Supporting Information
Band and microstructure engineering toward high thermoelectric performance in SnTe

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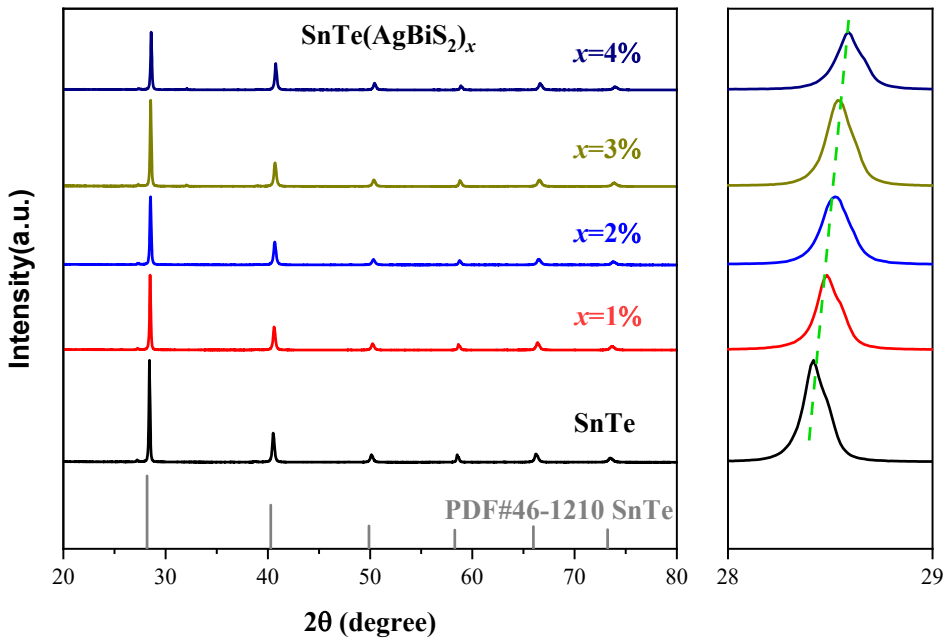

Figure S1 Powder XRD patterns and Enlargement of the powder XRD patterns at 28°~ 29° for all $SnTe(AgBiS_2)_x$ (x = 1%, 2%, 3%, and 4%) samples.

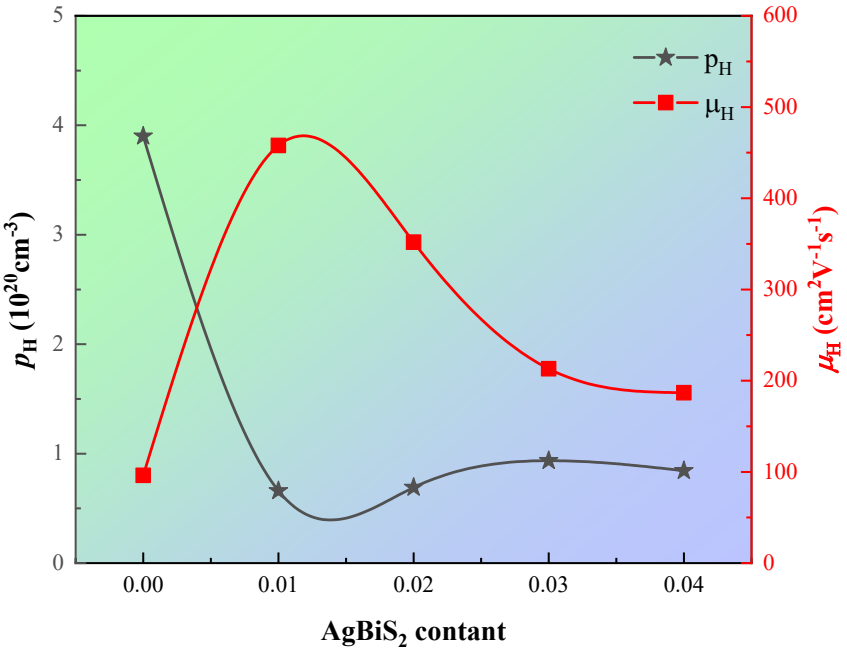

Figure S2 The relationship between Hall carrier concentration and Hall mobility with alloying $AgBiS_2$ content.

