

***Electronic Supplementary Information (ESI)***

**Lead-free Thermoelectrics: Promising Thermoelectric Performance  
in *p*-type SnTe<sub>1-x</sub>Se<sub>x</sub> System<sup>†</sup>**

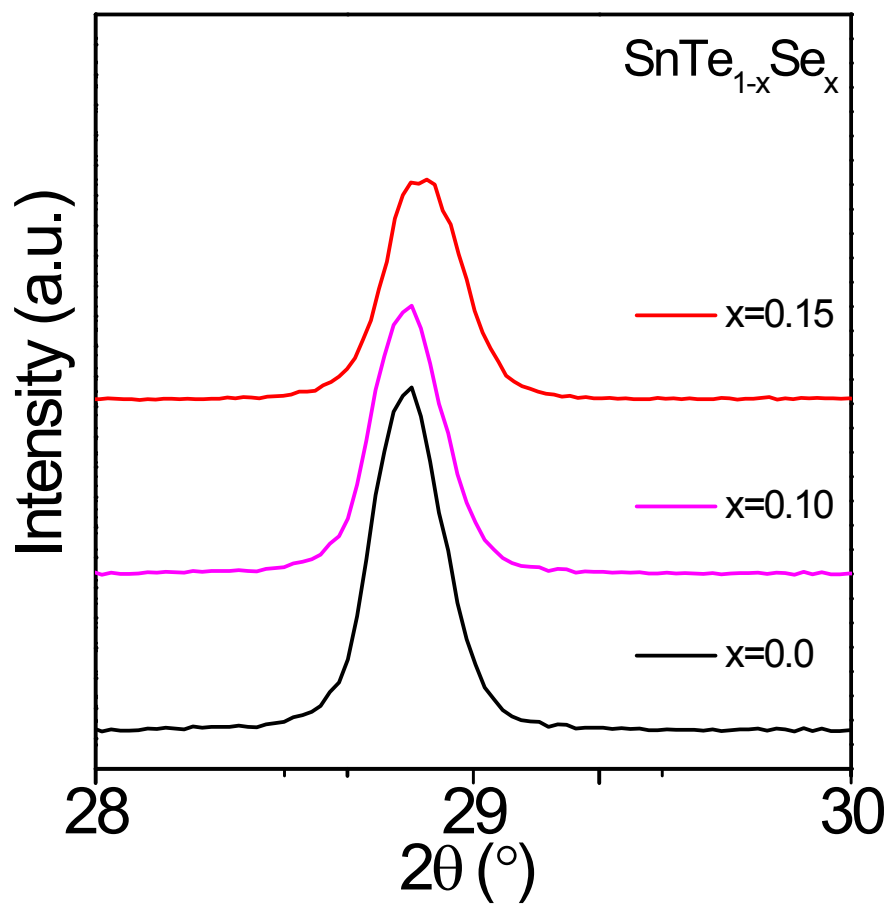
Ananya Banik<sup>a</sup> and Kanishka Biswas <sup>\*, a</sup>

*<sup>a</sup>New Chemistry Unit,*

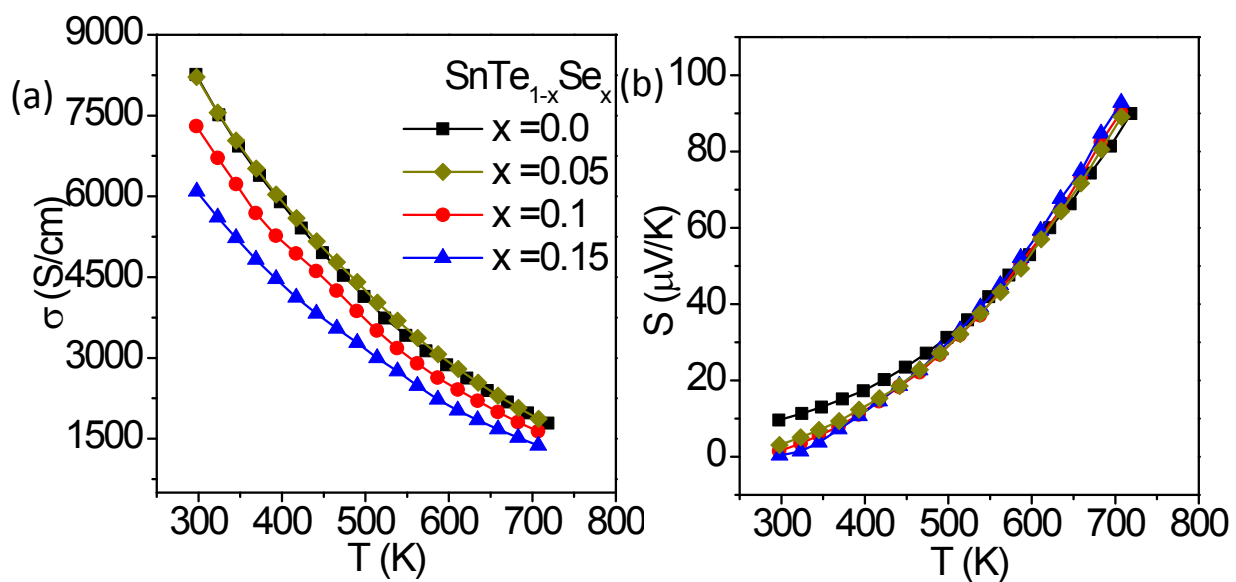
*Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR),*

