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

Supporting Information

Realization of n-type and enhanced thermoelectric performance of p-type BiCuSeO by controlled iron incorporation

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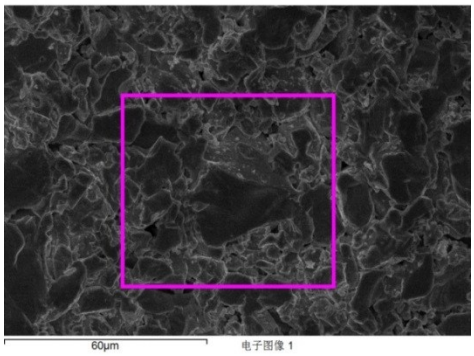
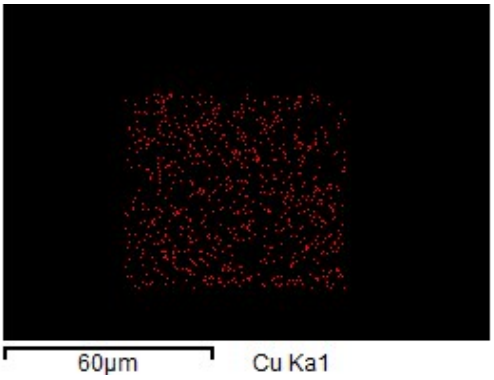
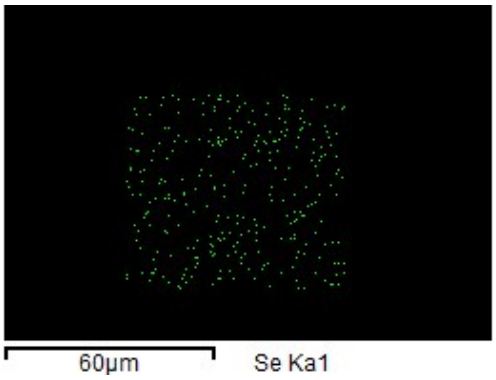
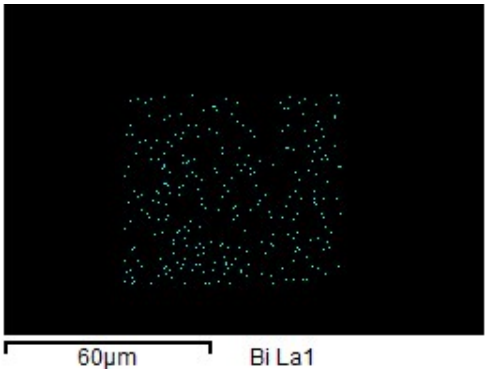
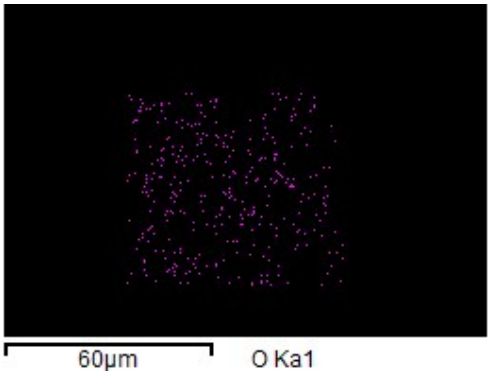










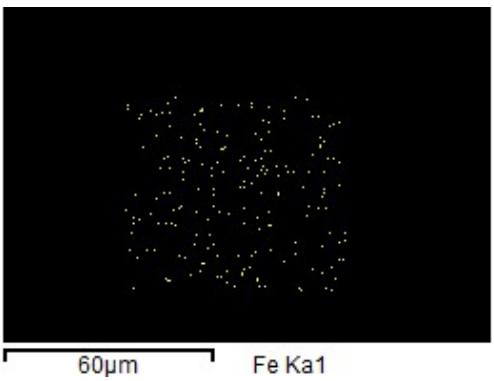
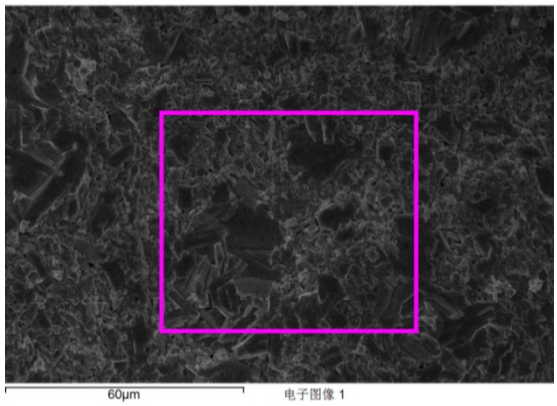
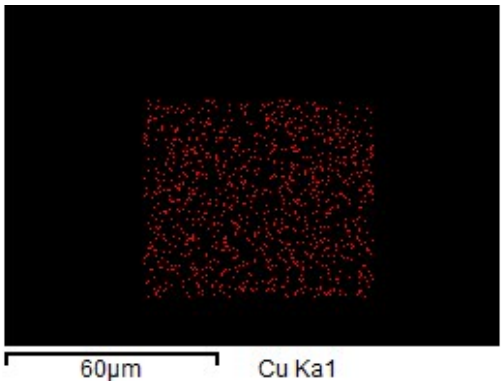
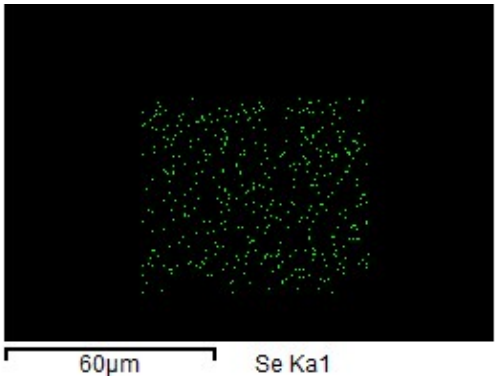
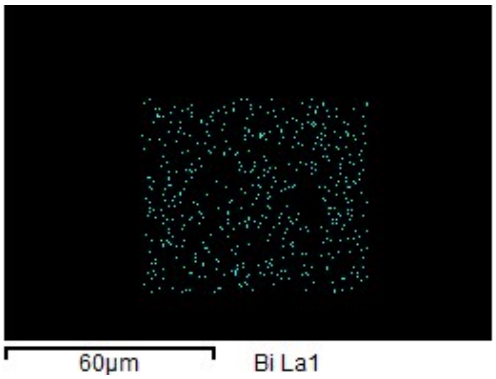


