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

Electronic Supplementary Information

Efficient Perovskite Nanocrystal Light-Emitting Diodes Using Benzimidazole-Substituted Anthracene Derivative as the Electron Transport Material

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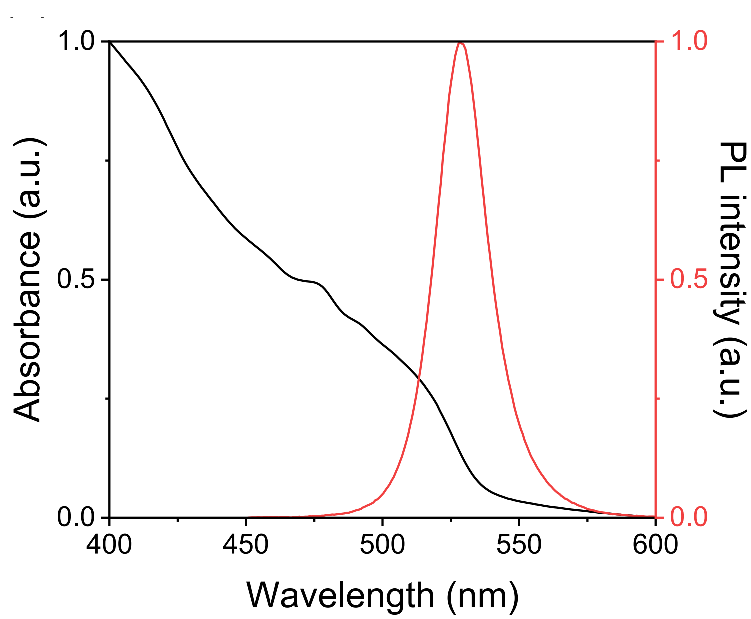

Figure S1. Photoluminescence and absorption spectra of colloidal $FA_{0.5}MA_{0.5}PbBr_3$ perovskite nanocrystals.

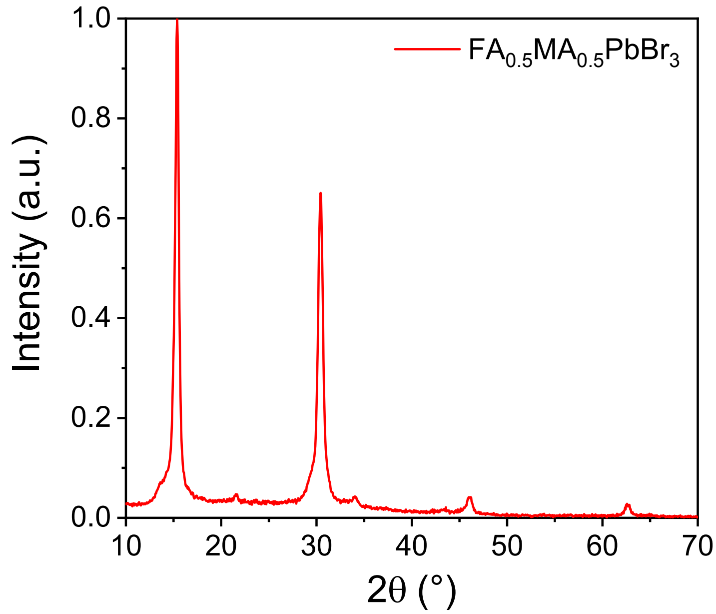

Figure S2. XRD pattern of colloidal $FA_{0.5}MA_{0.5}PbBr_3$ perovskite nanocrystals.

