Supporting Information

Low Thermal Conductivity and High Thermoelectric Performance in Sb and Bi co-doped GeTe: Complementary Effect of Band Convergence and Nanostructuring

Suresh Perumal[1], Pavithra Bellare[2], U. Sandhya Shenoy[3], Umesh V. Waghmare[3], and Kanishka Biswas[1]*

[1]*New Chemistry Unit, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Jakkur P.O., Bangalore 560064 (India)*

[2]*Materials Research Centre, Indian Institute of Science, Bangalore, 560 012, (India)*

[3]*Theoretical Sciences Unit, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Jakkur P.O., Bangalore 560064 (India)*

**E-mail: kanishka@jncasr.ac.in*

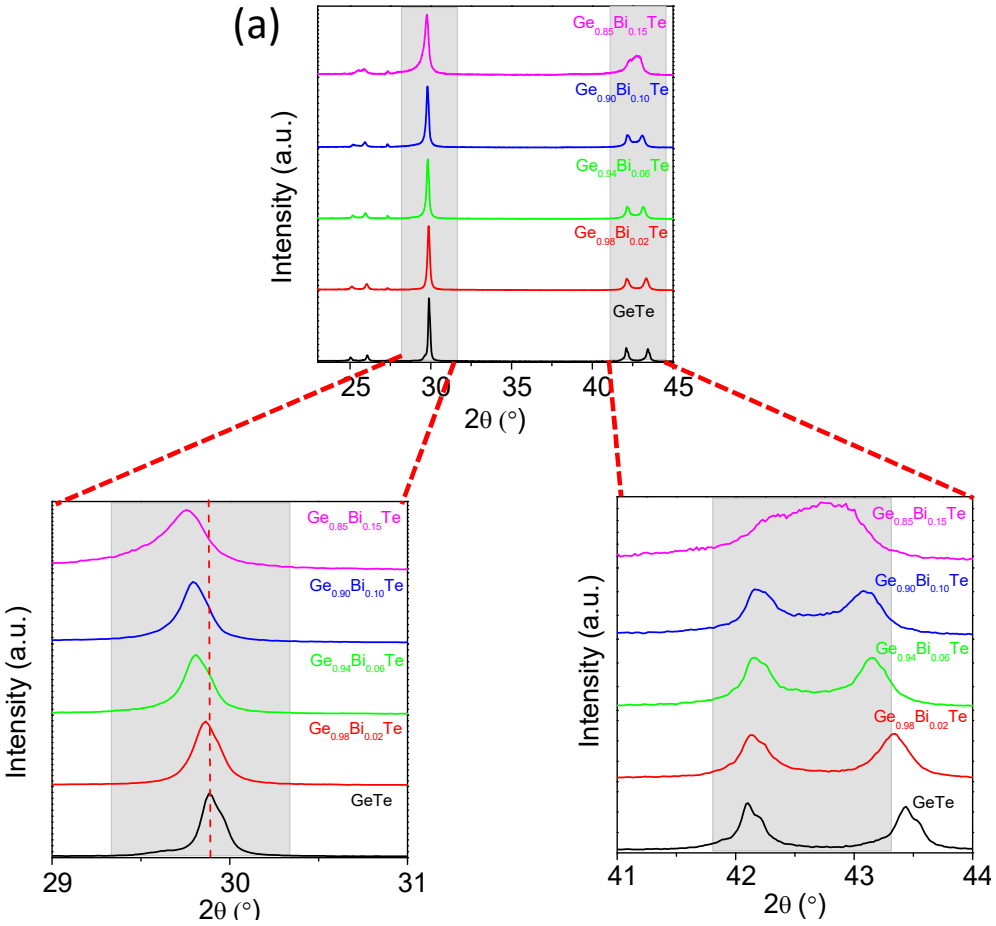

Fig. S1. The powder XRD pattern of $Ge_{1-x}Bi_xTe$ (x = 0−0.15) samples.

