

## Electronic Supplementary Material

### **Enhanced photoluminescence quantum yield of MAPbBr<sub>3</sub> nanocrystals by passivation using graphene**

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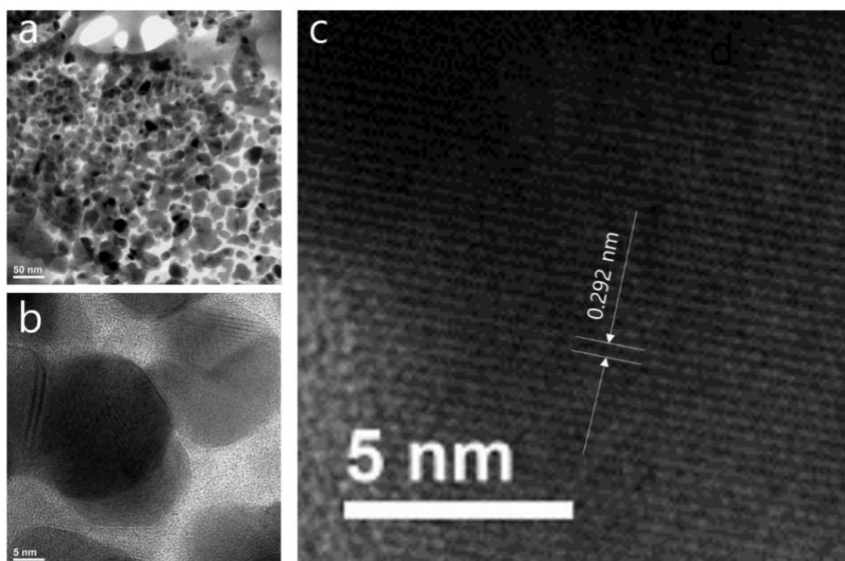
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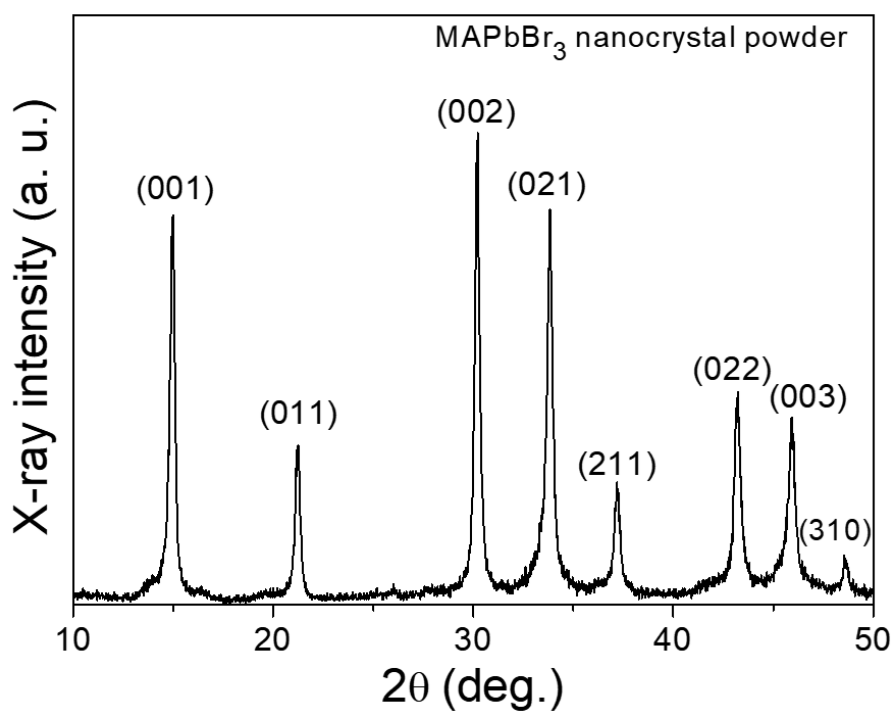
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Figure S1 shows transmission electron microscopy (TEM) images of the MAPbBr<sub>3</sub> nanoparticles for arbitrarily dispersed clusters. The shape of a nanocrystal is almost circular and the diameter ranges from 20~30 nm for all the nanoparticles. Figure S1c presents a high-resolution TEM image showing lattice fringes with a spacing of 0.292 nm for the cubic crystal structure at room temperature, in good agreement with a previously reported value [1].

