## Supplementary information:

# High Thermoelectric Figure of Merit in Nanostructured *p*-type PbTe-MTe (M = Ca, Ba)

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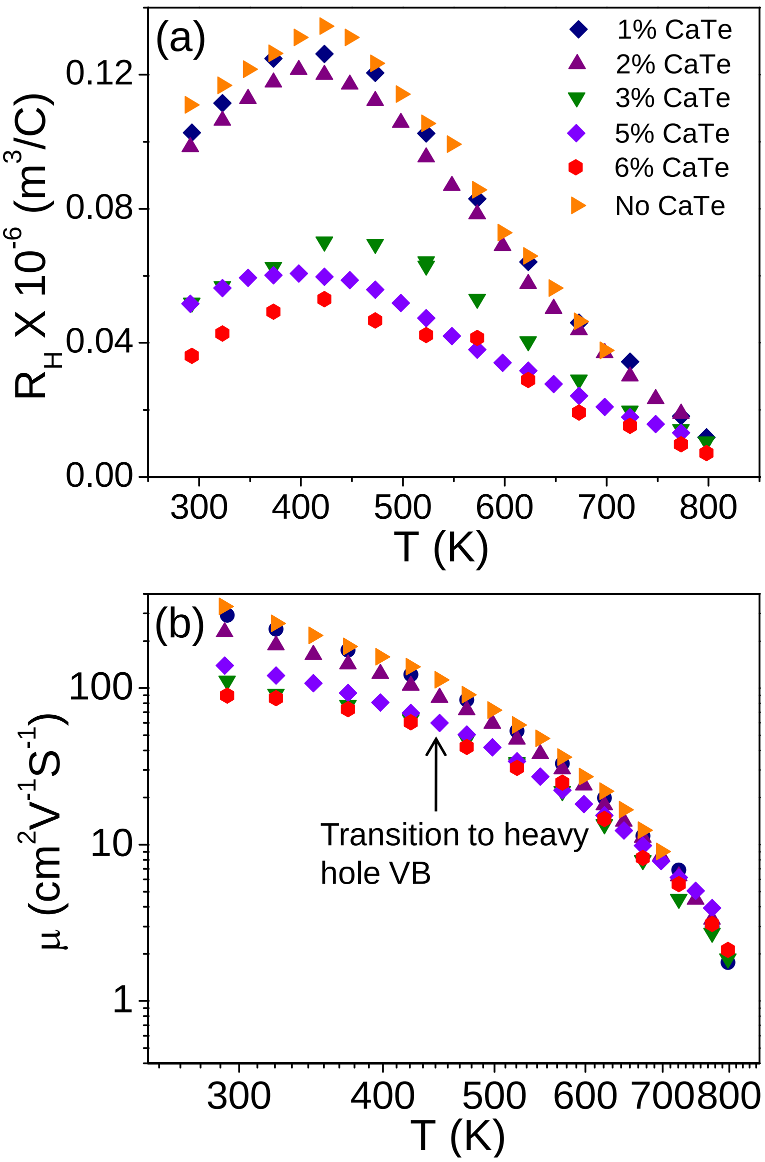


**Fig. S1** Temperature dependent (a) Hall coefficient and (b) hole mobility data (log-log scale plot) of PbTe-CaTe samples doped with 1 % $Na_2Te$ and a control sample, PbTe doped with 1 % $Na_2Te$. Decrease in the mobility was observed at ~450 K due to transition to the transition to the heavy hole valance band.

