

Supporting Information

Bottom-up Synthesis of Bright Fluorescent, Moisture-resistant Methylammonium Lead Bromide@Poly(3-bromothiophene)

*Soumen Sardar,^{#a} Atanu Jana,^{#b} Avik Mukherjee,^a Anamika Dhara,^c Abhijit Bandyopadhyay^{*a}*

[#]These authors contributed equally.

Figure S1.Degradation of bulk MAPbBr₃ in water

Figure S2.Colloidal stability of MAPbBr₃ NCs and MAPbBr₃@PTBr nanocomposite in different organic solvents

Figure S3.PXRD of bulk MAPbBr₃

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Figure S8.Stability test of MAPbBr₃ NCs in different amount (%) of water in toluene solvent.

Water content from right to left in % and total volume 1 ml

Figure S9.Stability test of MAPbBr₃@PTBr nanocomposite in different amount (%) of water in toluene solvent. Water content from right to left in % and total volume 1 ml

Figure S10. UV and PL spectra of PbBr₂ and MAPbBr₃ in DMF solvent medium for confirming the synthesis method.

Figure S11.The PL study after six months to check the stability in humidity.

Table S1.Fluorescence lifetimes of MAPbBr₃ NCs and MAPbBr₃@PTBr in toluene.

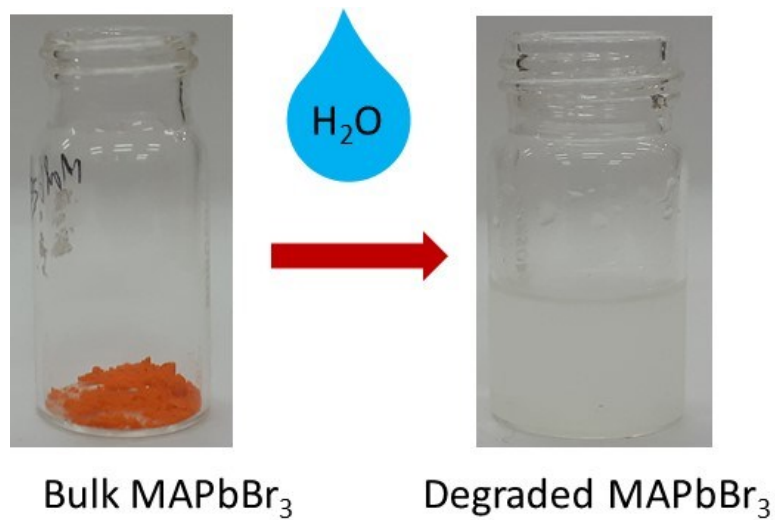


Figure S1. Degradation of bulk MAPbBr₃ in water. Bulk MAPbBr₃ degraded quickly in presence of water.

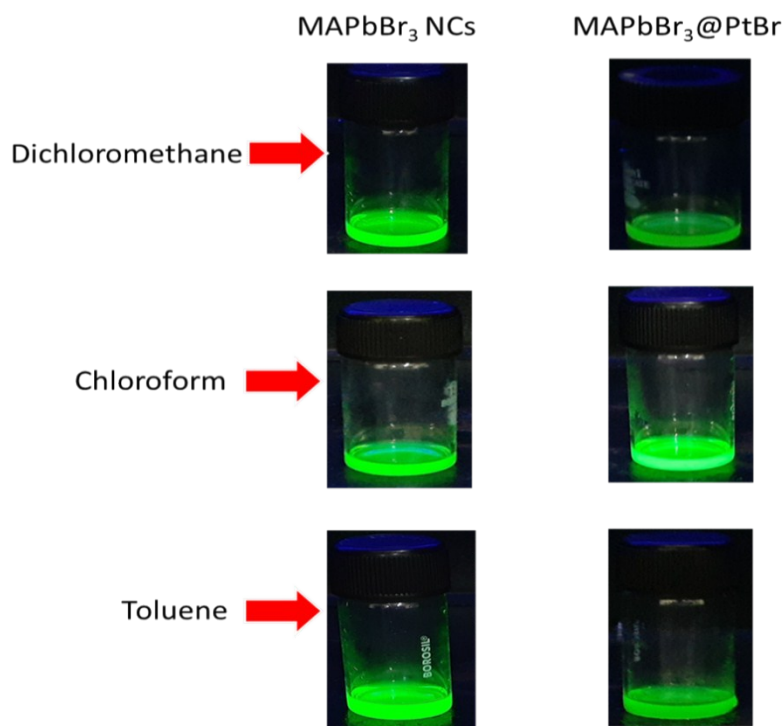


Figure S2. Colloidal stability of MAPbBr₃ NCs and MAPbBr₃@PtBr nanocomposite in different organic solvents. All the images were taken under UV light.