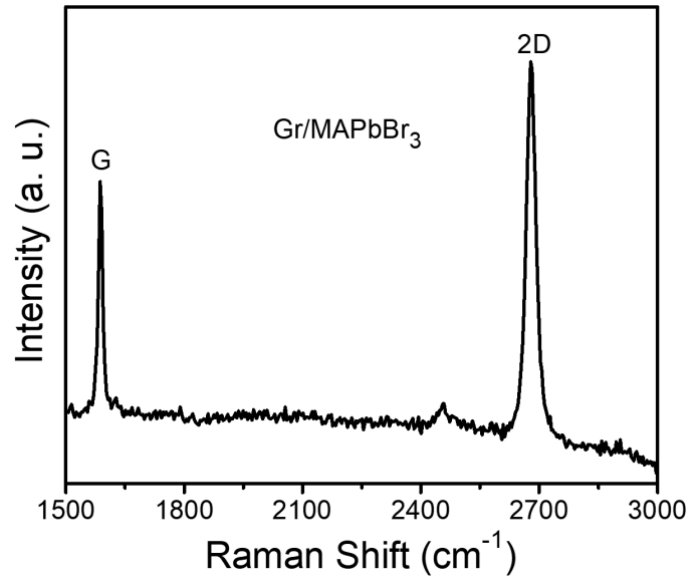
Figure S2 shows an X-ray diffraction pattern of the MAPbBr<sub>3</sub> nanocrystal, which confirms the Cubic crystal structure [2-4].



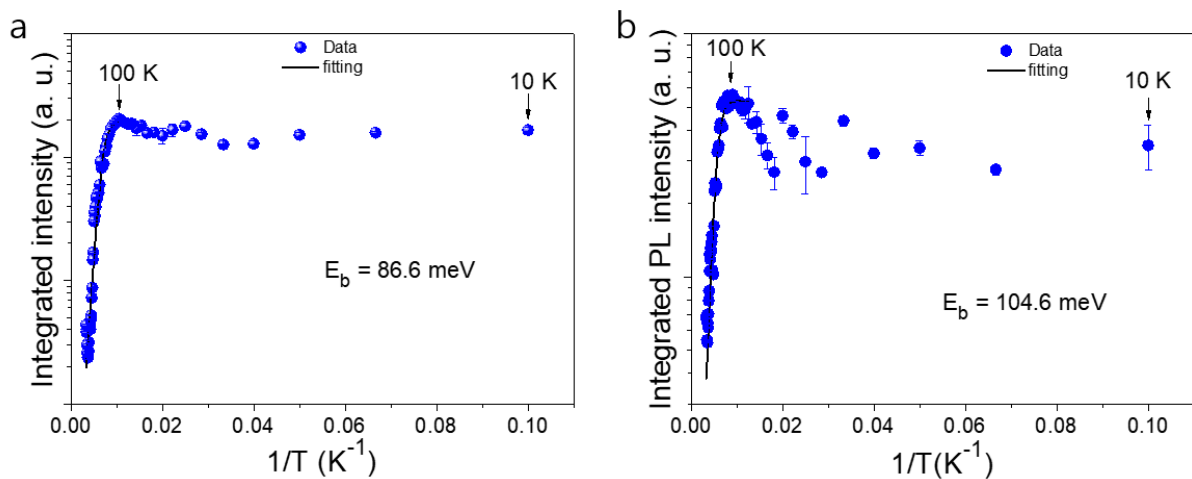
**Figure S1** (a) and (b). Transmission electron microscopy images of the MAPbBr<sub>3</sub>. (c) High resolution TEM image of a nanocrystal.



**Figure S2** X-ray diffraction pattern of the MAPbBr<sub>3</sub> nanocrystal.



**Figure S3** Raman spectroscopy measured at Gr/MAPbBr<sub>3</sub>.



**Figure S4.** Intensity variation as a function of reciprocal temperature. The thermal activation energies of 86.6 meV for MAPbBr<sub>3</sub> (a) and 104.6 meV for Gr/MAPbBr<sub>3</sub>/Gr (b) were obtained from the slope of the straight line.

#### References

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