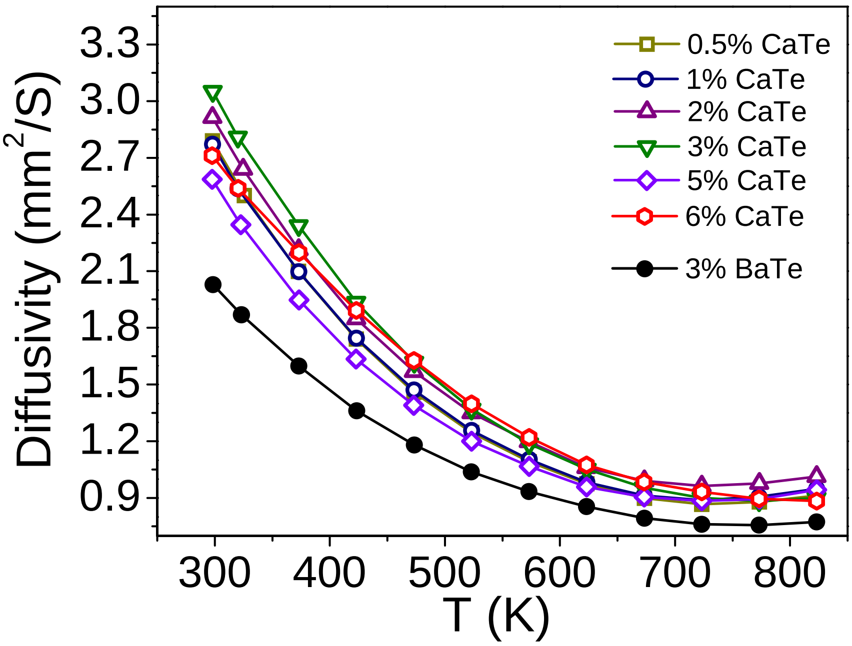


**Fig. S2** Temperature dependent thermal diffusivity data of all the PbTe-CaTe and PbTe-BaTe samples doped with 1% $Na_2Te$. Thermal diffusivities were measured using laser flash diffusivity method in a Netzsch LFA-457.

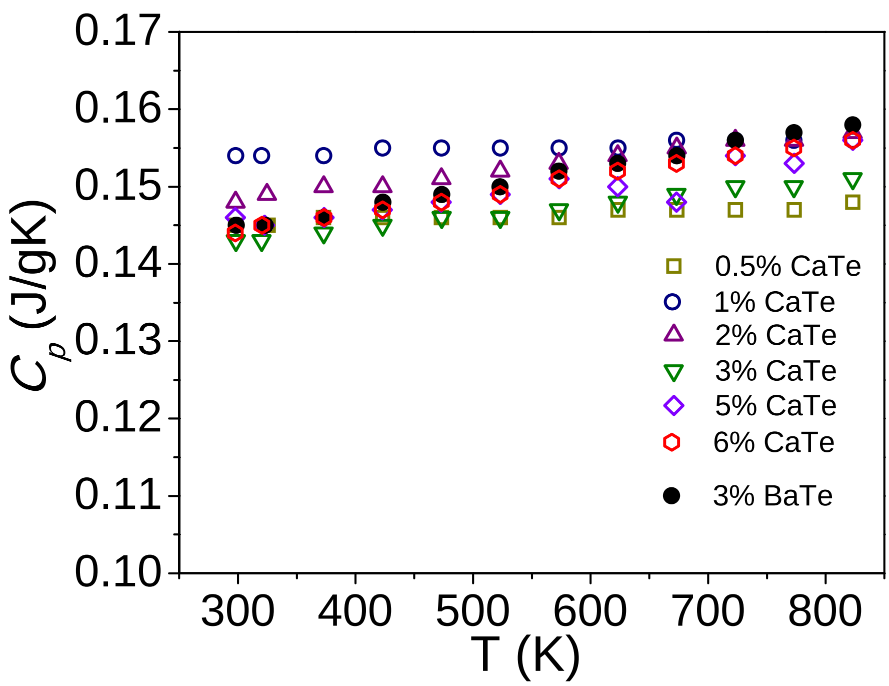


**Fig. S3** Temperature dependent heat capacity, $C_p$, of all the PbTe-CaTe and PbTe-BaTe samples doped with 1% $Na_2Te$. $C_p$ was indirectly derived using standard sample (pyroceram 9606) in the range 300-825 K at time of diffusivity measurement in a Netzsch LFA-457. Cooling cycle heat capacity data was obtained by the linear fitting of heating cycle heat capacity data with respect to the temperature. $C_p$ values are having close match with the literature reported value for pure PbTe.[1, 2]

## References

(1) R. Blachnik, R., Igel, *Z. Naturforsch. B*, 1974, **29**, 625.

(2) Z. H., Dughaish, *Physica B*, 2002, **322**, 205.