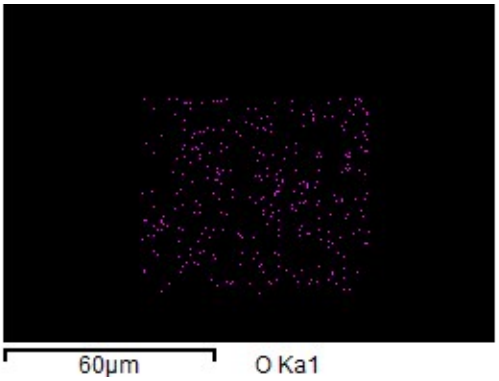
Fig. S1(a) EDX elemental mapping of $BiCu_{0.97}Fe_{0.03}SeO$











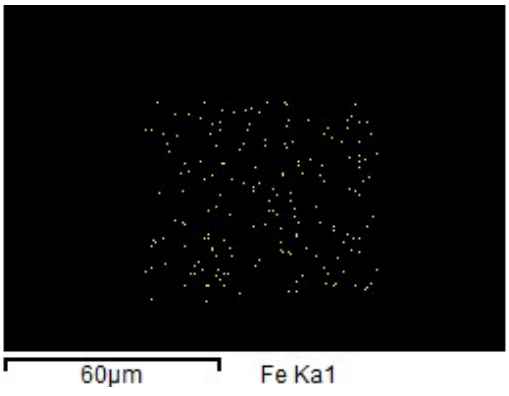