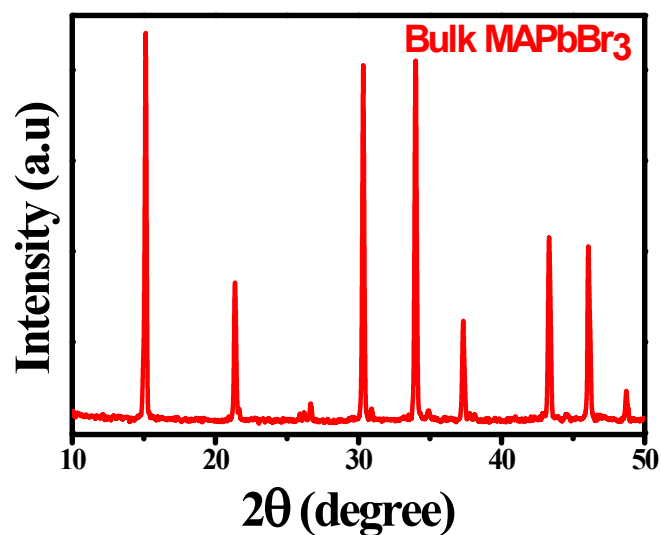


Figure S3. XRD of our as-synthesized bulk MAPbBr₃.

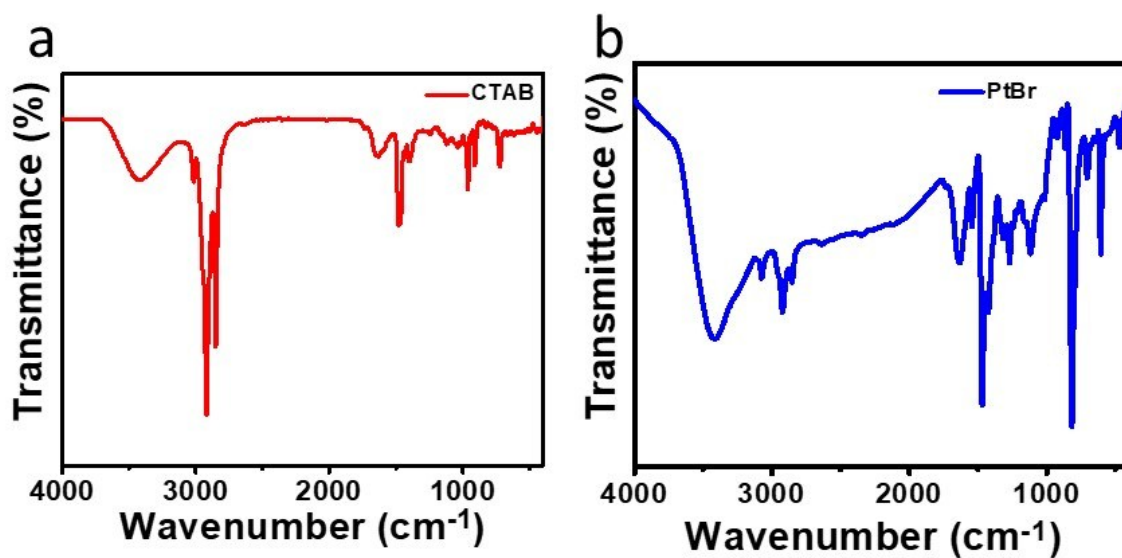


Figure S4. FTIR spectra of (a) CTAB and (b) PtBr. The corresponding FTIR peaks of CTAB and PtBr are present in MAPbBr₃@PtBr nanocomposite.

