

Electronic Supplementary Information

Effects of Ge and Sn substitution on the metal-semiconductor transition and thermoelectric properties of $\text{Cu}_{12}\text{Sb}_4\text{S}_{13}$ tetrahedrite

Yasufumi Kosaka,^a Koichiro Suekuni,^{*b} Katsuaki Hashikuni,^a Yohan Bouyrie,^c
Michihiro Ohta,^c and Toshiro Takabatake^{a,d}

^a *Department of Quantum Matter, Graduate School of Advanced Sciences of Matter,
Hiroshima University, Higashi-Hiroshima, 739-8530, Japan*

^b *Department of Applied Science for Electronics and Materials, Interdisciplinary Graduate
School of Engineering Sciences, Kyushu University, Kasuga, Fukuoka 816-8580, Japan*
** suekuni.koichiro.063@m.kyushu-u.ac.jp*

^c *Research Institute for Energy Conservation, National Institute of Advanced Industrial
Science and Technology (AIST), Tsukuba, Ibaraki 305-8568, Japan*

^d *Institute for Advanced Materials Research, Hiroshima University, Higashi-Hiroshima,
739-8530, Japan*

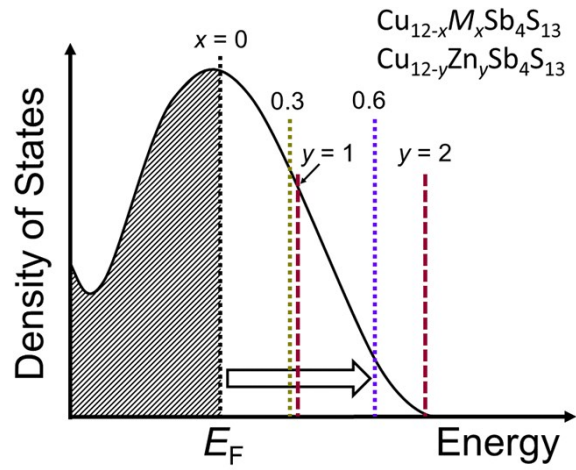


Fig. S1 Schematic picture of the density of states near the valence band top for $\text{Cu}_{12-x}\text{M}_x\text{Sb}_4\text{S}_{13}$ ($M = \text{Ge}, \text{Sn}$) and $\text{Cu}_{12-y}\text{Zn}_y\text{Sb}_4\text{S}_{13}$.

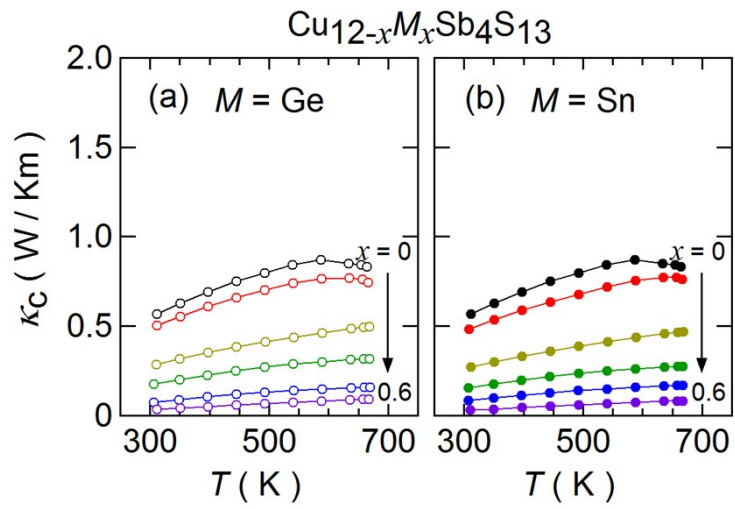


Fig. S2 Temperature dependence of charge carrier part of thermal conductivity κ_c for (a) $M = \text{Ge}$ and (b) $M = \text{Sn}$ of $\text{Cu}_{12-x}\text{M}_x\text{Sb}_4\text{S}_{13}$ ($x \leq 0.6$).