Low defects density CsPbBr$_3$ single crystals grown by an additive assisted method for gamma-ray detection

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Supplementary Information

Supplementary Figure 1. XRD pattern of CsPbBr$_3$ powder grown with CB.
Supplementary Figure 2. UV-vis absorption spectrum of of CsPbBr$_3$ single crystal grown with CB. The inset is the Tauc plot which shows the optical bandgap about 2.22 eV.
Supplementary Figure 3. PL spectrum of CsPbBr$_3$ single crystal grown with CB. PL was measured at 25 °C.
Supplementary Figure 4. Linear attenuation coefficients of CsPbBr$_3$ perovskite versus photon energy.
Supplementary Figure 5. Electron induced transient current of CB-assisted CsPbBr$_3$ single crystal detector under (a) 60 V, (b) 100 V, (c) 140 V, and (d) 200 V. (e) Electron mobility of CB-assisted CsPbBr$_3$ single crystal detector estimated by linear fitting $\tau_{\text{transit}}$ versus $1/V$. 

Electron mobility: 181 cm$^2$/V·s
Supplementary Figure 6. Hole induced transient current of CB-assisted CsPbBr$_3$ single crystal detector under (a) 60 V, (b) 100 V, (c) 140 V, and (d) 200 V. (e) Hole mobility of CB-assisted CsPbBr$_3$ single crystal detector estimated by linear fitting $\tau_{\text{transit}}$ versus $1/V$.
Supplementary Figure 7. Sensitivity of detector based on CB-assisted CsPbBr$_3$ single crystal. The energy of X-ray is 60 keV, and the CB-assisted CsPbBr$_3$ is biased at 650 V/cm.