Supporting Information

Lead-free Iron-doped $Cs_3Bi_2Br_9$ Perovskite with Tunable Properties

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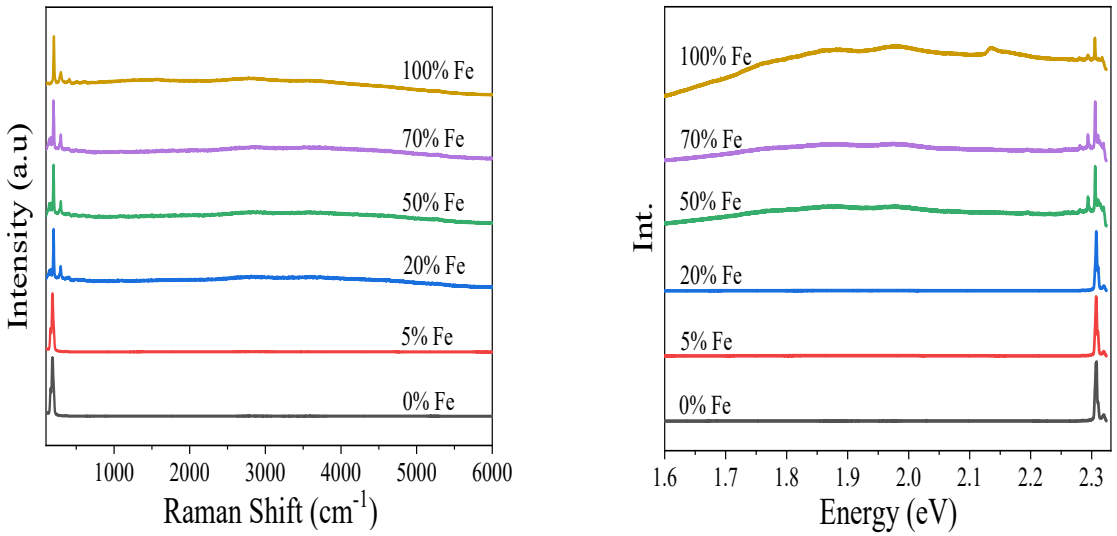

Fig. S1 (a) Raman spectra of the pristine $Cs_3Bi_2Br_9$ and Fe doped perovskite crystals in the range of 50-6000 cm^{-1}. (b) Energy of different Cu-alloyed perovskite crystals in the range of 1.6-2.3 eV.