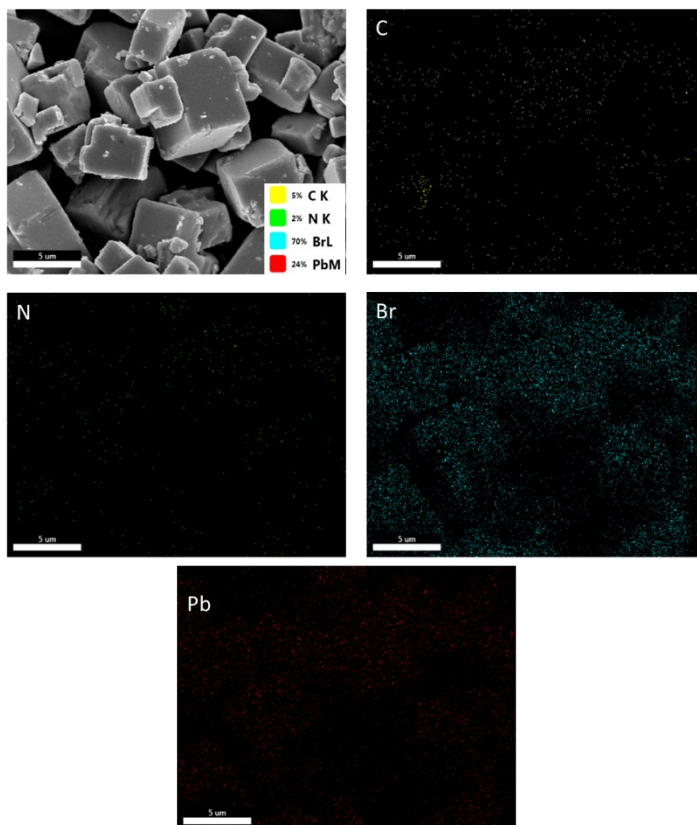


Figure S5.SEM image and elemental mapping for bulk MAPbBr₃

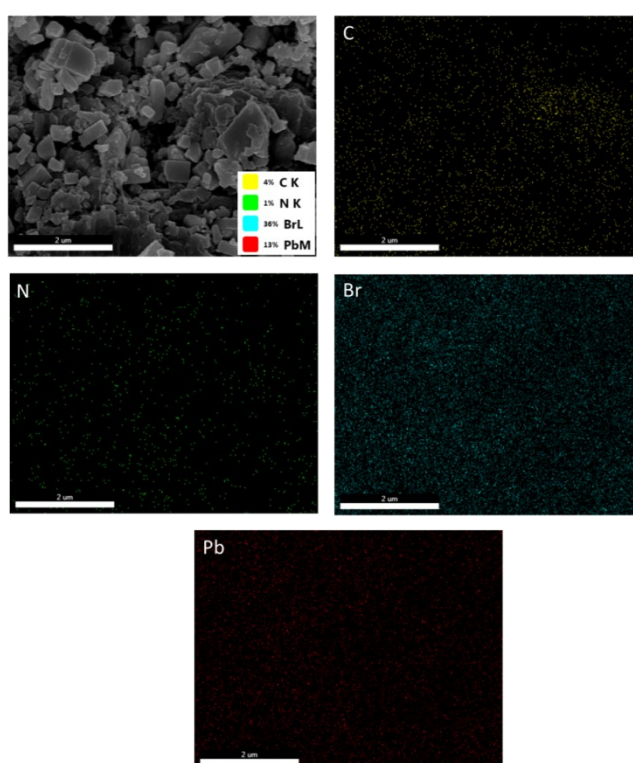


Figure S6.SEM image and elemental mapping for MAPbBr₃ NCs

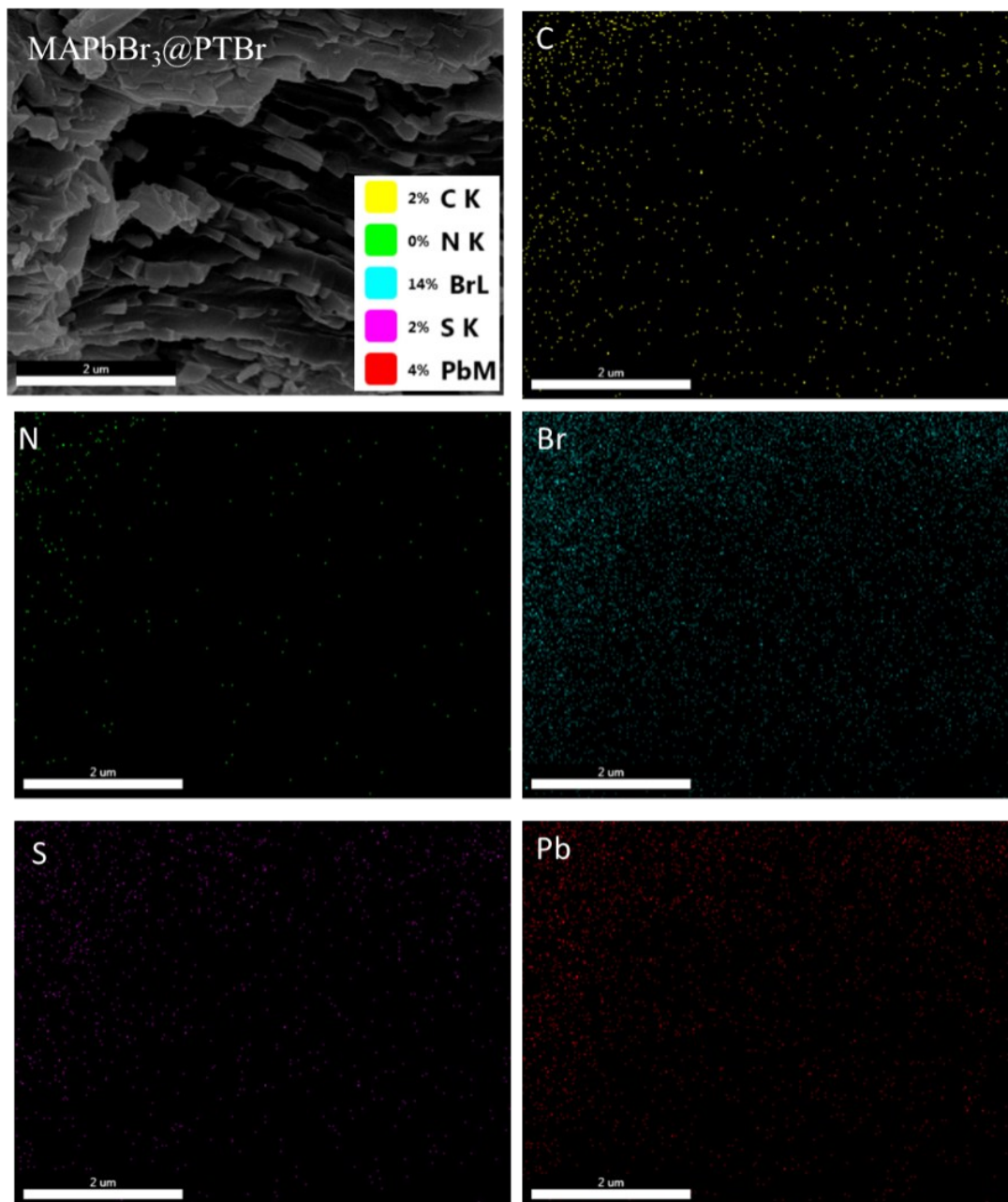


Figure S7. SEM image and elemental mapping for MAPbBr₃@PTBr.



Figure S8. Stability test of MAPbBr₃ NCs in different amount (%) of water in toluene solvent.

Water content from right to left in % and total volume 1 ml.