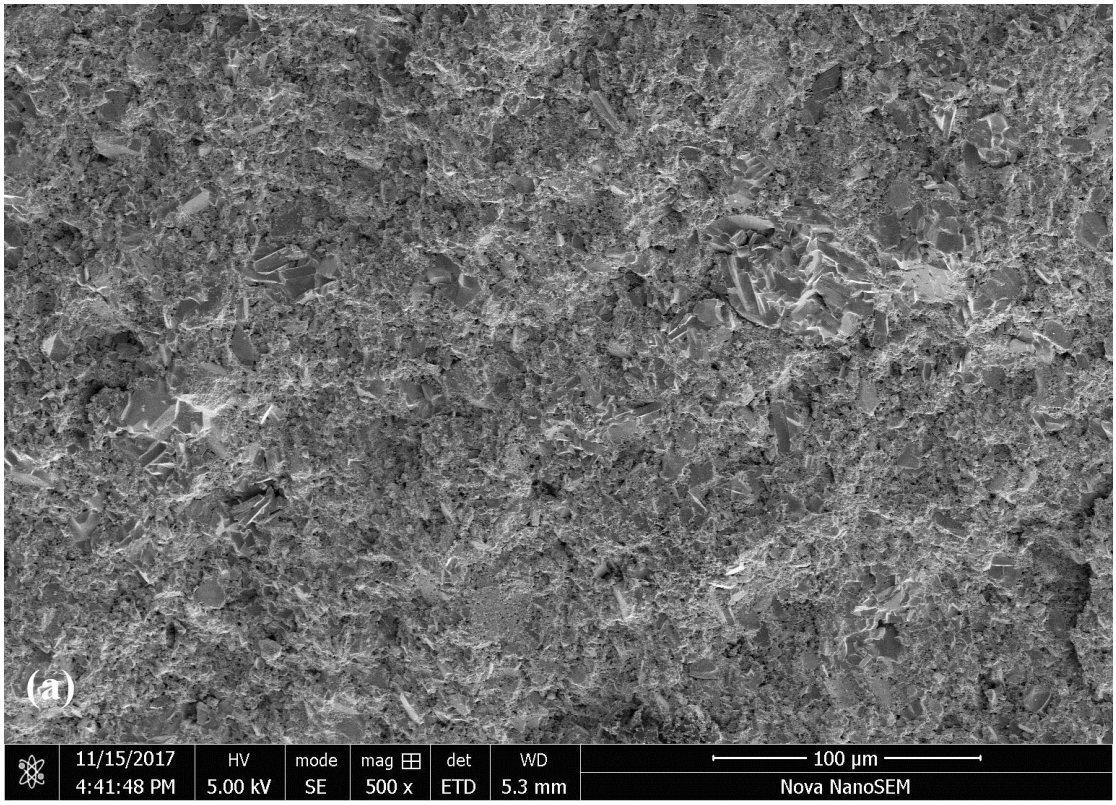
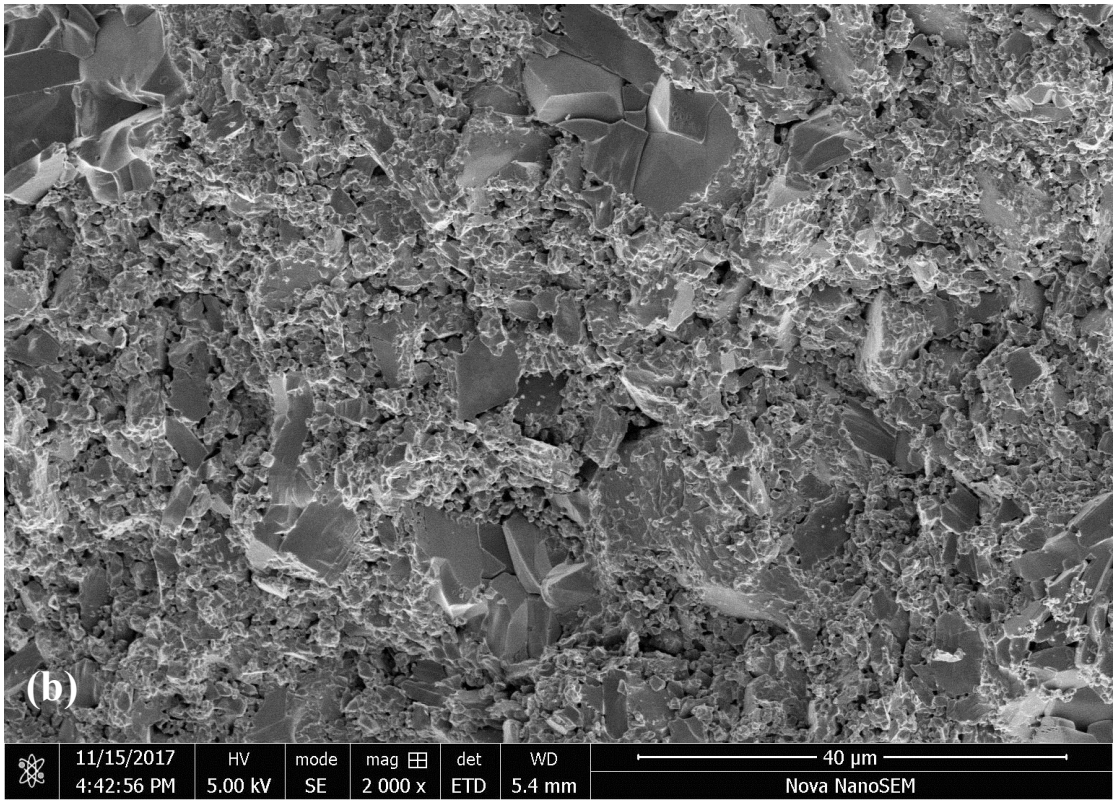
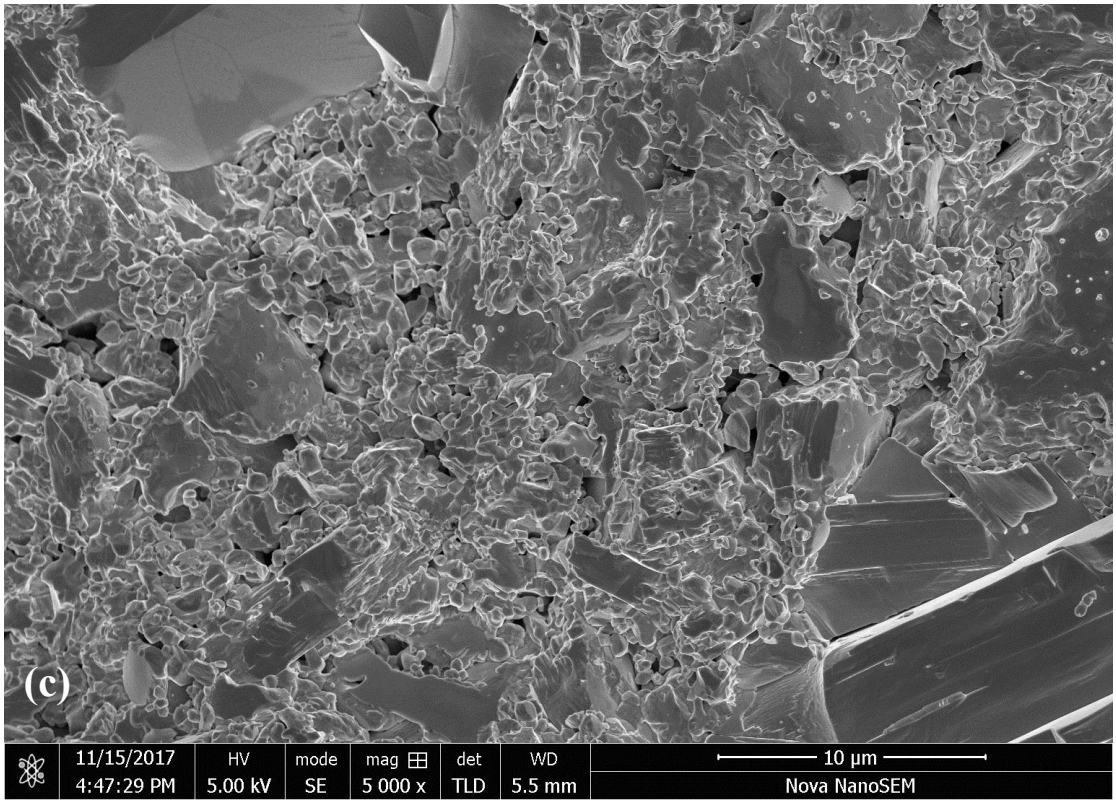