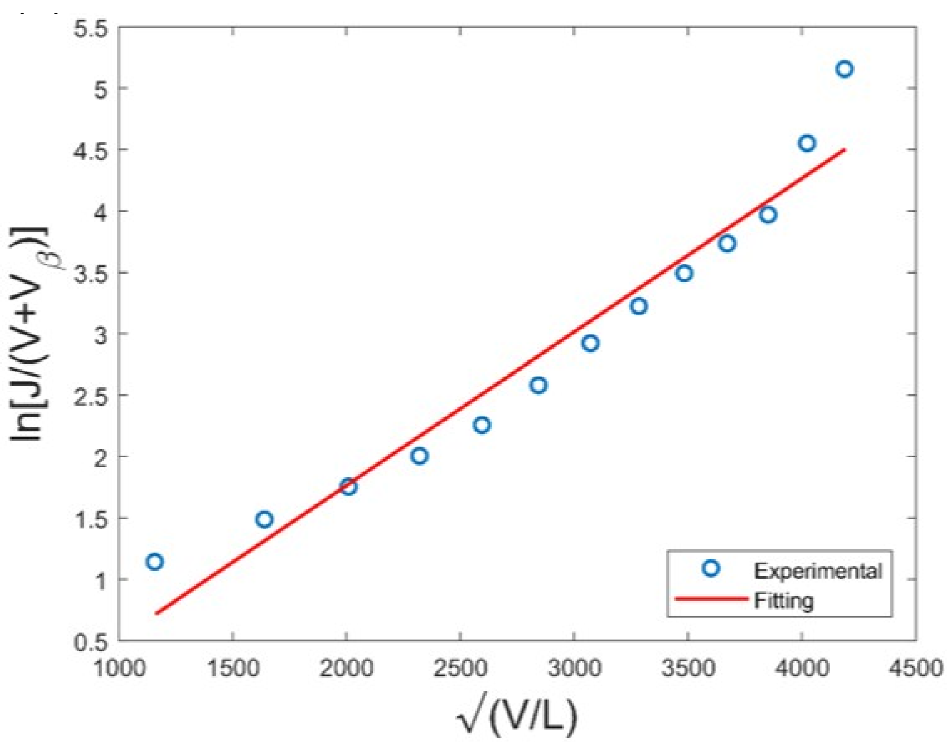

Figure S3. (a) *J-V* experimental data with axes transformed according to modified Poole-Freckle equation and fitting of the model used to extract electron mobility. Estimated zero field mobility $\mu_0 = 8{:}11 \times 10^{-6}$ cm^2V^{-1} s^{-1}.

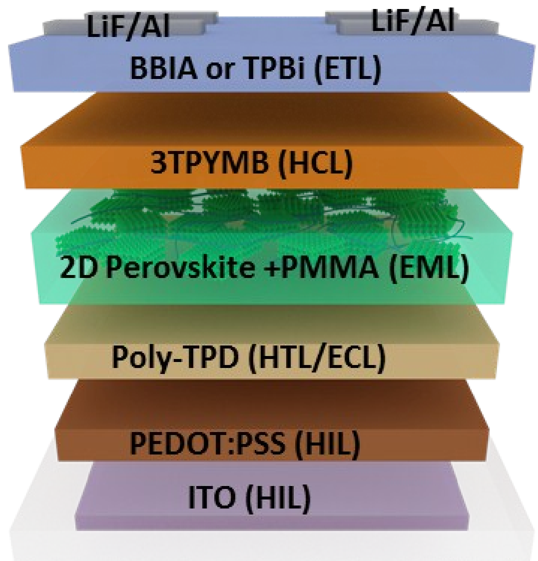

Figure S4. Schematic device architecture of devices with **BBIA** and TPBi electron transporting materials.

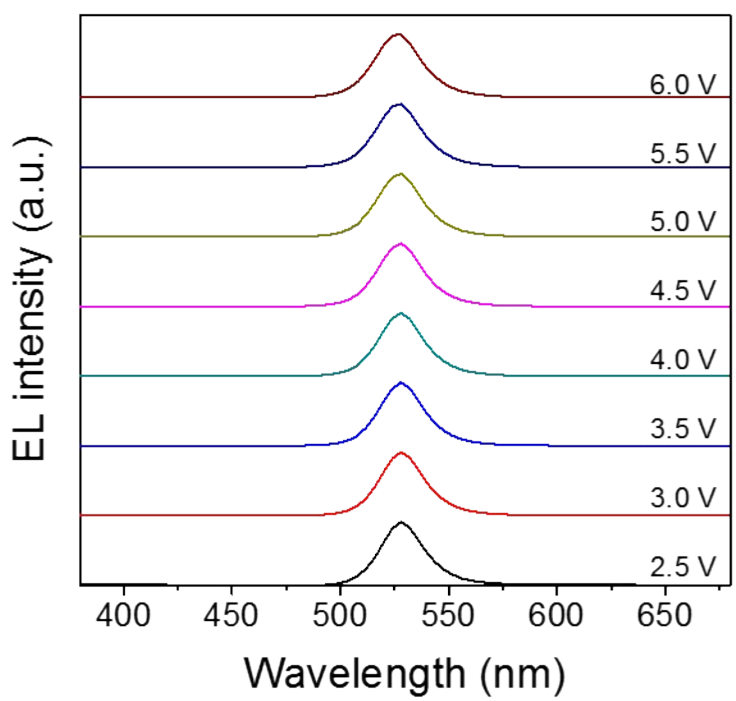

Figure S5. EL spectra of devices at different operating voltages ranging between 2.5 to 6 V.

