Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

The effects of Ge doping on thermoelectric performance of p-type polycrystalline SnSe

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Nominal composition	Density(g/cm^3)
SnSe	6.01
$Sn_{0.99}Ge_{0.01}Se$	5.89
$Sn_{0.97}Ge_{0.03}Se$	5.85
$Sn_{0.95}Ge_{0.05}Se$	5.83
$Sn_{0.93}Ge_{0.07}Se$	5.85

Table S1: Density of $(Sn_{1-x}Ge_x)Se$ for x= 0, 0.01, 0.03, 0.05 and 0.07 were measured using Archimedes method.

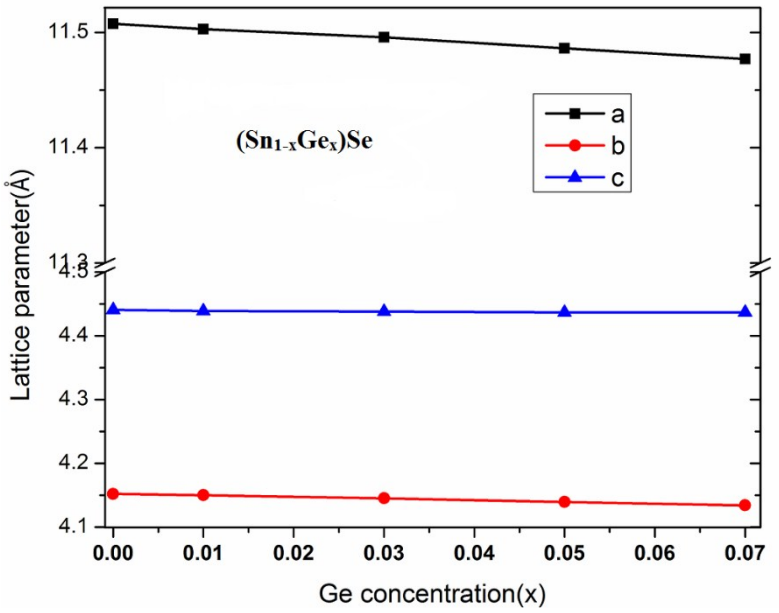

Fig. S1. Lattice parameters derived from the powder XRD patterns of $(Sn_{1-x}Ge_x)Se$ for x=0, 0.01, 0.03, 0.05 and 0.07.

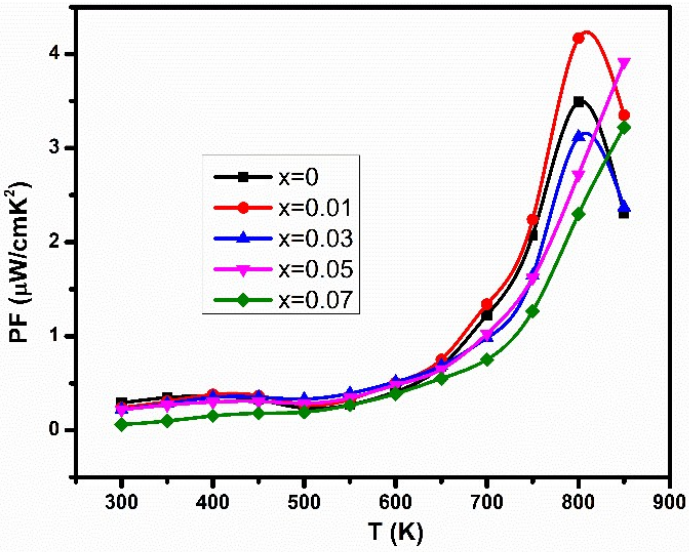

Fig. S2. Power factor as a function of temperature for $(Sn_{1-x}Ge_x)Se$, x=0, 0.01, 0.03, 0.05 and 0.07 measured along the plane perpendicular to the sintering direction.