Fig. S1(b) EDX elemental mapping of $Bi_{0.94}Pb_{0.06}Cu_{0.97}Fe_{0.03}SeO$







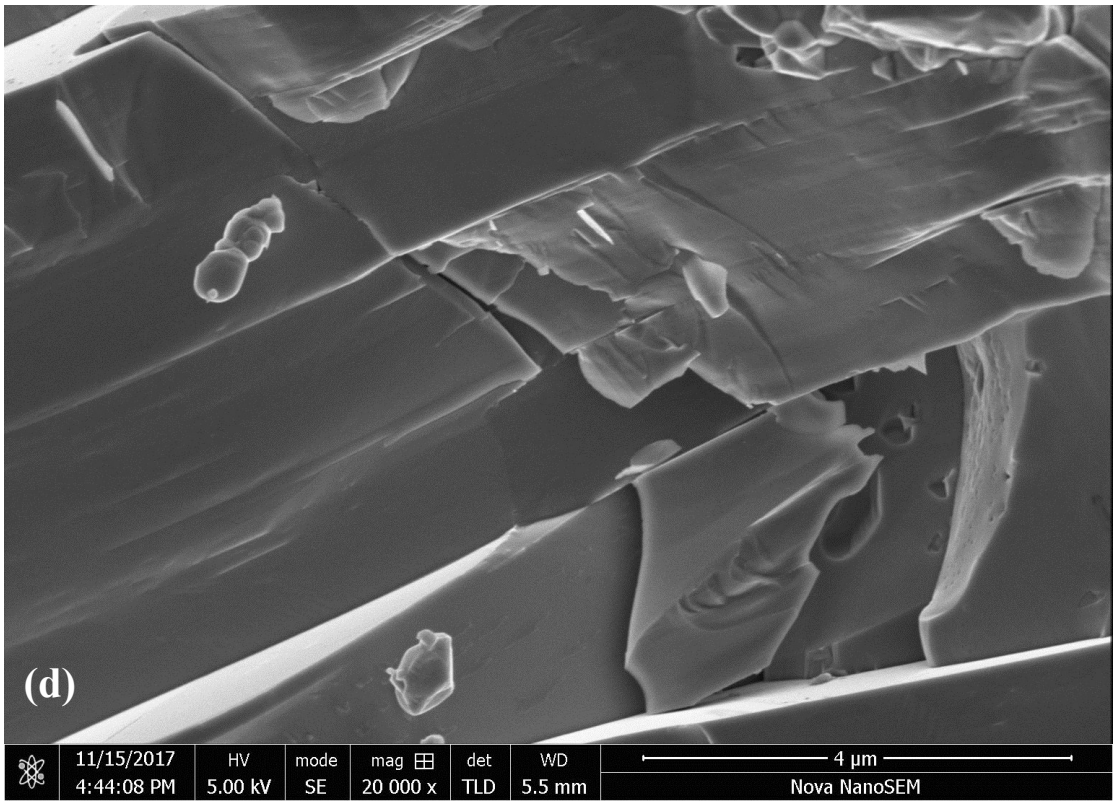


Fig. S2 FE-SEM of cross-section of typical SPS sample of $Bi_{0.94}Pb_{0.06}Cu_{0.99}Fe_{0.01}SeO$