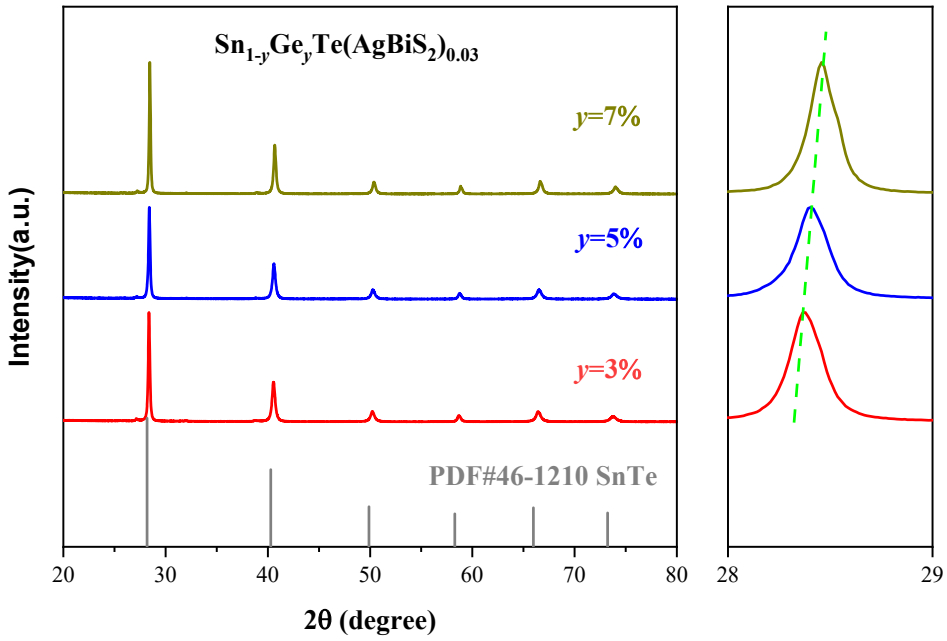

Figure S3 Powder XRD patterns and Enlargement of the powder XRD patterns at 28°~ 29° for all $Sn_{1-y}Ge_yTe(AgBiS_2)_{0.03}$ (y = 3%, 5%, and 7%) samples.

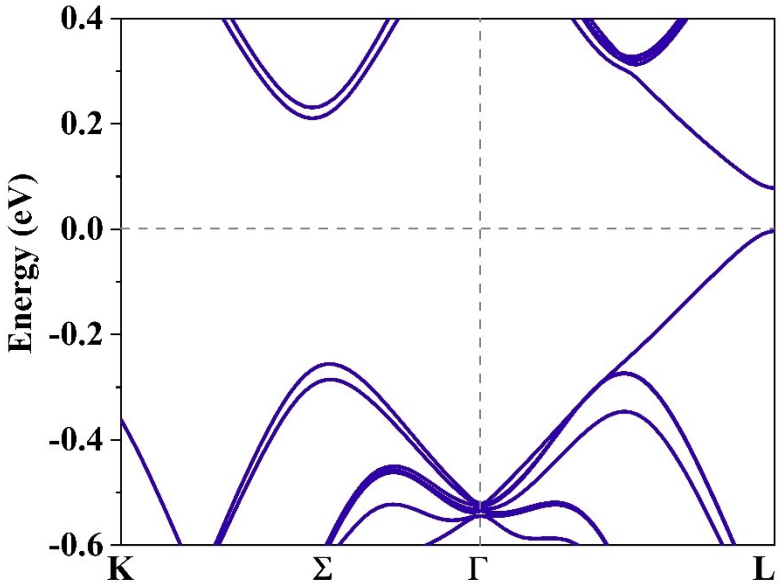

Figure S4 Band structures of Ge doped SnTe.

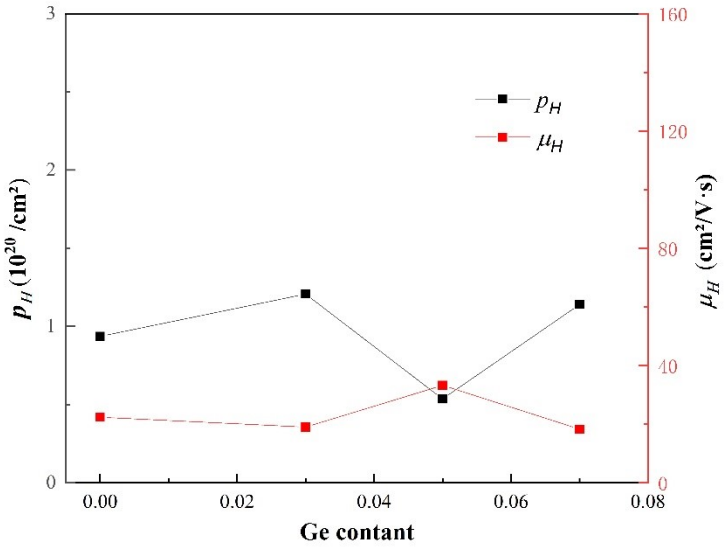

Figure S5 The relationship between Hall carrier concentration and Hall mobility with Ge doping content.