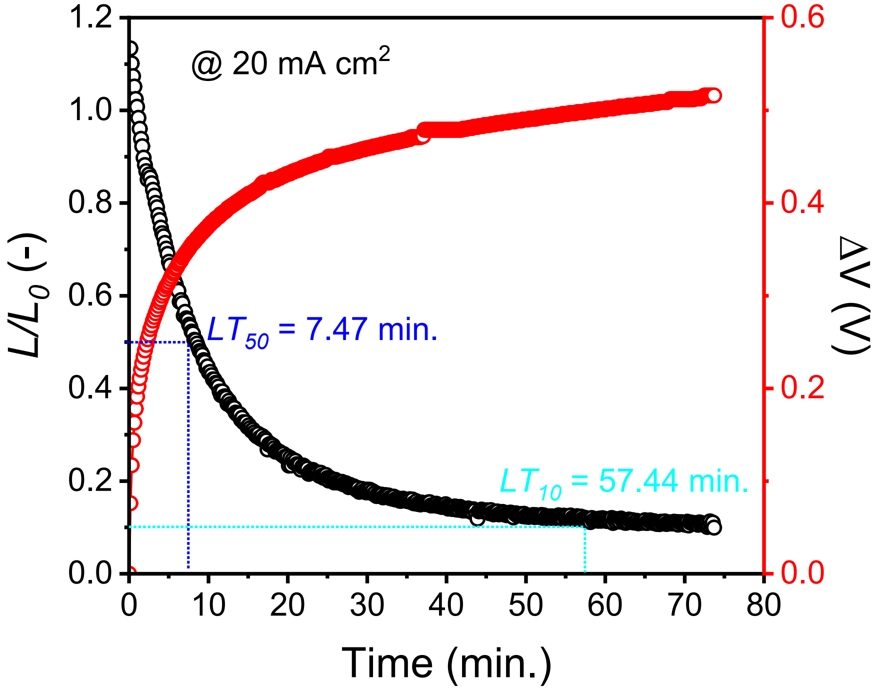

Figure S6. Lifetime of PeLED based on conventional electron transporting material, TPBi. Relative luminance and driving voltage change as a function of time under continuous electrical stress at a constant current density of 20 mA cm^{-2}.