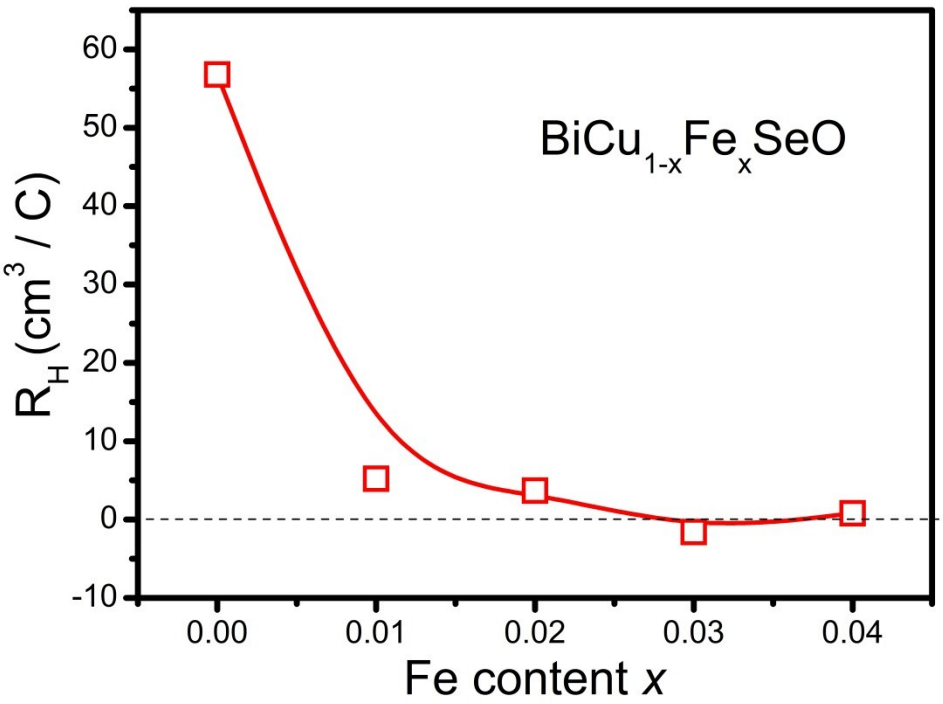


Fig. S3 Fe content dependences of Hall effects of $BiCu_{1-x}Fe_xSeO$ (x = 0 to 0.04) at room temperature.

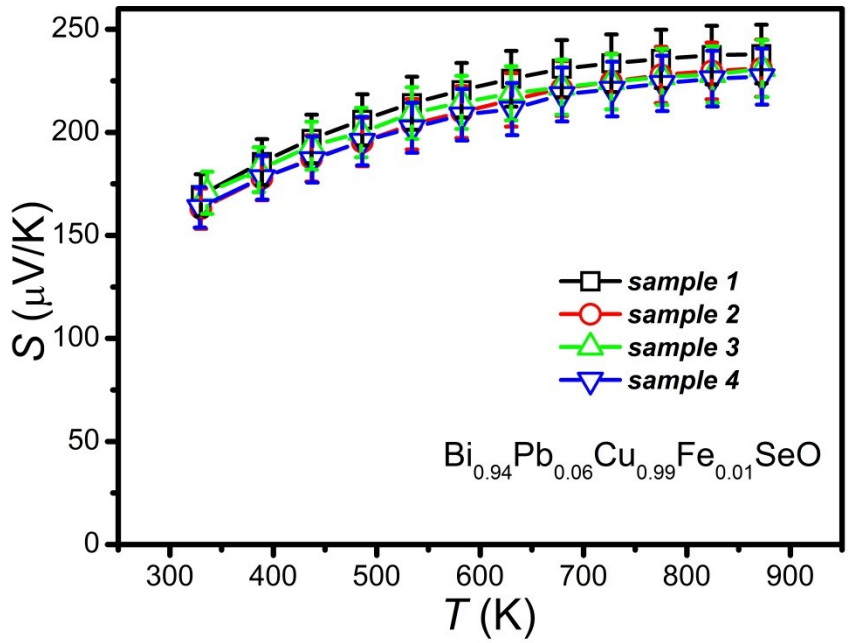


Fig. S4(a) Temperature dependence of Seebeck coefficient of $Bi_{0.94}Pb_{0.06}Cu_{0.99}Fe_{0.01}SeO$ from 310K to 873K.

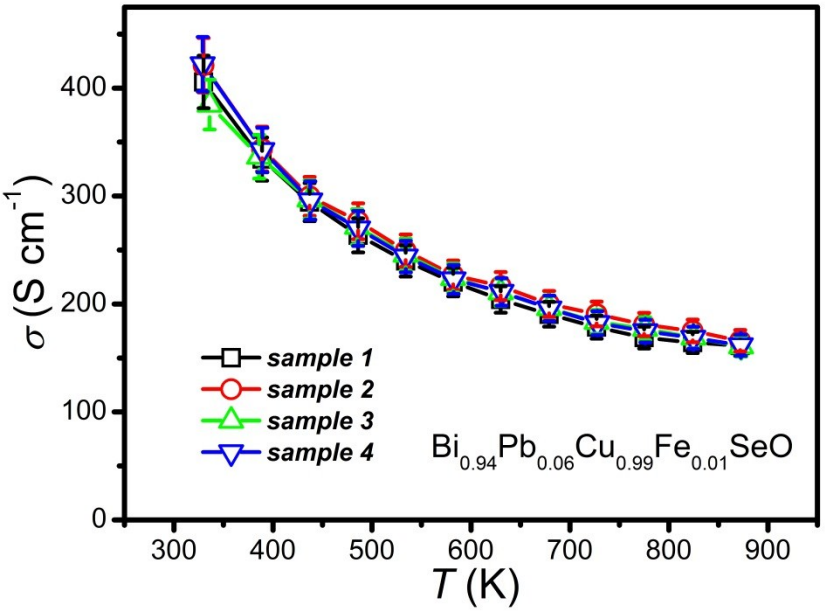


Fig. S4(b) Temperature dependences of electrical conductivity of $Bi_{0.94}Pb_{0.06}Cu_{0.99}Fe_{0.01}SeO$ from 310K to 873K.