*Jakkur P.O., Bangalore 560 064 (India)*

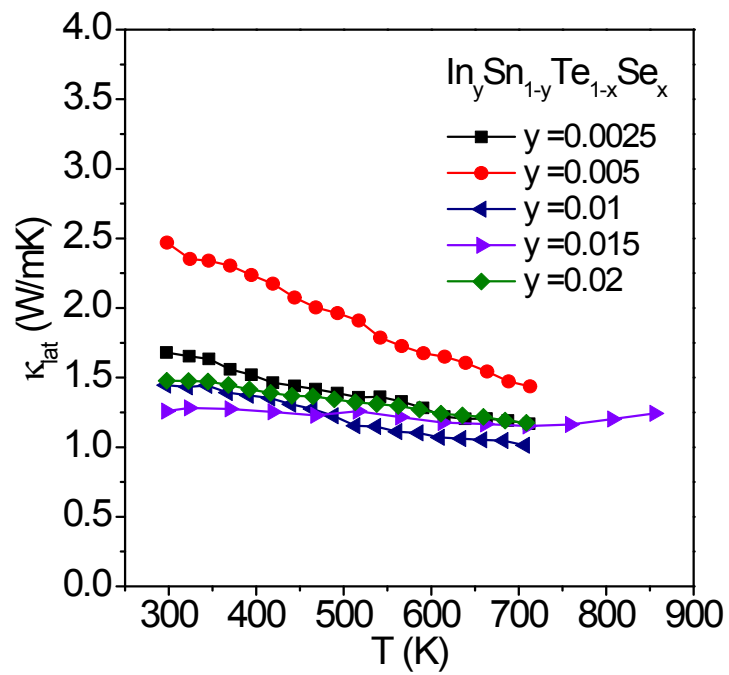
*\*Email: kanishka@jncasr.ac.in*



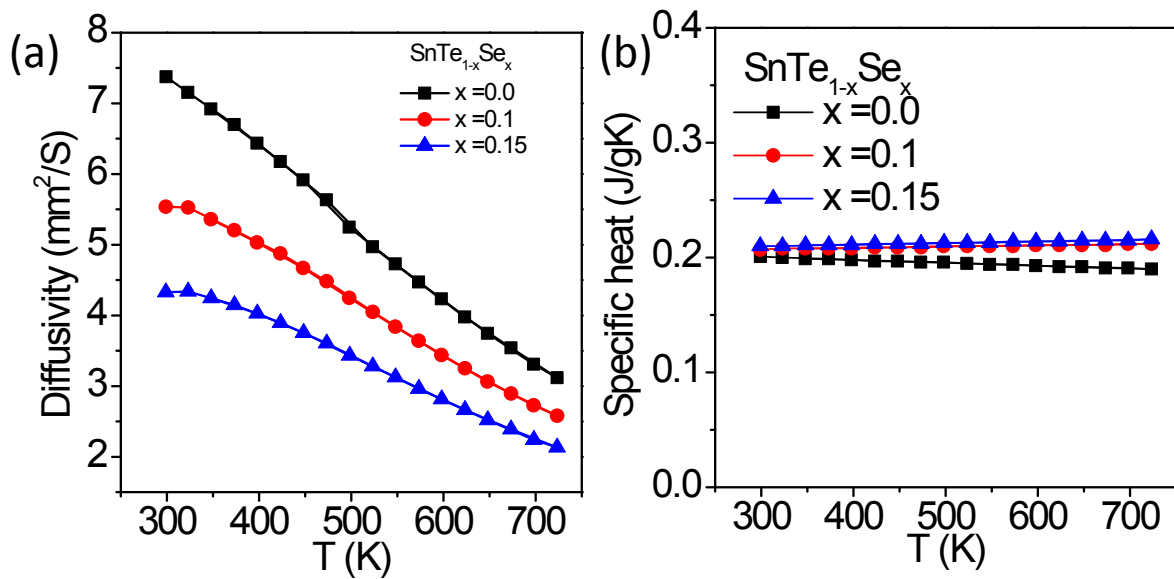
**Fig. S1** Zoomed powder XRD pattern of  $\text{SnTe}_{1-x}\text{Se}_x$  [ $x=0-0.15$ ].