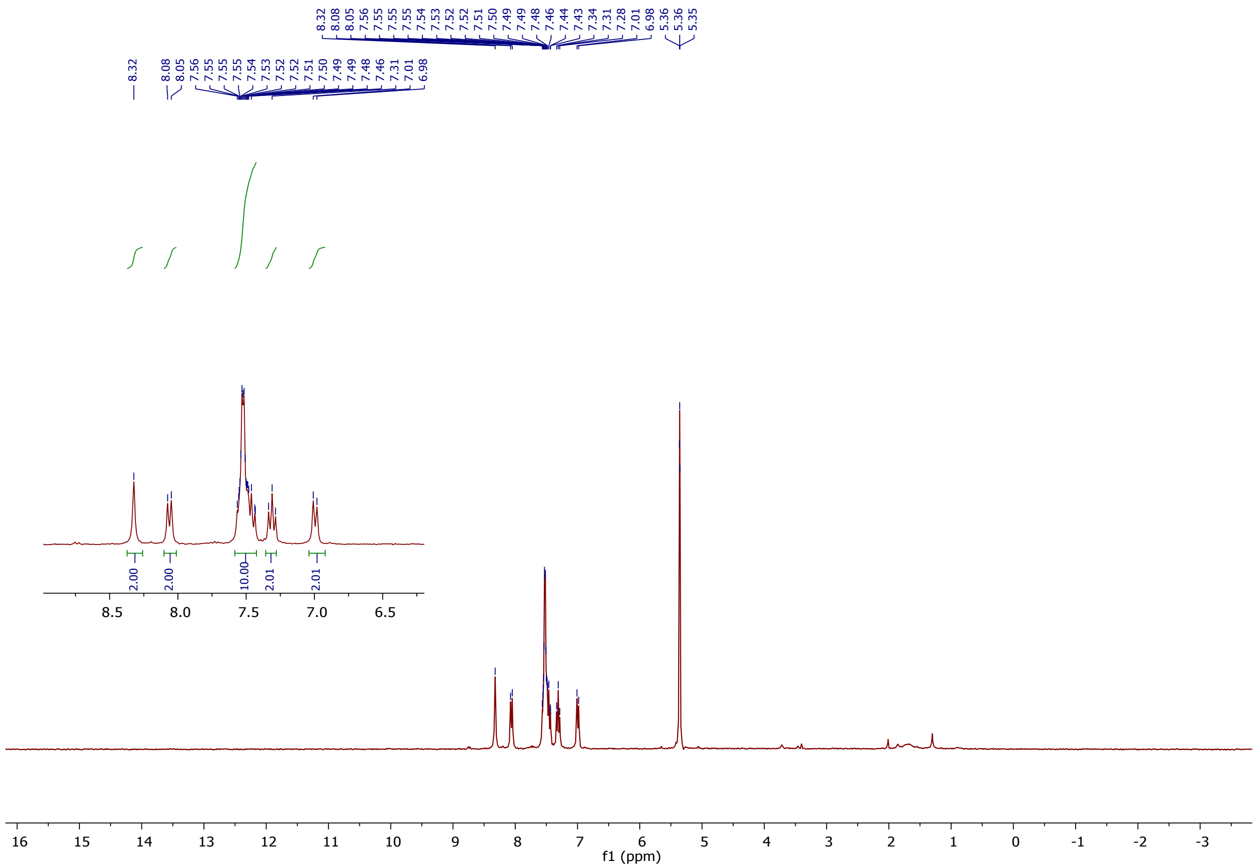

Figure S7. ^{1}H-NMR spectrum of BBIA collected in d_2-DCM (inset: zoomed aromatic region).