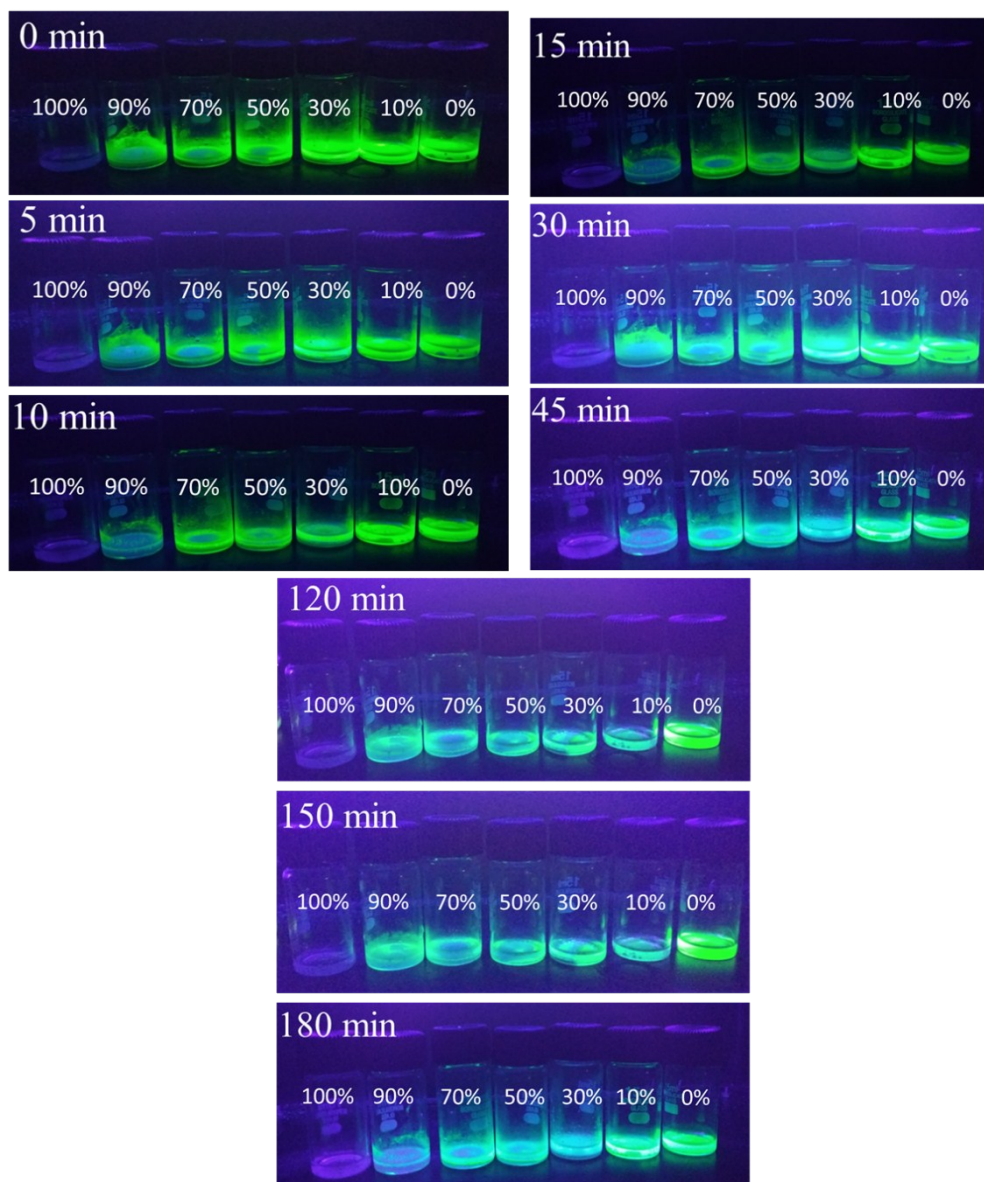


Figure S9. Stability test of MAPbBr₃@PTBr nanocomposite in different amount (%) of water in toluene solvent. Water content from right to left in % and total volume 1 ml.

