Electronic Supplementary Material (ESI) for RSC Advances.

Enhancement of thermoelectric properties by effective K-doping and nano precipitation in quaternary compounds of $(Pb_{1-x}K_xTe)_{0.70}(PbSe)_{0.25}(PbS)_x$

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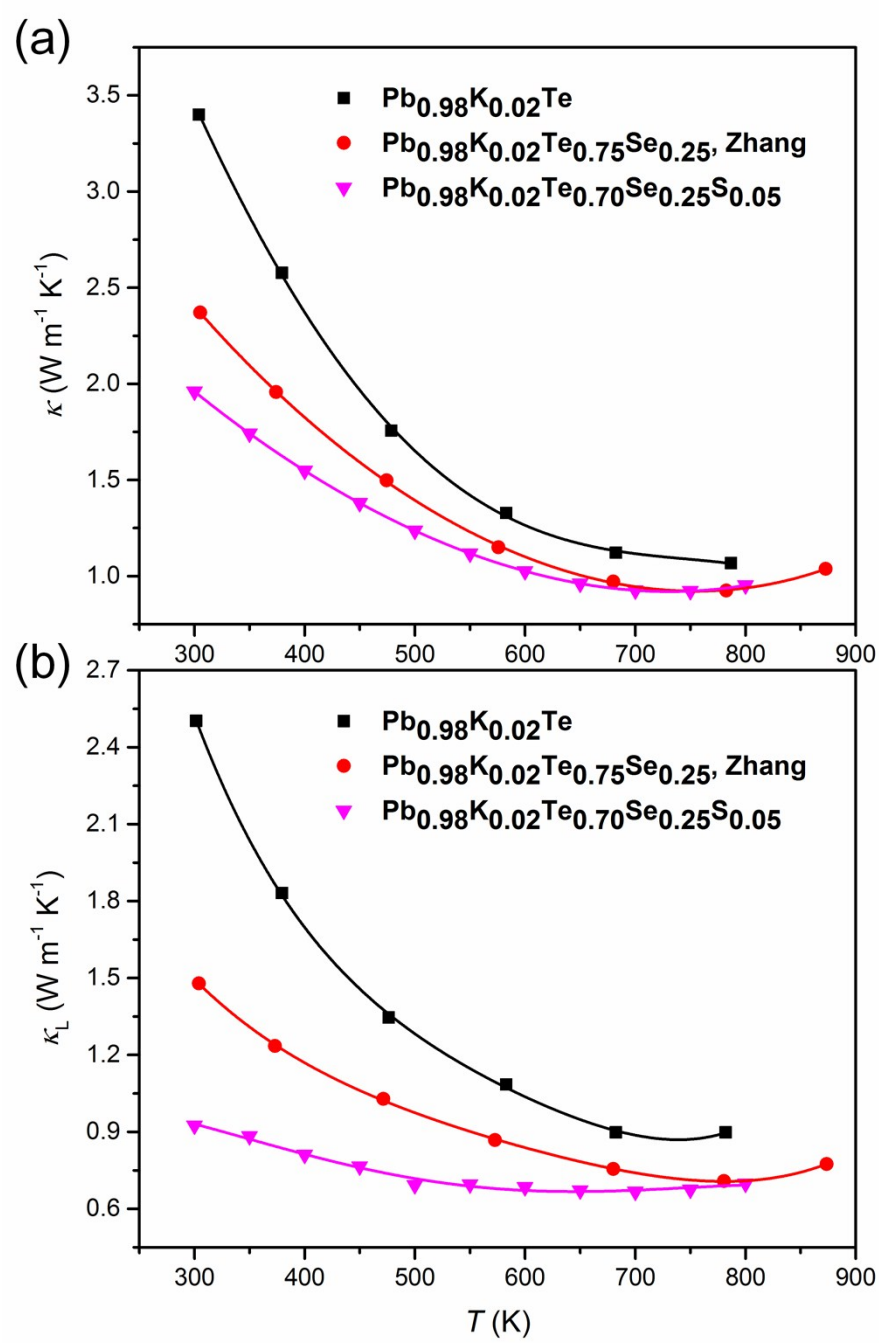

Fig. S1. Comparative temperature-dependent thermal conductivity (a) and lattice thermal conductivity (b) of the compounds as indicated.