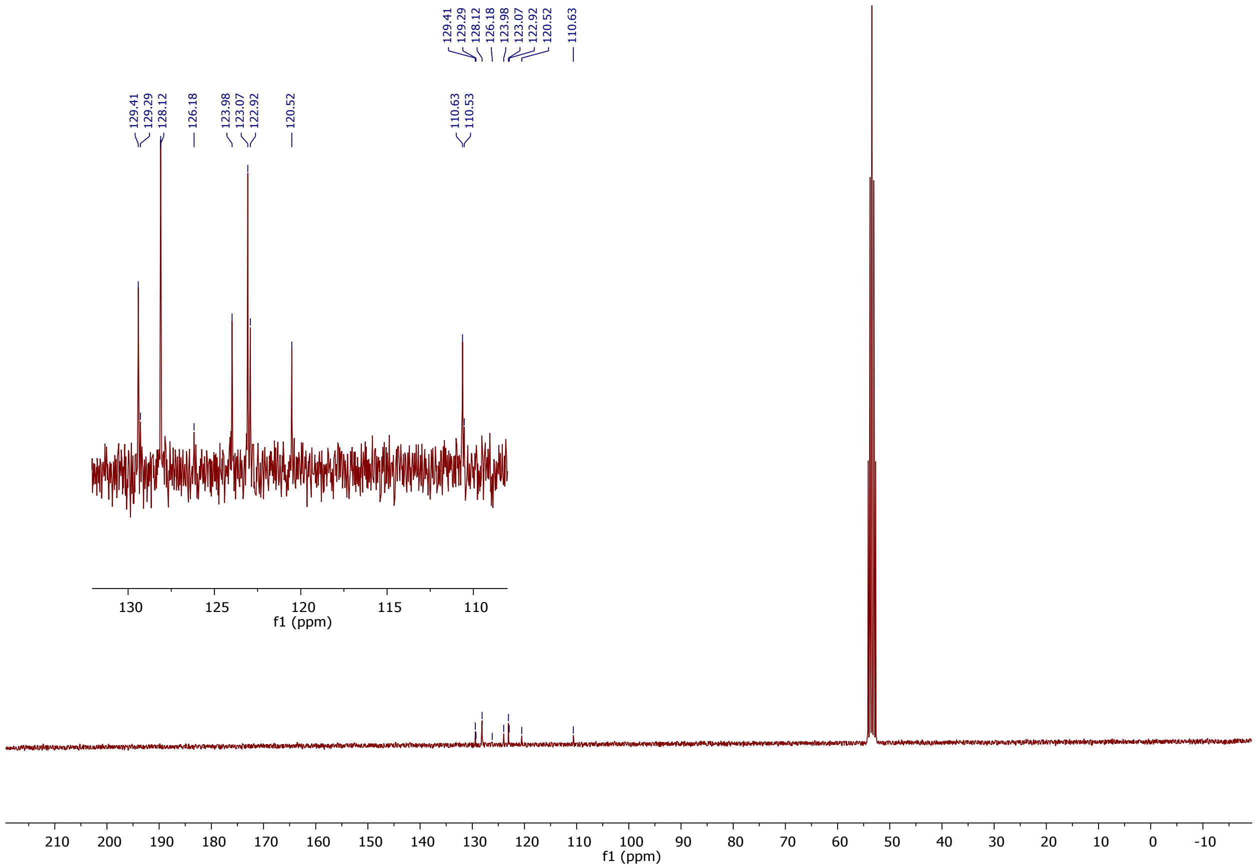

Figure S8. ^{13}C-NMR spectrum of BBIA in d_2-DCM. (inset: zoomed region of BBIA peaks)

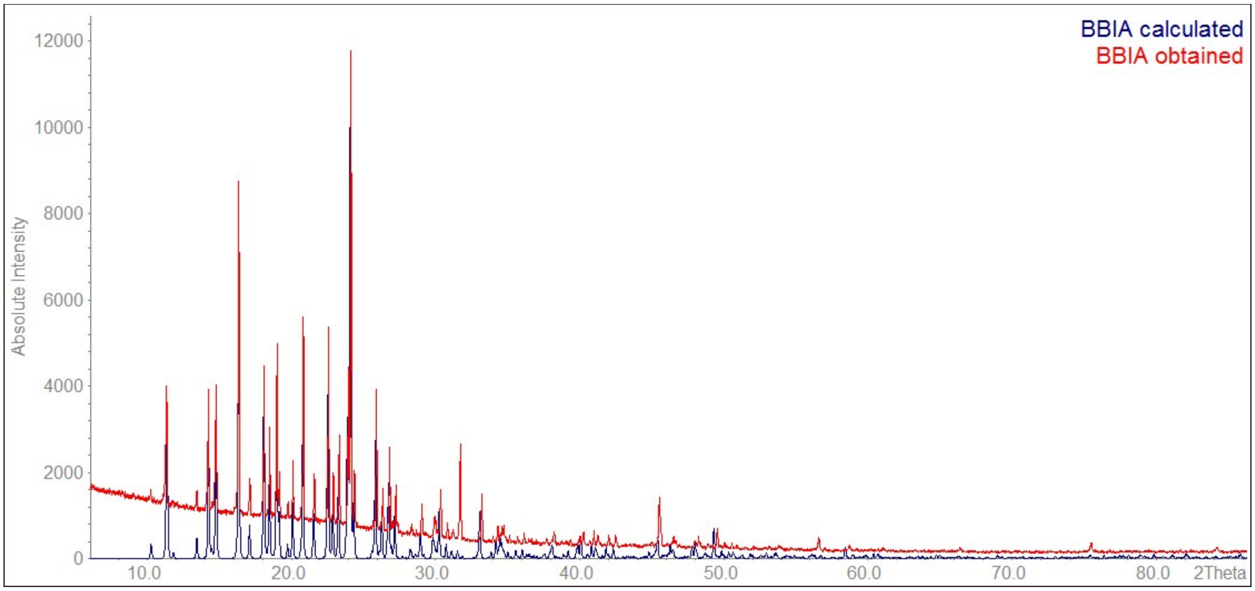

Figure S9. PXRD of BBIA sample as synthesized fitting with calculated powder pattern from single crystal of BBIA CCDC 635086.[1] (Cu-irradiation λ = 1.54060 Å, collected in a STOE STADI P).

References

1. L. Li, T.-L. Hu, J.-R. Li, D.-Z. Wang, Y.-F. Zeng and X.-H. Bu, *CrystEngComm*, 2007, **9**, 412-420.