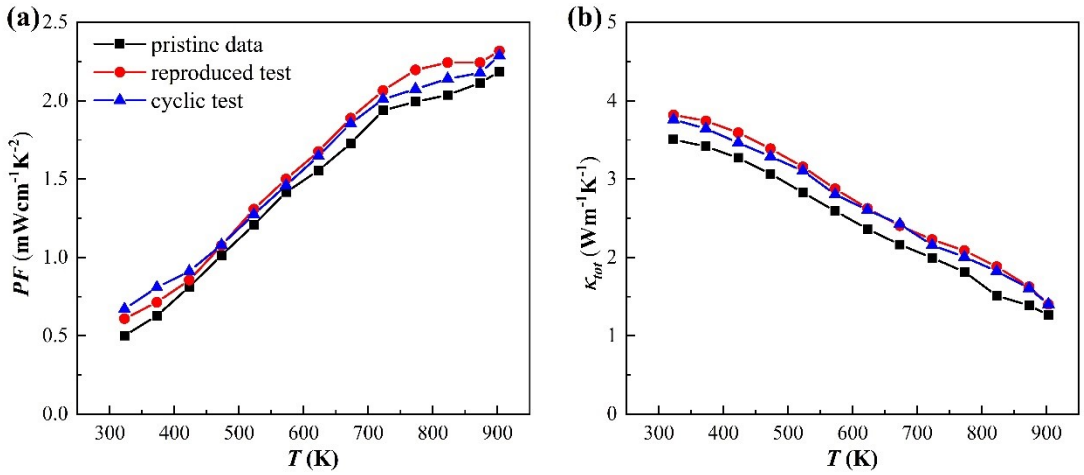

Figure S6 The cycling stability and measurement repeatability tests for the sample with the highest *zT* values.

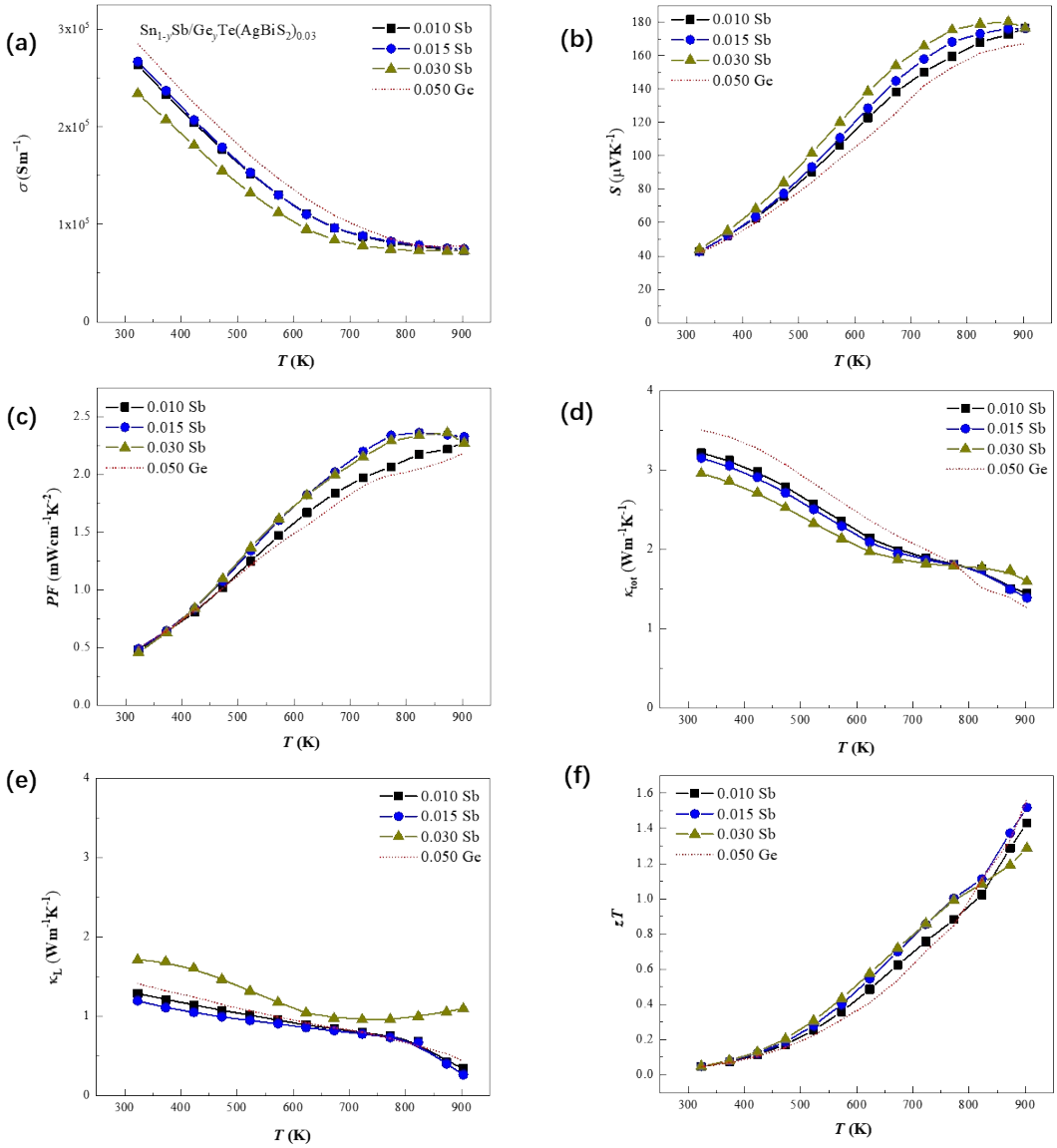

Figure S7 Temperature dependence of (a) electrical conductivity, (b) Seebeck coefficient, (c) power factor, (d) thermal conductivity, (e) lattice thermal conductivity, and (f) zT values of $Sn_{1-y}Sb/Ge_yTe+0.03AgBiS_2$ samples.