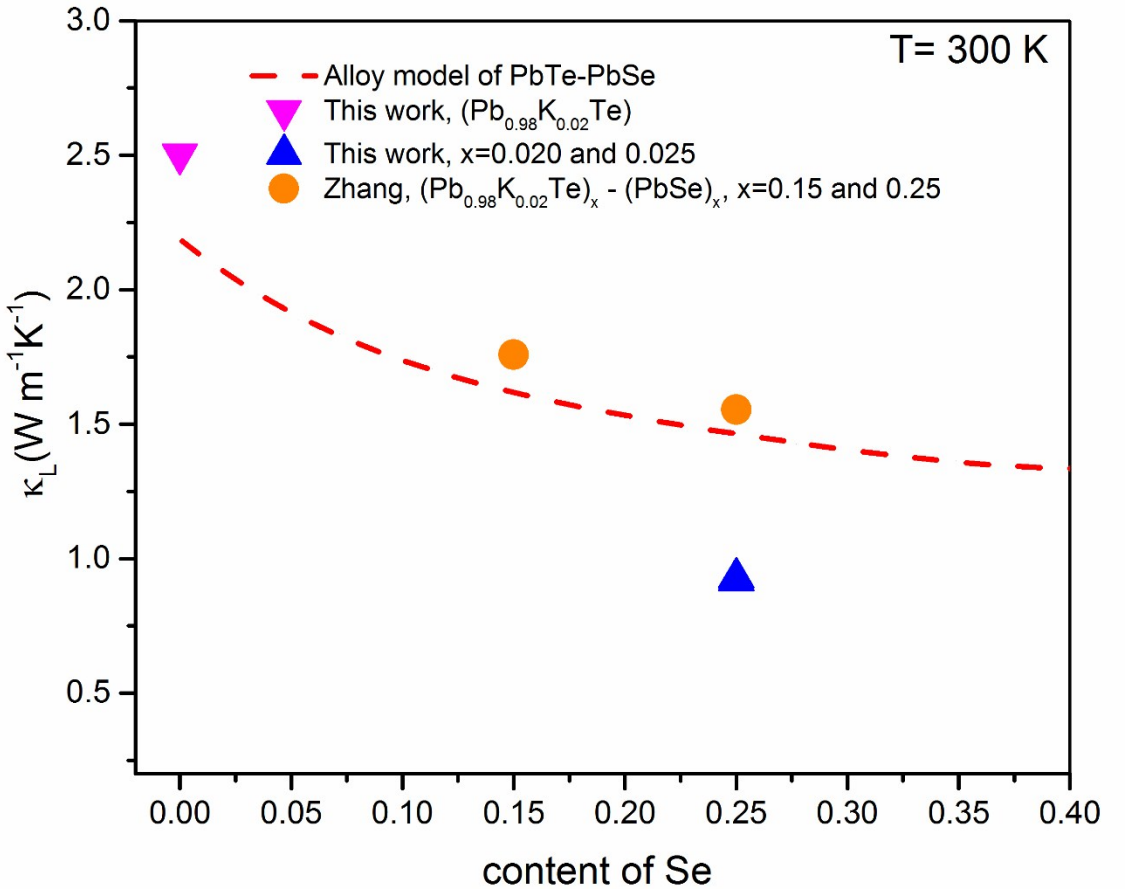

Fig. S2. Theoretical calculation of lattice thermal conductivity κ_L of the Callaway's alloy model (red dashed line) and experimental lattice thermal conductivity of $Pb_{0.98}K_{0.02}Te$, $(Pb_{1-x}K_xTe)_{0.70}(PbSe)_{0.25}(PbS)_{0.05}$ (x = 0.02 and 0.25), and $(Pb_{0.98}K_{0.02}Te)_{1-x}(PbSe)_x$ [27] with respect to Se concentration.