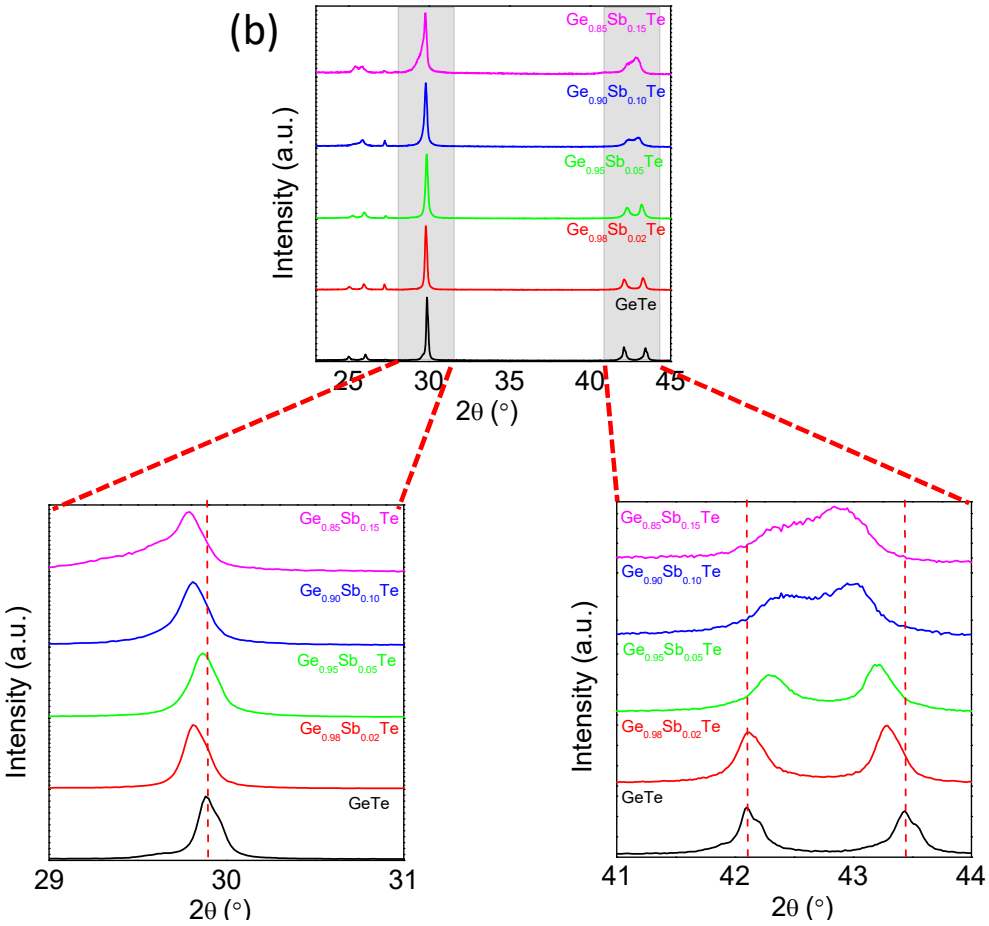

Fig. S2. The powder XRD pattern of $Ge_{1-x}Sb_xTe$ (x = 0−0.15) samples.

