation time for photocatalytic degradation of RhB by BiOBr.

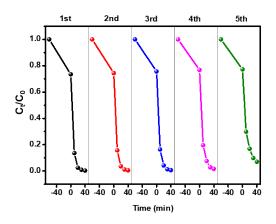


Figure S8. Stability tests of the Cs<sub>2</sub>AgBiBr<sub>6</sub> NCs in multiple photocatalytic degradation cycles.

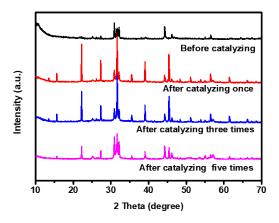


Figure S9. The XRD patterns of Cs<sub>2</sub>AgBiBr<sub>6</sub> NCs before and after the stability tests.