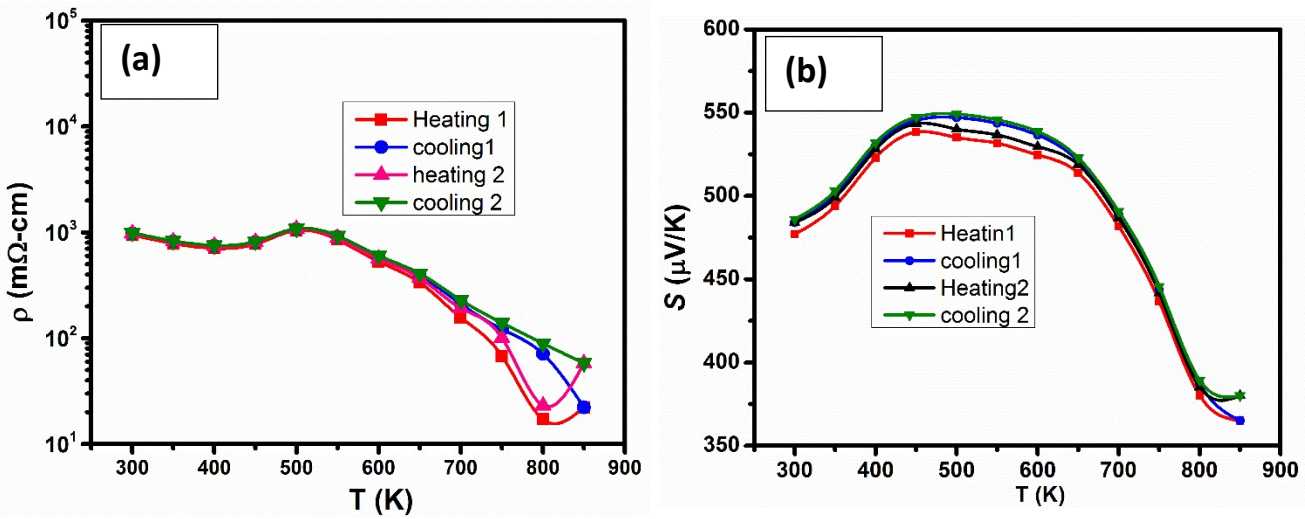

Fig. S3. The thermoelectric properties of $Sn_{0.99}Ge_{0.01}Se$ polycrystalline tested by thermal cycling, indicating a very good thermal stability for the Ge doped SnSe below the transition temperature. (a) Electrical resistivity versus temperature and (b) Seebeck coefficient versus temperature.

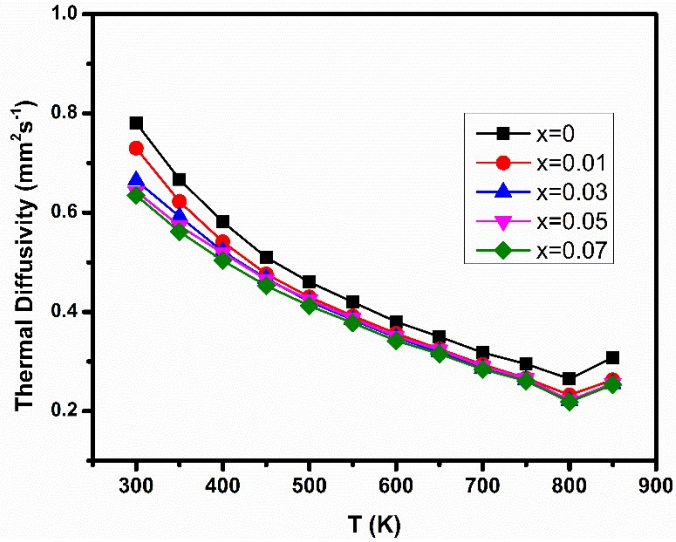

Fig. S4. Temperature dependence of thermal diffusivity measured along the plane perpendicular to the sintering direction of $(Sn_{1-x}Ge_x)Se$ for x=0, 0.01, 0.03, 0.05 and 0.07.

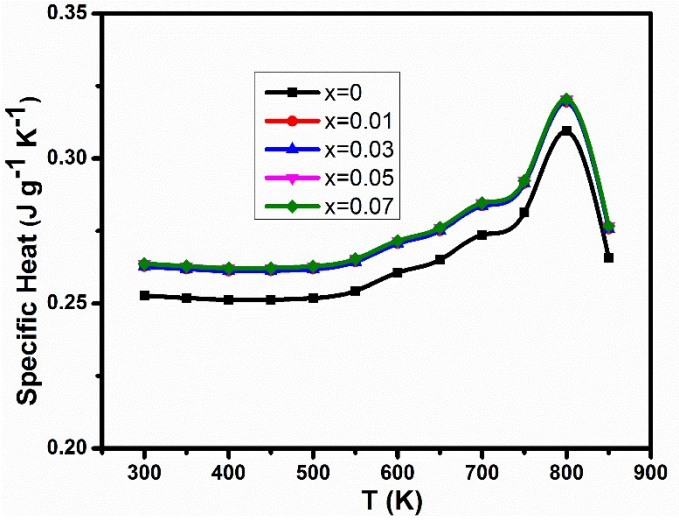

Fig. S5. Temperature dependence of specific heat of $(Sn_{x-1}Ge_x)Se$ for x=0, 0.01, 0.03, 0.05 and 0.07. It is noticed that the Cp has an upturn at ~800 K, which is related to the phase transition at this temperature.