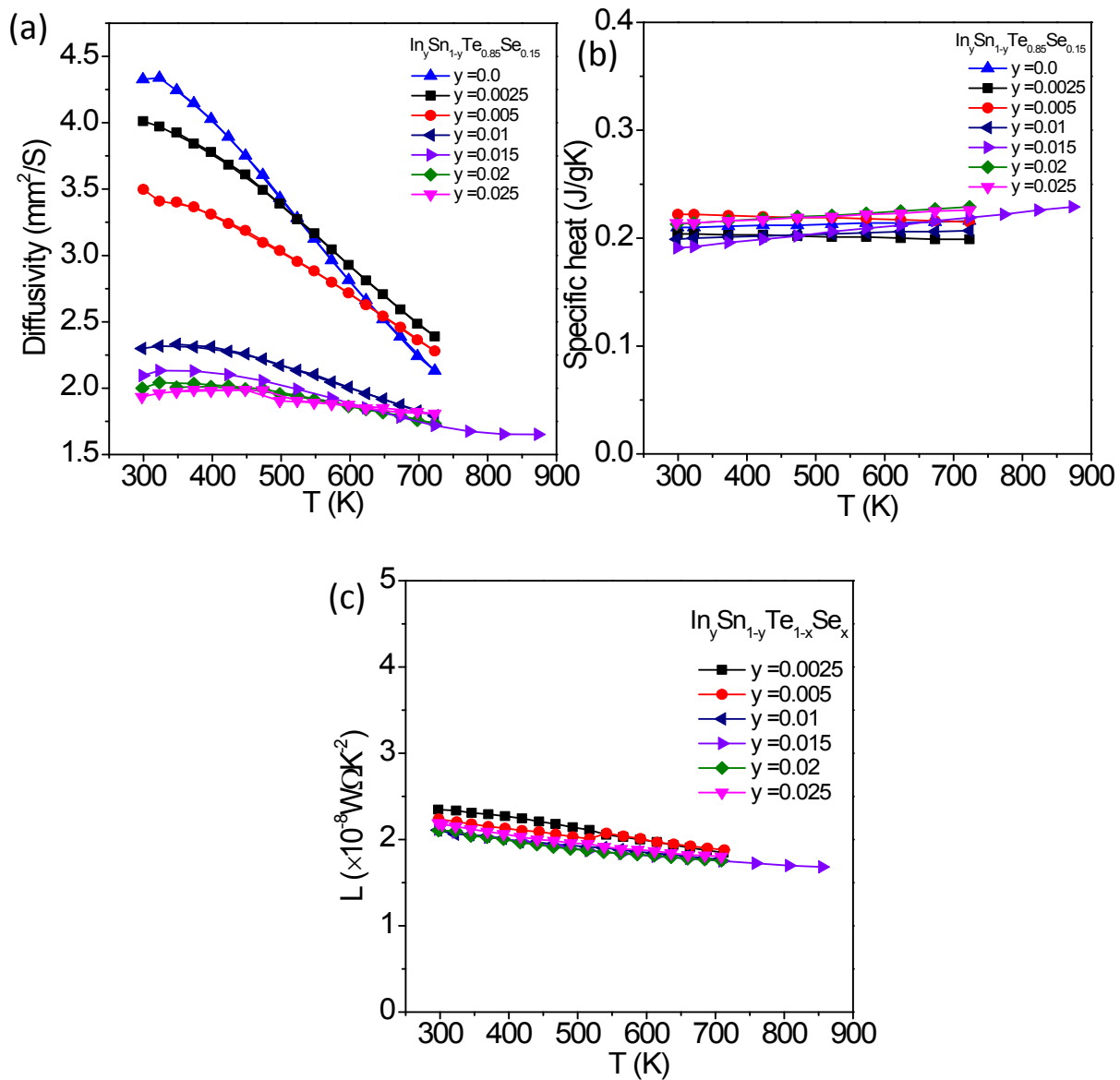
**Fig. S2** Temperature dependent (a) electrical conductivity and (b) Seebeck coefficient of SnTe<sub>1-x</sub>Se<sub>x</sub> [x =0-0.15].



