Thermoelectric Properties of $Bi_{1-x}Sn_xCuSeO$ Solid Solutions

Yu-Qing Yang, Xiao-Cun Liu, Xin Liang*

School of Materials Science and Engineering, Changzhou University, Changzhou, Jiangsu 213164, China

*Corresponding author (X. Liang), Email address: liangxin@cczu.edu.cn

Supporting Information

Contents

1. Fig. S1. Identification of impurity peaks in the range from 23 to 31 degree for pristine BiCuSeO.

2. Fig. S2. Lattice parameters deduced from the XRD data calculated from the diffraction angle are plotted against the tin concentration.

3. Fig. S3. SEM image and EDS mapping of a selected area with impurity phase for $Bi_{0.9}Sn_{0.1}CuSeO$.

4. Fig. S4. The expected and measured carrier concentration in $Bi_{1-x}Sn_xCuSeO$ with Sn doping concentration.
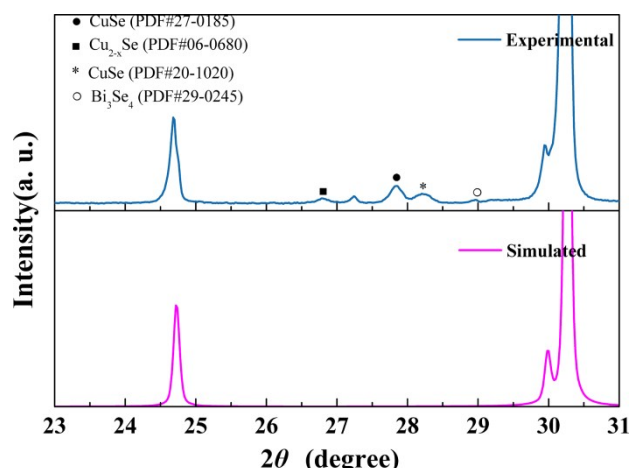
Fig. S1. Identification of impurity peaks in the range from 23 to 31 degree for pristine BiCuSeO.

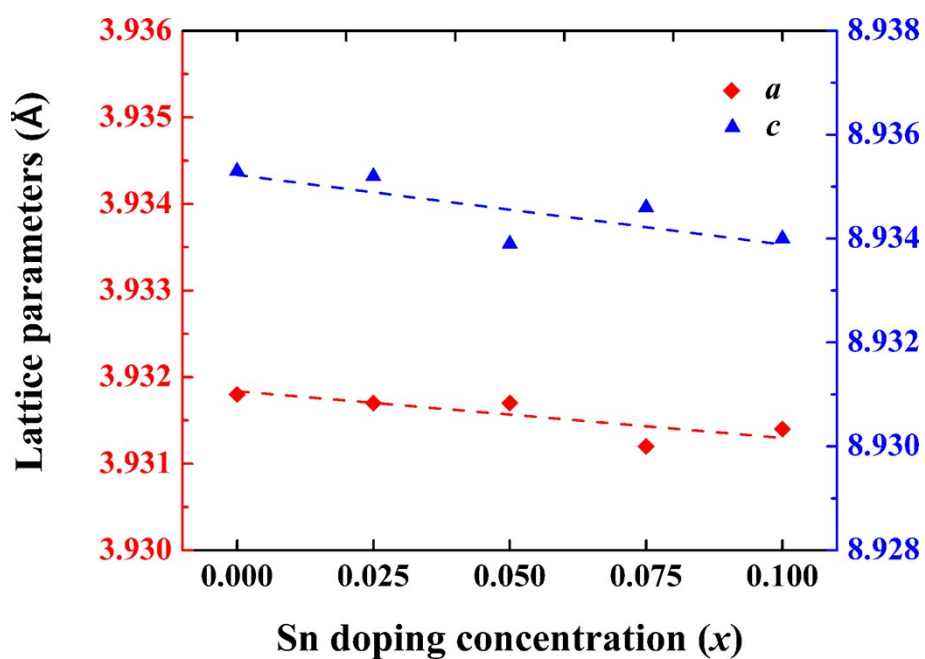The peak at ~27.2 degree is the k-β line.

Figure S2. Lattice parameters deduced from the XRD data calculated from the diffraction angle are plotted against the tin concentration. The dashed lines are the best linear fit of the data.
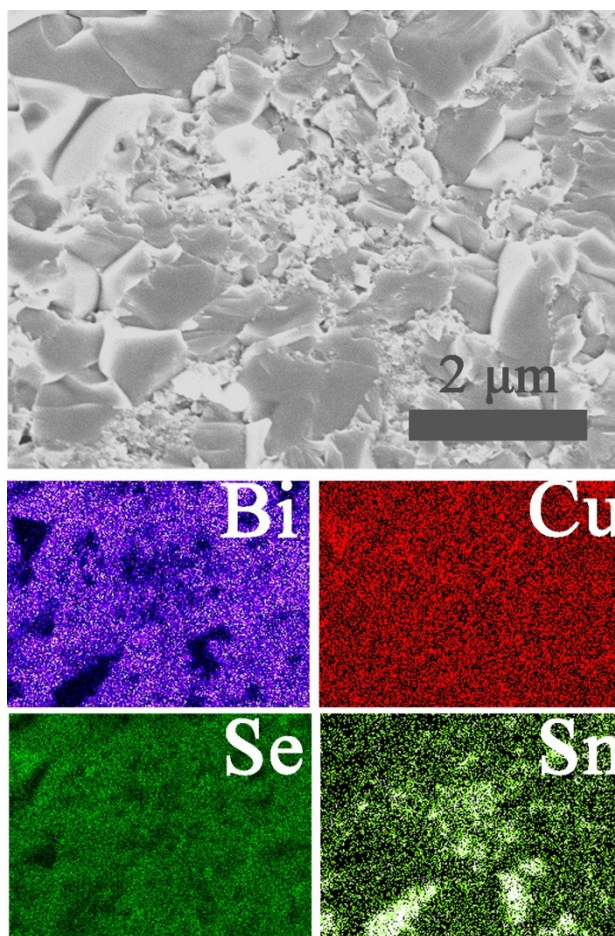
Figure S3. SEM image and EDS mapping of a selected area with impurity phase for $Bi_{0.9}Sn_{0.1}CuSeO$. Inhomogeneous distribution of elements as detected by EDS indicates that the impurity is Sn-rich.

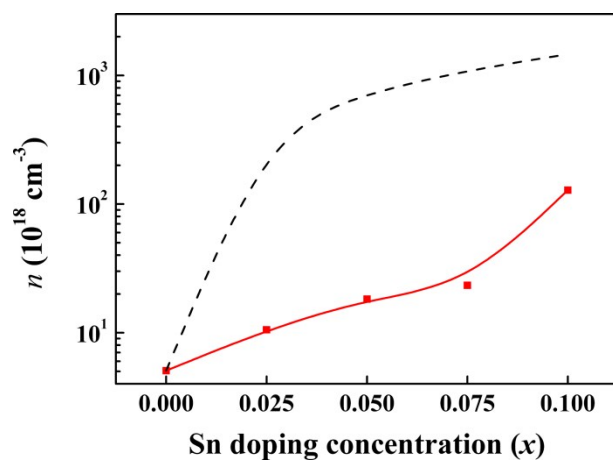**Figure S4**. The expected and measured carrier concentration in $Bi_{1-x}Sn_xCuSeO$ with Sn doping concentration. The dashed line is the expected Hall carrier density calculated by simple charge counting if assuming that every Sn^{2+} creates one hole in the conduction band. The carrier concentration obtained from Hall measurements is given by the red solid symbols with the solid fit line for vision guide.