Supporting Information

Strengthened Phonon Scattering and Band Convergence Synergistically Realize High-Performance SnTe Thermoelectric

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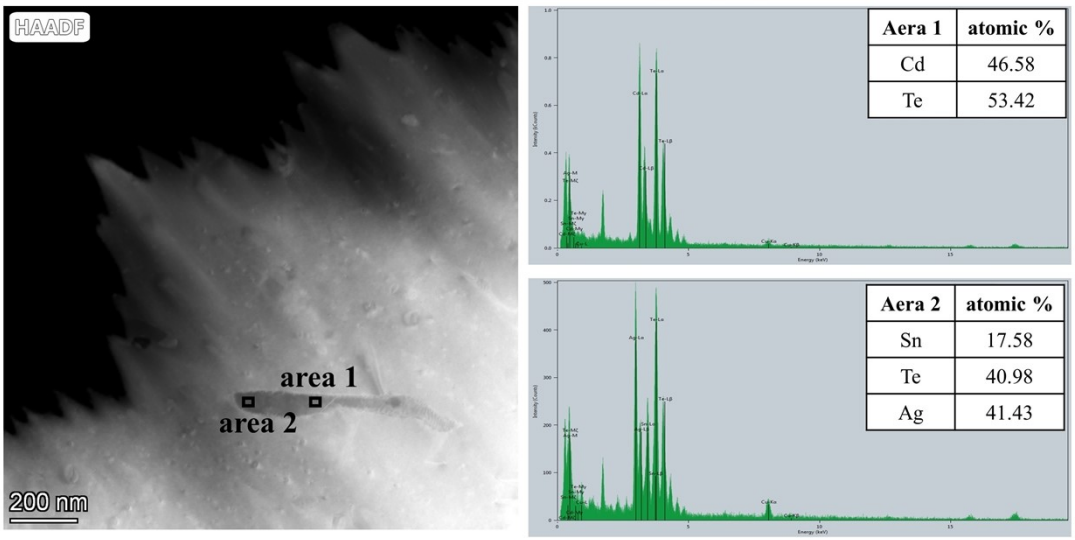

Figure S1. The HAADF image and its elements composition results of area 1 and area 2.