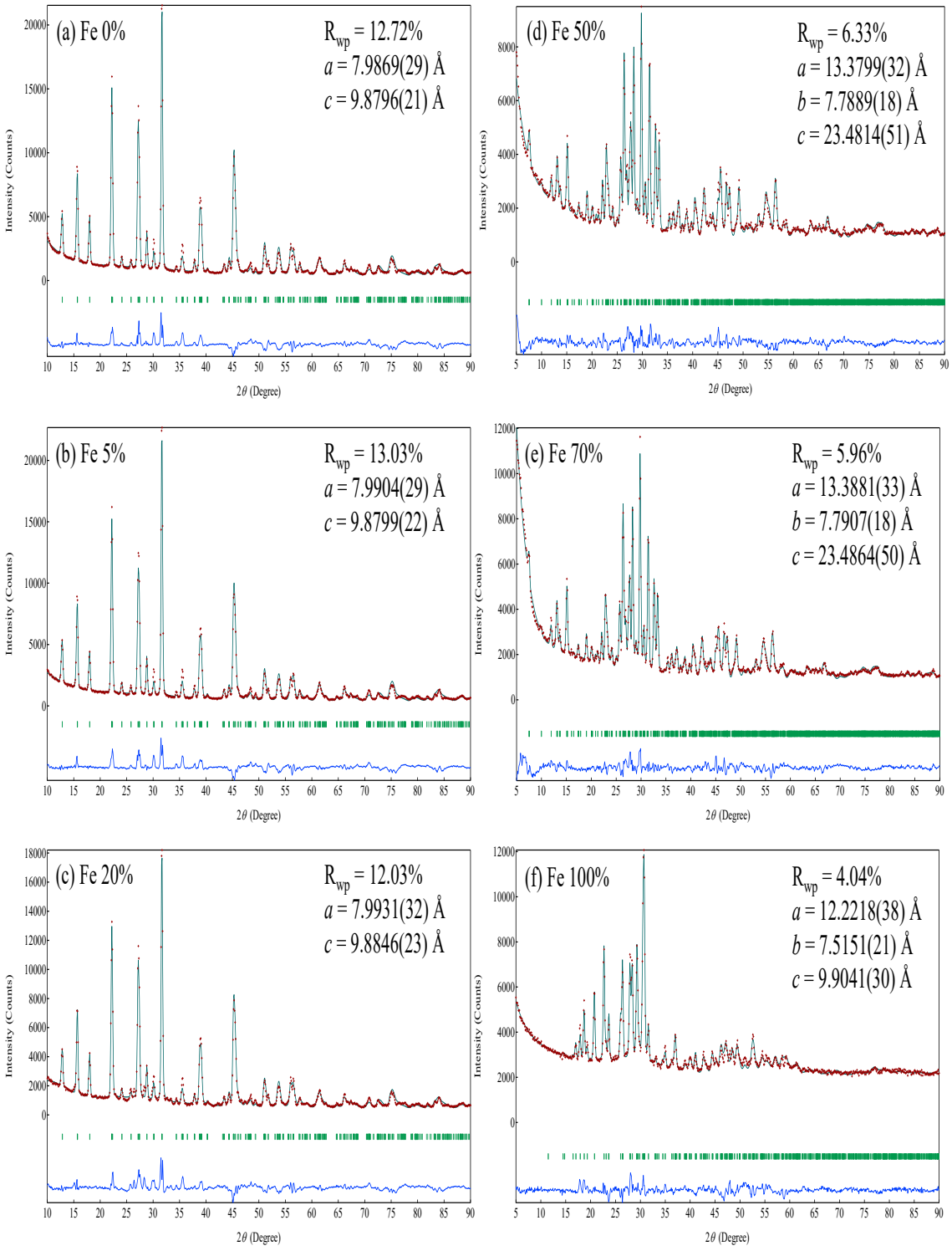

Fig. S2. Rietveld refined XRD patterns of Fe doping samples based on the (a-c) $Cs_3Bi_2Br_9$ structure with P-3m1, (d-e) $Cs_2(Bi,Fe)Br_5$ structure with Pnma and (f) $CsFeBr_4$ structure with Pnma.

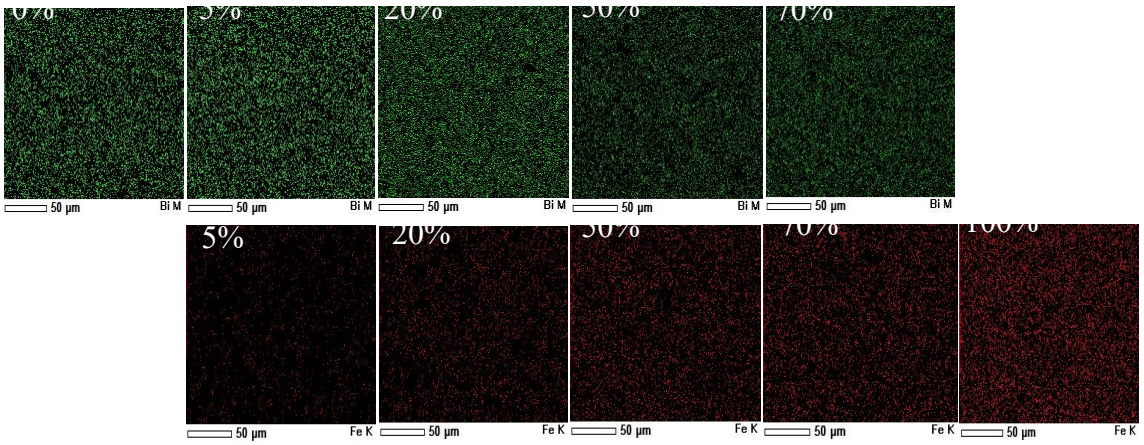

Fig. S3. Energy Dispersive Scanning (EDS) elemental mapping for Bi (Green) and Fe (Red).