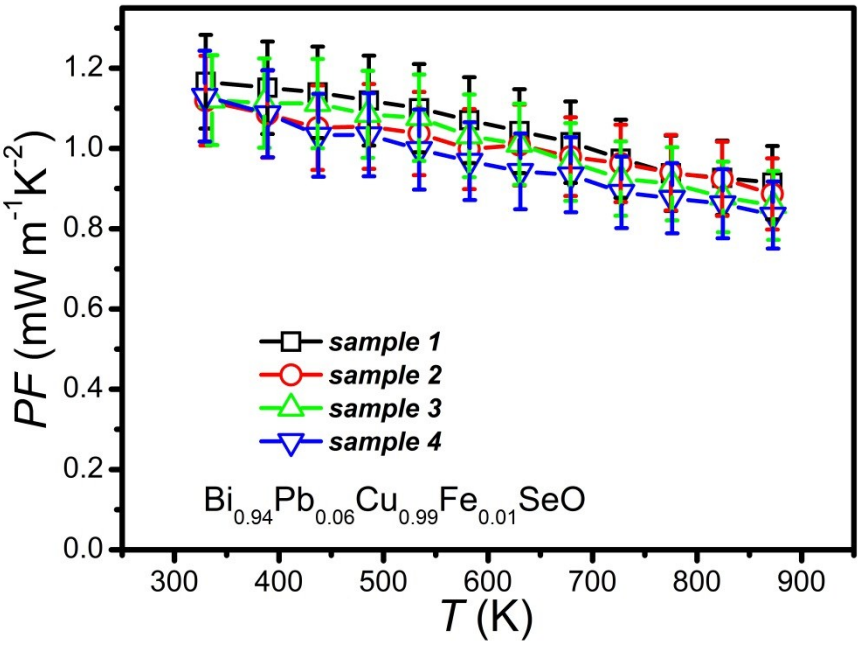


Fig. S4(c) Temperature dependences of power factor of $Bi_{0.94}Pb_{0.06}Cu_{0.99}Fe_{0.01}SeO$ from 310K to 873K.

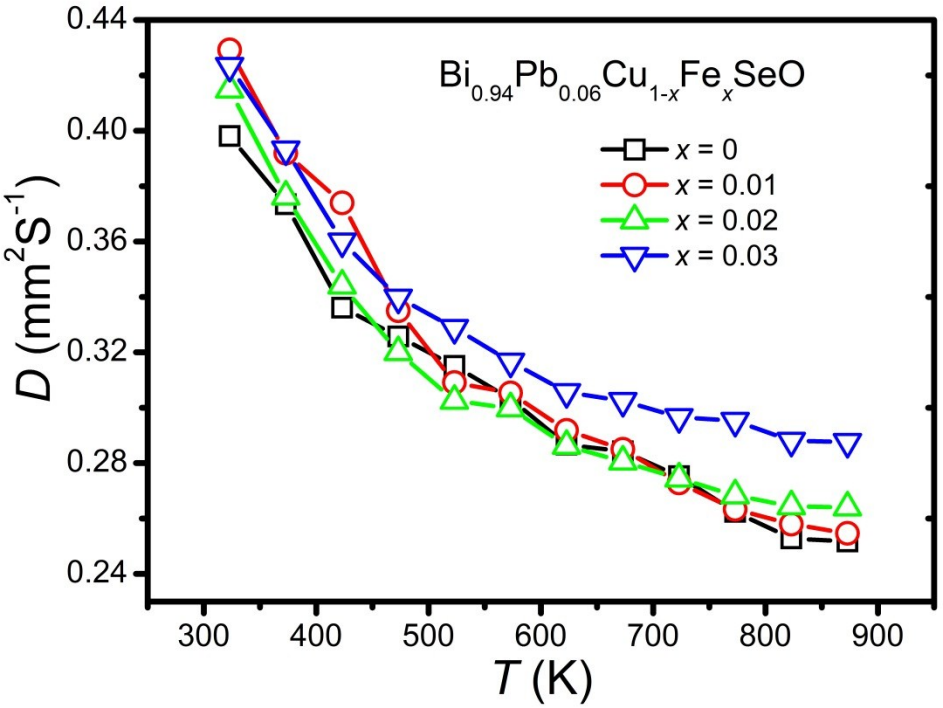


Fig. S5 The thermal diffusivity of $Bi_{0.94}Pb_{0.06}Cu_{1-x}Fe_xSeO$ (x = 0 to 0.03) from 323 K to 873 K