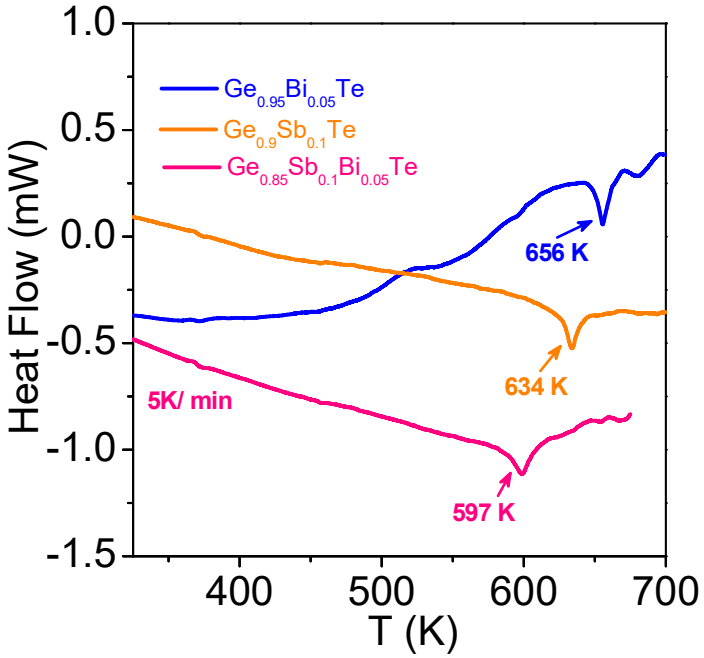

Fig. S3. DSC curves of $Ge_{0.95}Bi_{0.05}Te$, $Ge_{0.90}Sb_{0.10}Te$ and $Ge_{0.85}Bi_{0.05}Sb_{0.10}Te$ samples.

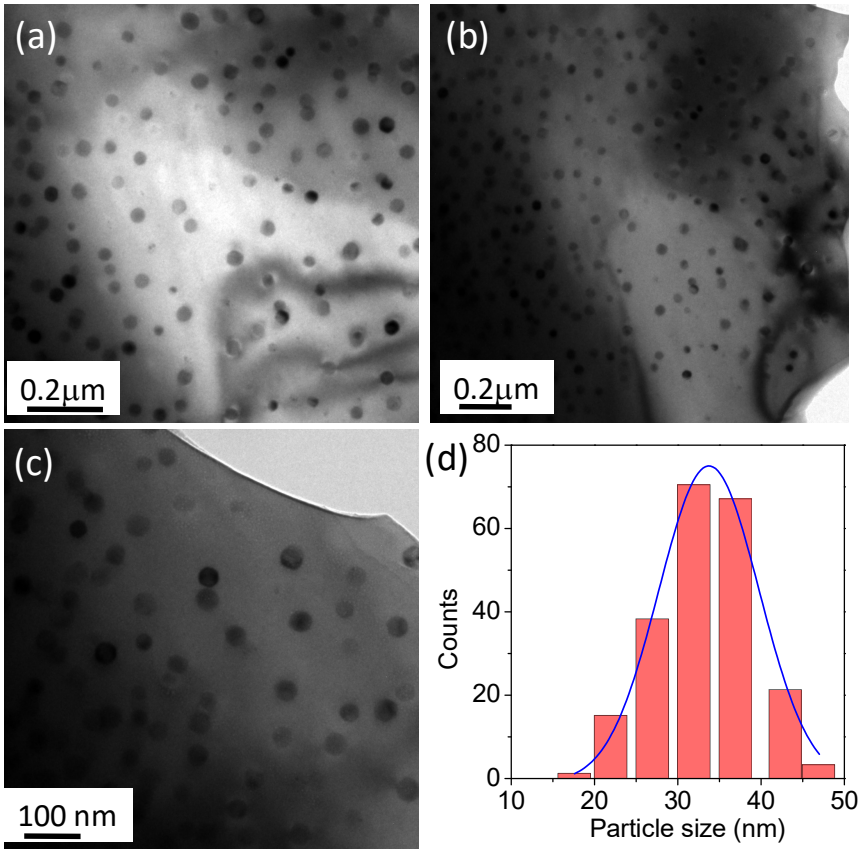

Fig. S4. (a-c) low and high magnification TEM micrographs of $Ge_{0.85}Bi_{0.05}Sb_{0.10}Te$ at different regions and (d) the particle size distribution.

