Supporting Information

Optical and electronic anisotropies in perovskitoid crystals of Cs$_3$Bi$_2$I$_9$ studies of nuclear radiation detection

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EDS Measurements

Table. SI1 EDS analysis of $Cs_3Bi_2I_9$.

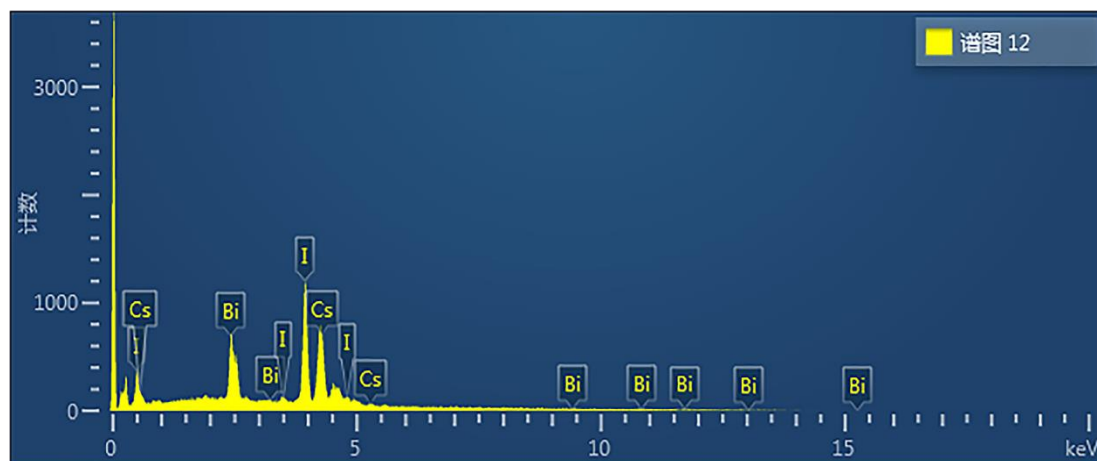| Element	Theoretical atomic percentage (%)	The actual atomic percentage (%)
I	64.29	64.88
Cs	21.43	20.14
Bi	14.28	14.98
Total:	100.00	100.00

Fig. SI1 The test spectrum results of EDS of $Cs_3Bi_2I_9$.