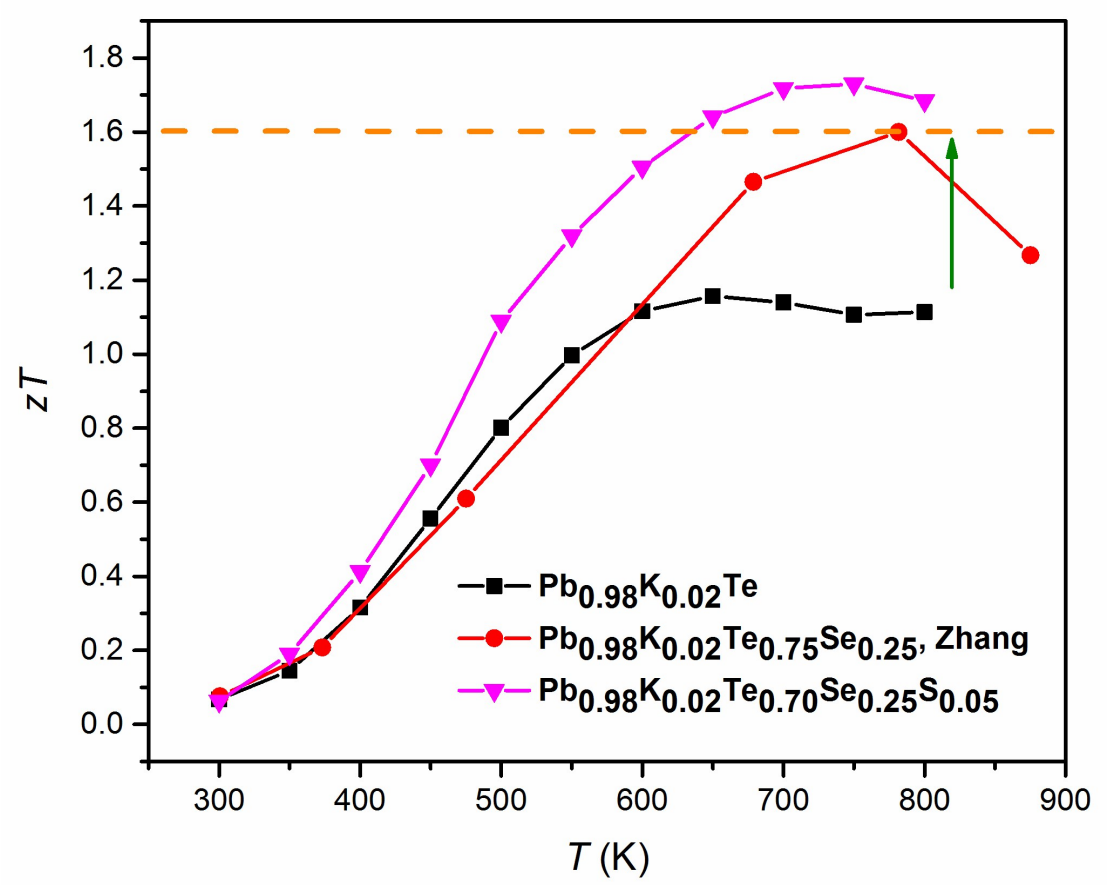

Fig. S3. Comparative temperature-dependent *ZT* values of $Pb_{0.98}K_{0.02}Te$, $(Pb_{1-x}K_xTe)_{0.70}(PbSe)_{0.25}(PbS)_{0.05}$ (x = 0.02 and 0.25), and $(Pb_{0.98}K_{0.02}Te)_{1-x}(PbSe)_x$ [27].