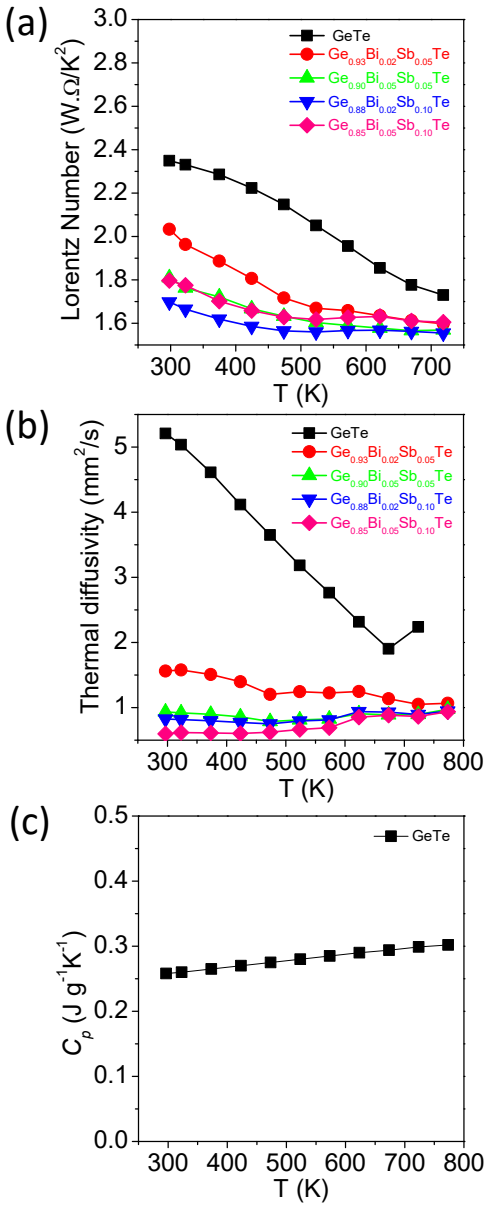

Fig. S5. Temperature dependence of (a) Lorentz number, (b) thermal diffusivity and (c) specific heat of $Ge_{1-x-y}Bi_xSb_yTe$ samples.

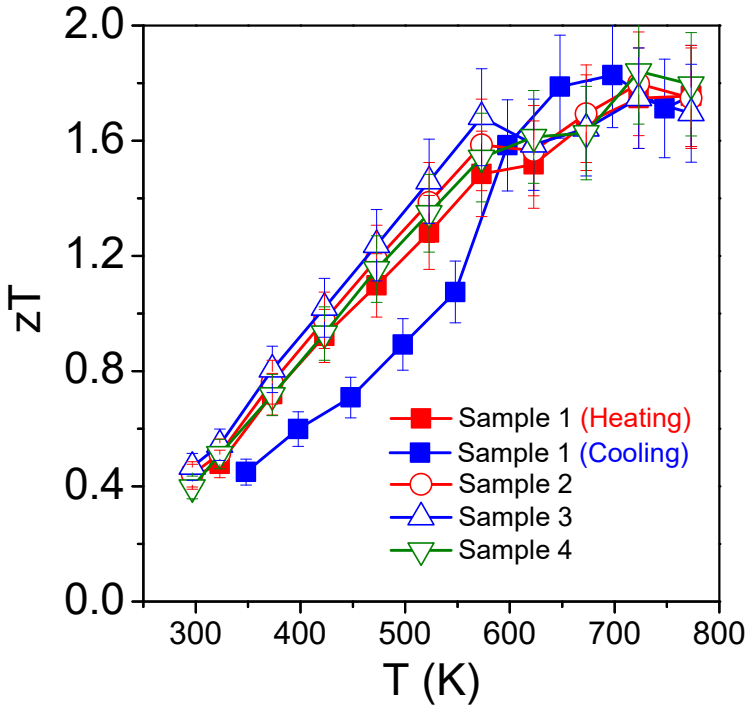

Fig. S6. Reproducibility and heating-cooling cycles of $Ge_{0.85}Bi_{0.05}Sb_{0.10}Te$ sample.