Electric Measurements
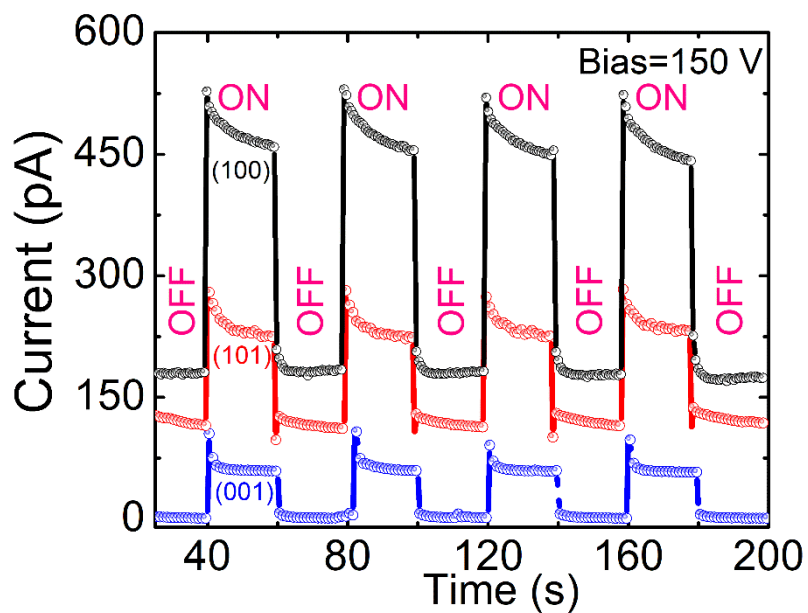

Fig. SI2 Typical photoresponse contrast of $CBI_{(100)}$, $CBI_{(101)}$ and $CBI_{(001)}$ at 150 V in 425nm LED (~200 mW·cm^{-2}).
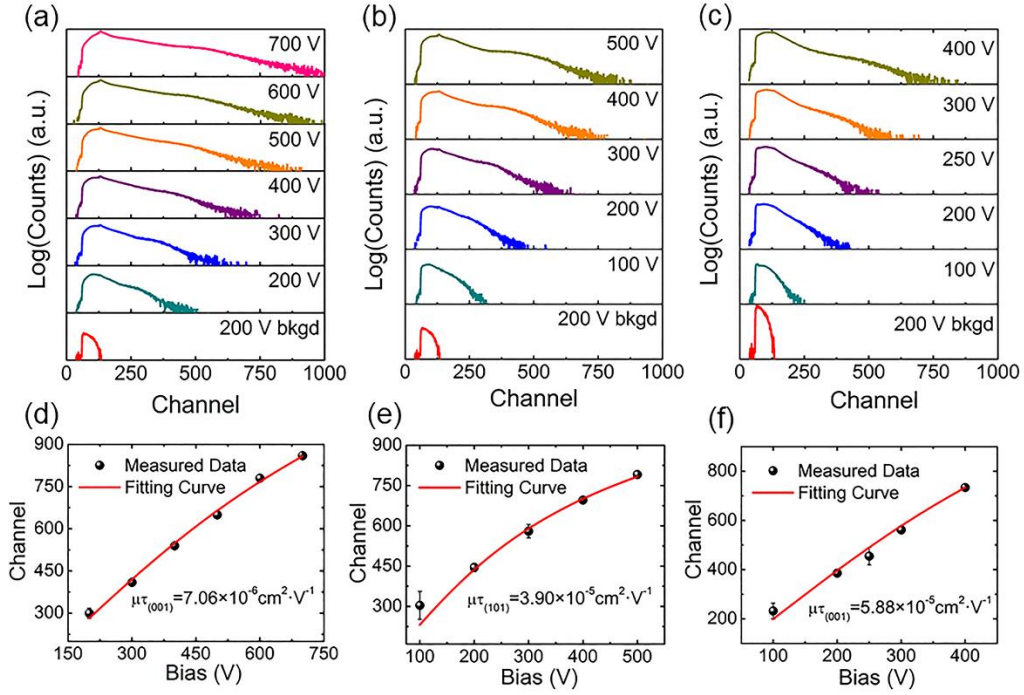
Radiation detection Characterization

Fig. SI3 (a), (b) and (c) are the response spectra to ^{241}Am alpha source of CBI$_{(001)}$, CBI$_{(101)}$ and CBI$_{(100)}$, respectively. (d), (e) and (f) $\mu\tau$ of CBI$_{(001)}$, CBI$_{(101)}$ and CBI$_{(100)}$ were 7.06×10^{-6} cm$^2\cdot$V^{-1}, 3.90×10^{-5} cm$^2\cdot$V^{-1} and 5.88×10^{-5} cm$^2\cdot$V^{-1} fitted by the single carrier Hecht equation, respectively.
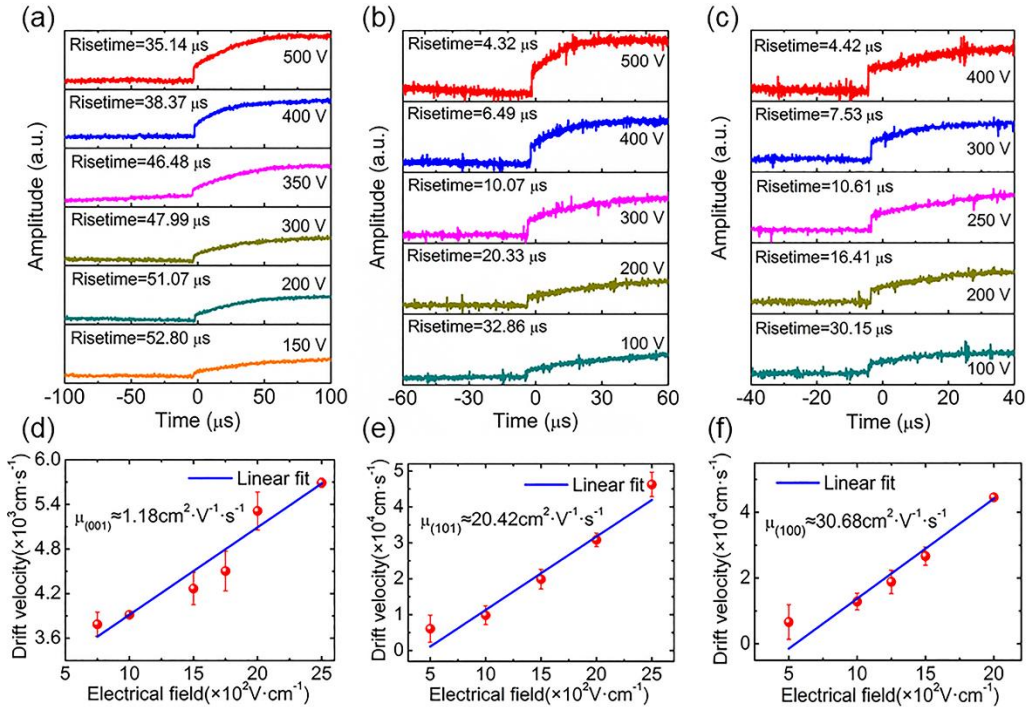

Fig. SI4 (a), (b) and (c) Alpha particles induced pulse shapes of CBI$_{(001)}$, CBI$_{(101)}$ and CBI$_{(100)}$ under various bias, respectively. (d), (e) and (f) The electron mobilities of CBI$_{(001)}$, CBI$_{(101)}$ and CBI$_{(100)}$ by the linear fitting, respectively.