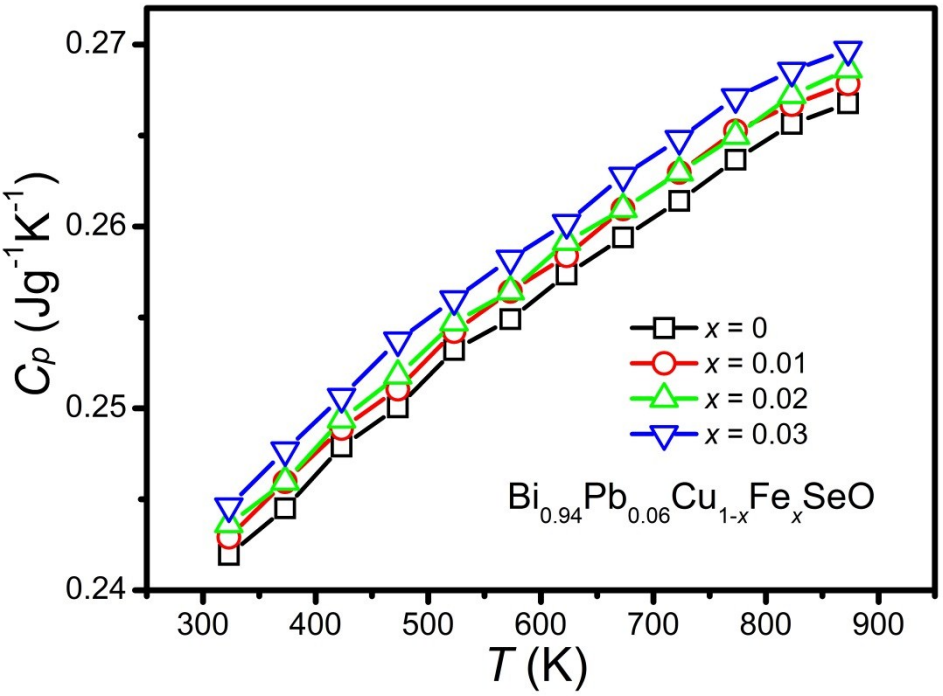


Fig. S6 The specific heat data of $Bi_{0.94}Pb_{0.06}Cu_{1-x}Fe_xSeO$ (x = 0 to 0.03) from 323 K to 873 K

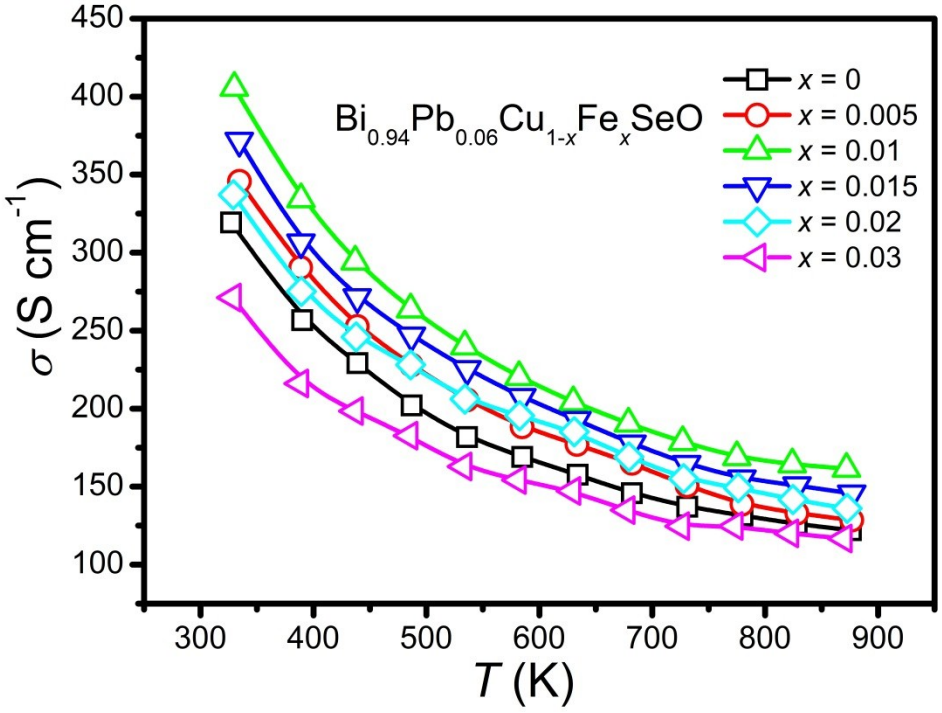


Fig. S7(a) Temperature dependence of the electrical conductivity of $Bi_{0.94}Pb_{0.06}Cu_{1-x}Fe_xSeO$ from 310K to 873K.

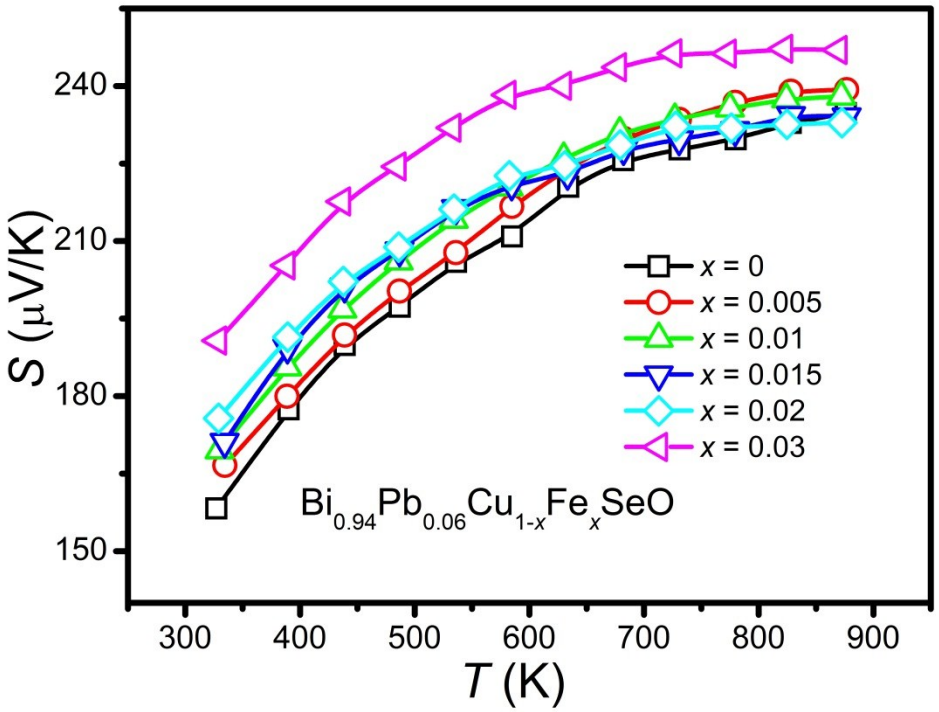


Fig. S7(b) Temperature dependence of the Seebeck coefficient of $Bi_{0.94}Pb_{0.06}Cu_{1-x}Fe_xSeO$ from 310K to 873K.