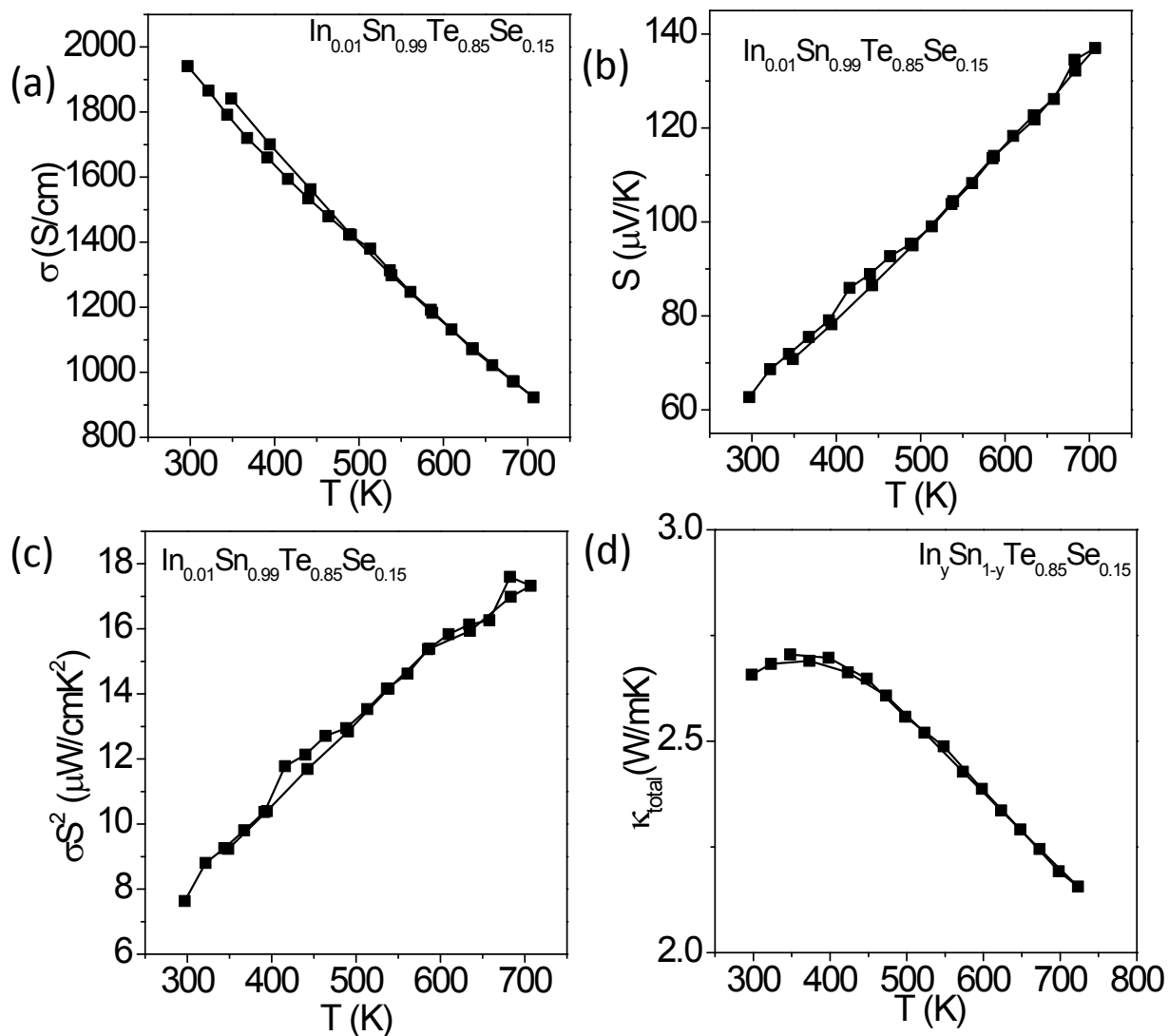
**Fig. S3** Temperature dependent lattice thermal conductivity of  $\text{In}_y\text{Sn}_{1-y}\text{Te}_{0.85}\text{Se}_{0.15}$  [ $y=0-0.02$ ].



**Fig. S4** Temperature dependent (a) thermal diffusivity and (b) heat capacity of SnTe<sub>1-x</sub>Se<sub>x</sub> [x = 0-0.15].



**Fig. S5** Temperature dependent (a) thermal diffusivity, (b) heat capacity and (c) Lorenz number of  $\text{In}_y\text{Sn}_{1-y}\text{Te}_{0.85}\text{Se}_{0.15}$  [ $y=0-0.025$ ].



**Fig. S6** Heating and cooling cycle (a) electrical conductivity, (b) Seebeck coefficient, (c) power factor and (d) total thermal conductivity data of  $\text{In}_{0.01}\text{Sn}_{0.99}\text{Te}_{0.85}\text{Se}_{0.15}$ .