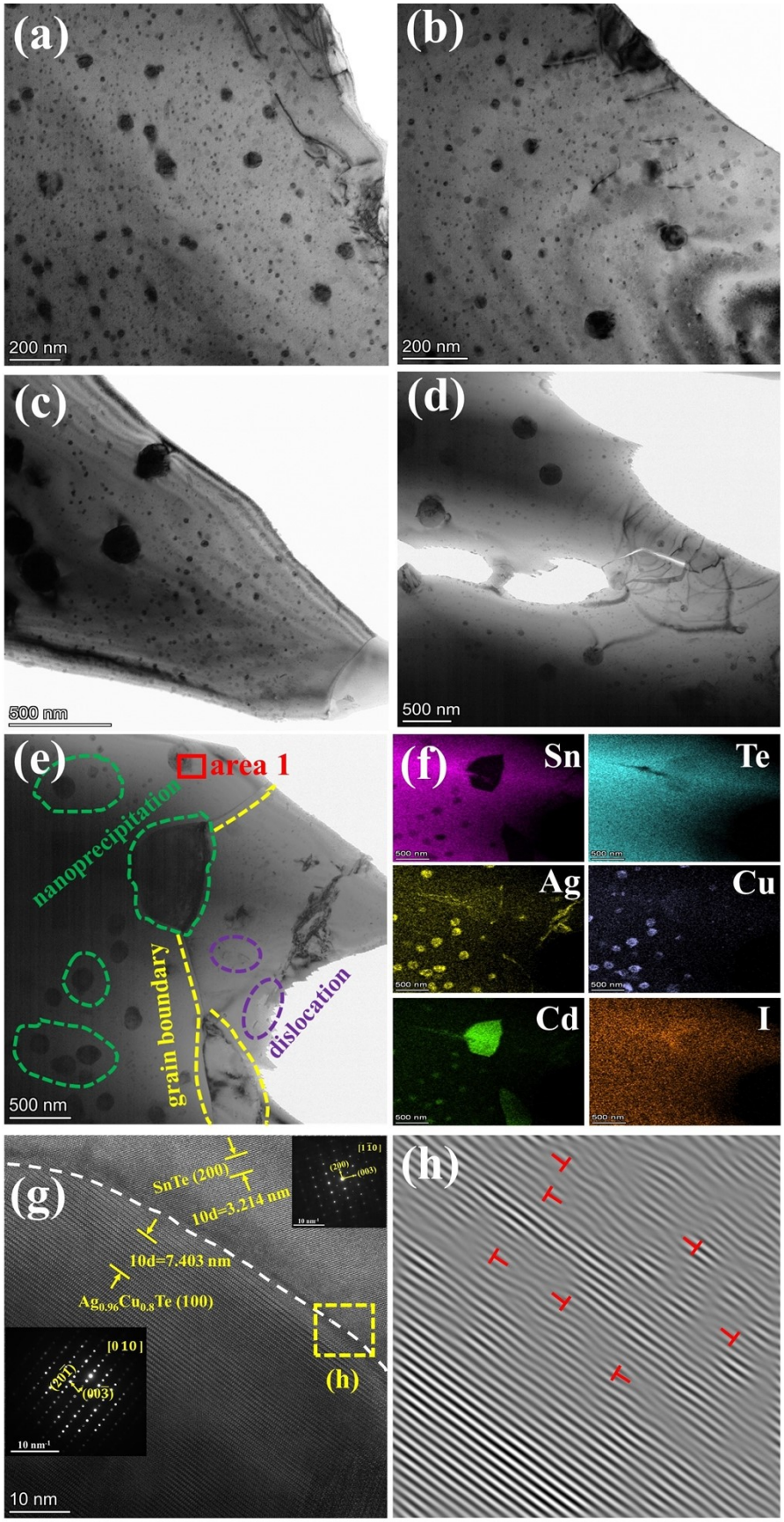

Figure S2. TEM analyses of the $(Sn_{0.96}Cd_{0.04}Te_{0.99}I_{0.01})_{0.94}(AgCuTe)_{0.06}$ sample: (a-e) The medium magnification TEM image to show the grain boundaries, dislocations and

nanoprecipitates defects, (f) its corresponding EDS mapping of Sn, Te, Ag, Cu, Cd, I; (g) The high-resolution TEM image from selected area "1" in (e) near the nanoprecipitate and the inset is the selected area electron diffraction (SAED) pattern along the $[1\bar{1}0]$ direction of SnTe and the $[010]$ direction of $Ag_{0.96}Cu_{0.8}Te$, (h) the IFFT image from the selected area in (g) to display the dislocations distribution.

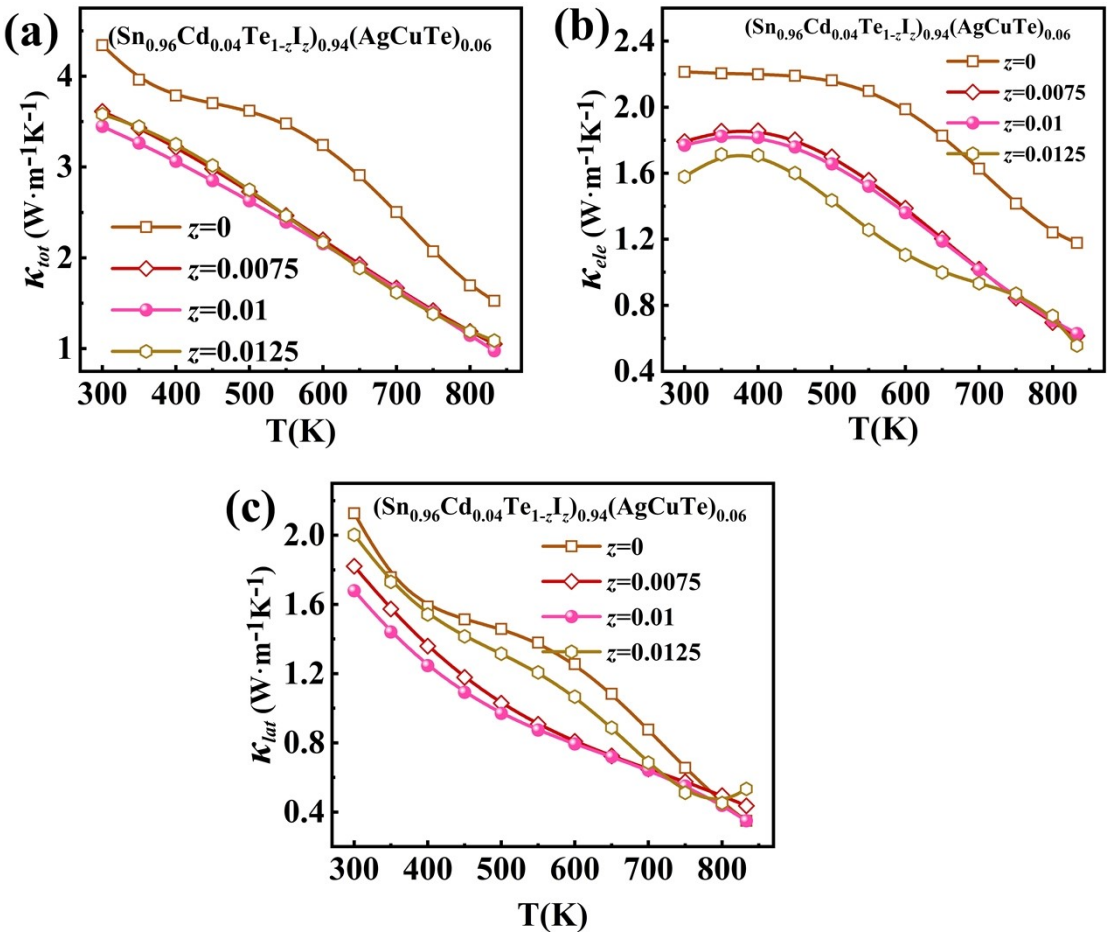

Figure S3. The temperature dependent thermal transport properties of $(Sn_{0.96}Cd_{0.04}Te_{1-z}I_z)_{0.94}(AgCuTe)_{0.06}$ samples (z = 0, 0.0075, 0.01, 0.0125): (a) total thermal conductivity κ_{tot}, (b) electrical thermal conductivity κ_{ele}, (c) lattice thermal conductivity κ_{lat}.