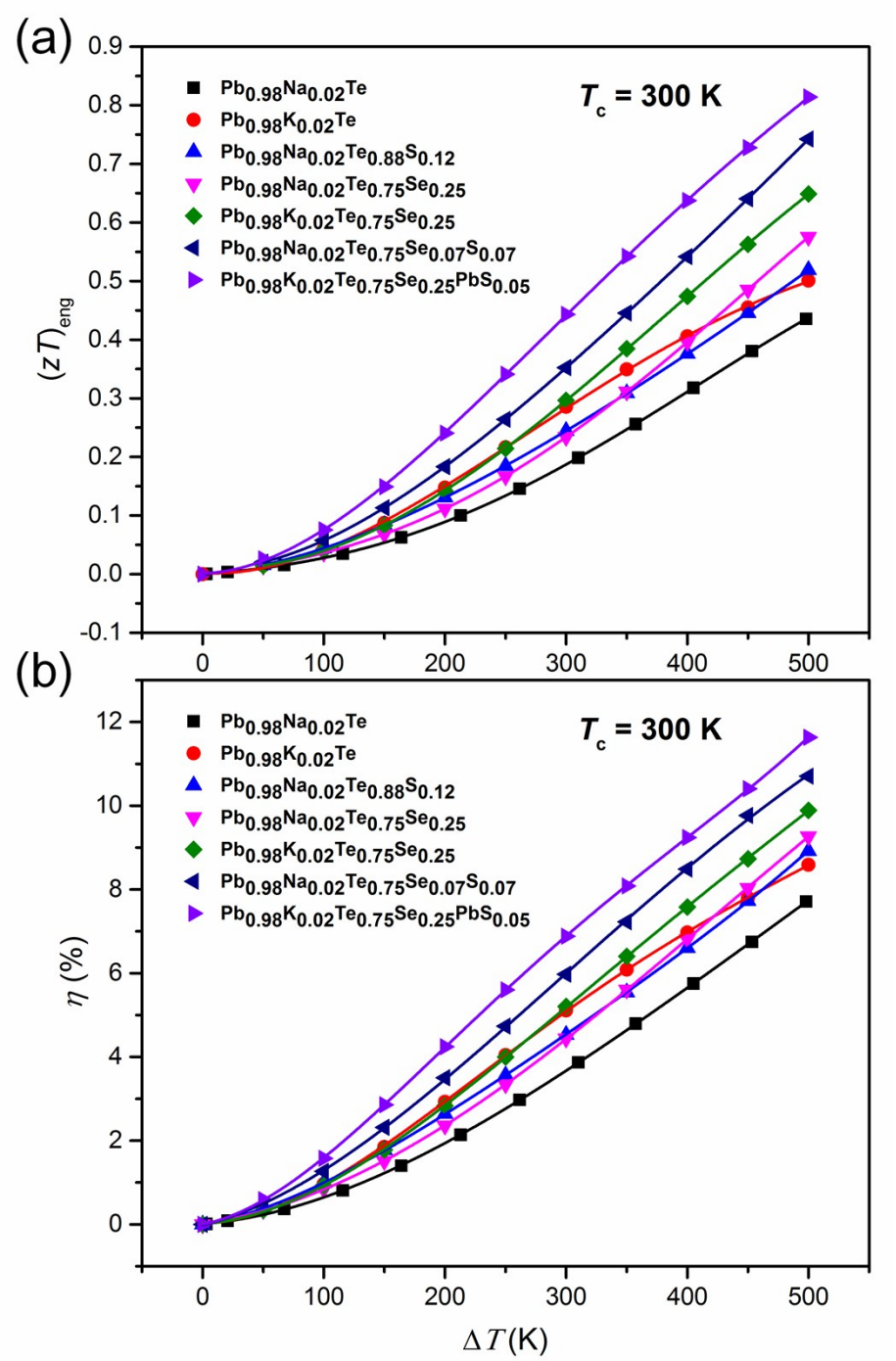

Fig. S3. Comparative engineering $(ZT)_{eng}$ (a) and efficiency η (b) in terms of temperature difference ΔT at T_c = 300 K for various compounds as indicated.