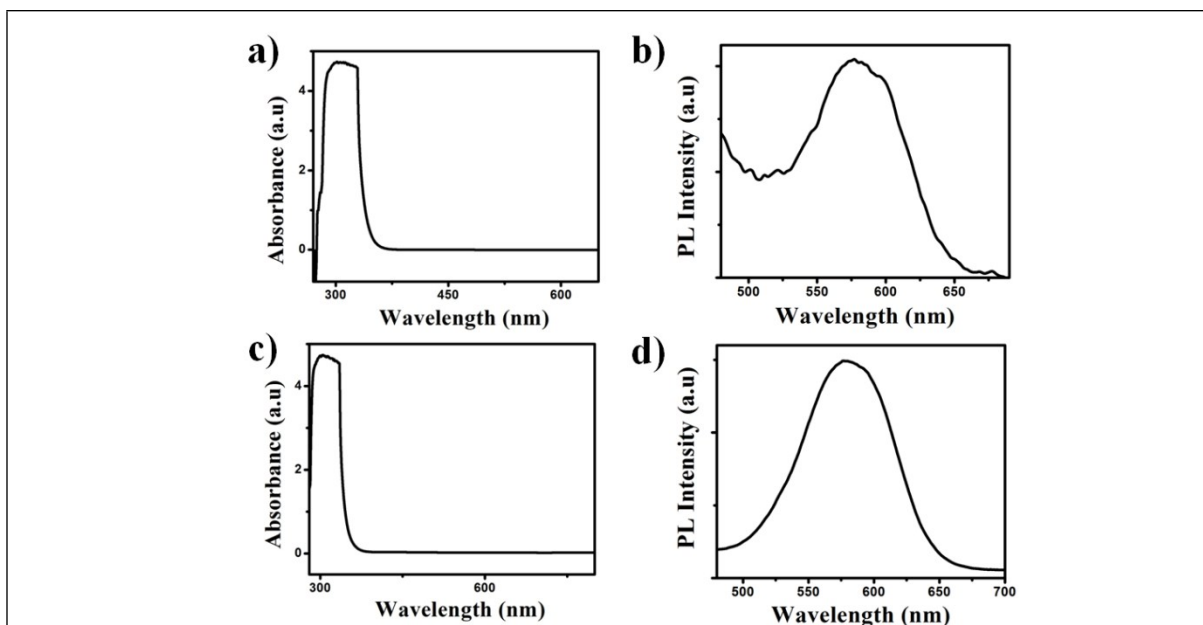


Figure S10. a) UV absorption of PbBr₂ b) Photoluminescence (PL) spectra of PbBr₂ c) UV absorption of MAPbBr₃ d) Photoluminescence (PL) spectra of MAPbBr₃ in DMF solvent.

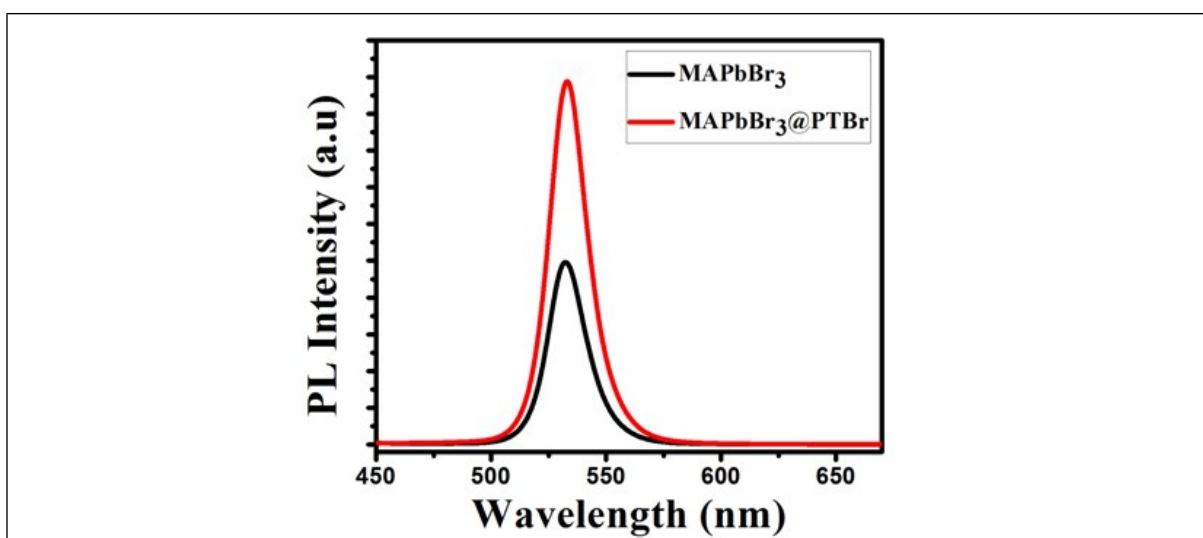


Figure S11. The PL study after six months of MAPbBr₃ and MAPbBr₃@PTBr to check the stability in humidity.

Table S1. Fluorescence lifetimes of MAPbBr₃ NCs and MAPbBr₃@PTBr in toluene

Compounds in toluene	τ_1 (ns)	τ_2 (ns)	τ_3 (ns)	α_1	α_2	α_3	χ^2	τ_{av}
MAPbBr ₃ NCs	21.4	1.03	0.17	0.01	0.04	0.94	0.99	5.18
MAPbBr ₃ @PTBr	1.07	22.20	0.17	0.04	0.01	0.94	0.99	6.23