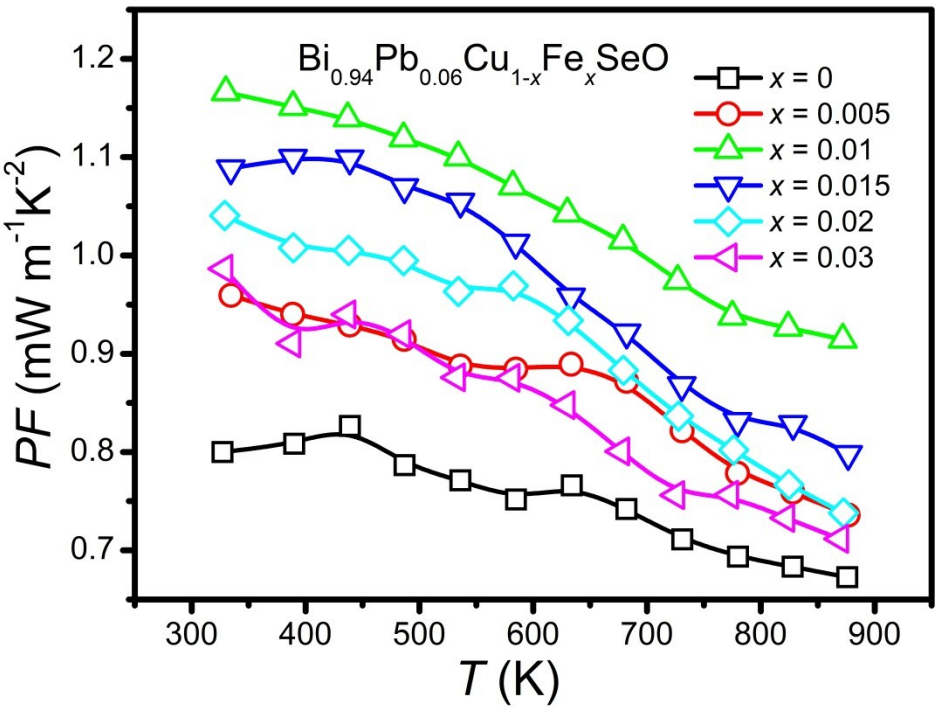


Fig. S7(c) Temperature dependence of the thermoelectric power factor of $Bi_{0.94}Pb_{0.06}Cu_{1-x}Fe_xSeO$ from 310K to 873K.

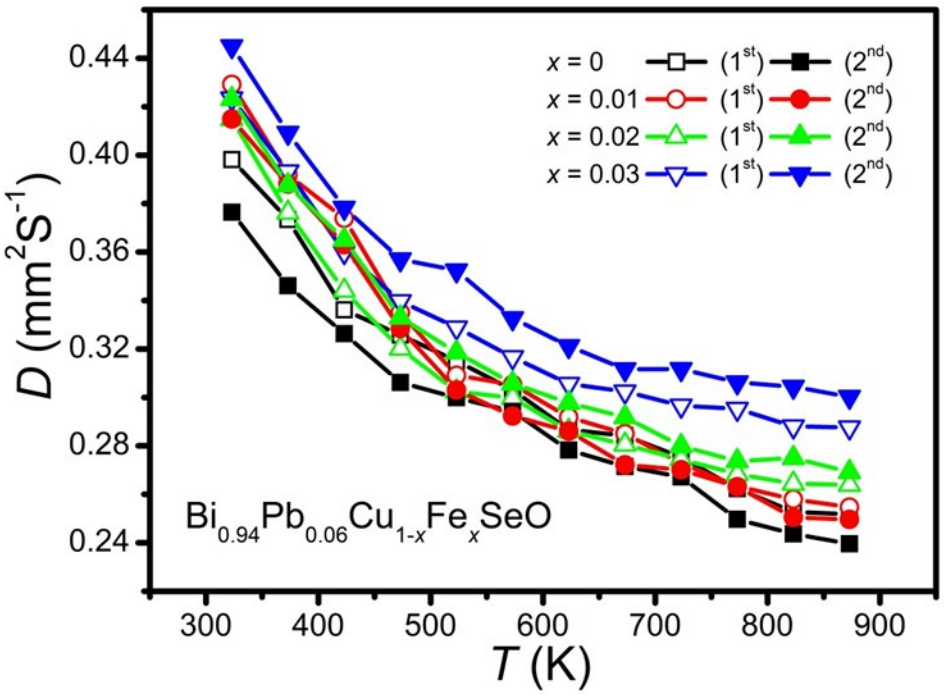


Fig. S8 Reproducibility of the thermal diffusivity of $Bi_{0.94}Pb_{0.06}Cu_{1-x}Fe_xSeO$ (x = 0 to 0.03) from 323 K to 873 K