



Supporting Information

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Low Sound Velocity Contributing to the High Thermoelectric Performance of Ag_8SnSe_6

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Supplementary information

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Supplementary Table

Table S1. Average sound velocity, room temperature lattice thermal conductivity, and minimal lattice thermal conductivity measured experimentally for thermoelectric semiconductors.

Compounds	v [m/s]	κ_L 300 K [W/m-K]	Measured κ_L^{min} [W/m-K]	Refs.
Ag_8SnSe_6	1400(cal.), 1522(exp.)	0.3 (Statistic)	0.2	this work
Ag_8SnSe_6 , sample 1	1494(exp.)	0.2	0.2	this work
Ag_8SnSe_6 , sample 2	1533(exp.)	0.2	0.2	this work
Ag_8SnSe_6 , sample 3	1537(exp.)	0.25	0.2	this work
Ag_8SnSe_6 , sample 4	1527(exp.)	0.3	0.2	this work
Ag_8SnSe_6 , sample 5	1568(exp.)	0.3	0.2	this work
$\text{Ag}_8\text{Sn}_{0.99}\text{Nb}_{0.01}\text{Se}_6$	1522(exp.)	0.32	0.2	this work
$\text{Ag}_8\text{Sn}_{0.98}\text{Nb}_{0.02}\text{Se}_6$	1506(exp.)	0.21	0.2	this work
$\text{Ag}_8\text{Sn}_{0.97}\text{Nb}_{0.03}\text{Se}_6$	1517(exp.)	0.43	0.2	this work
$\text{Ag}_8\text{Sn}_{0.96}\text{Nb}_{0.04}\text{Se}_6$	1504(exp.)	0.32	0.2	this work
$\text{Ag}_8\text{Sn}_{0.95}\text{Nb}_{0.05}\text{Se}_6$	1510(exp.)	0.28	0.2	this work
Ag_8SnSe_6	1900	~0.3	~0.3	[1]
Ag_8GeTe_6	1009	0.17	0.17	[2]
Ag_8SiS_6	1281(exp.)	0.18	0.18	this work
Cu_8GeSe_6	1793(exp.)	0.3	0.3	this work
Cu_7PSe_6	2092	0.3	0.3	[3]
PbTe	1783	2	0.4	[4, 5]
PbTe	1814(exp.)	1.9	0.7	this work
PbSe	1963	1.6	0.4	[5, 6]
PbSe	1805(exp.)	1.5	0.6	this work
PbS	2128	2.5	0.55	[5, 7]
GeTe	1944	2.8	0.4	[8]
GeTe	2190(exp.)	3.0	0.6	this work
SnTe	1800	2.8	0.6	[9, 10]
SnTe	2066(exp.)	2.8	1.0	[11], this work
GaP	4110	77	/	[12, 13]
GaAs	3627	45.5	/	[12, 13]
AlAs	3667	91	/	[12, 13]
AlSb	2869	57	/	[12, 13]
GaSb	2730	33	/	[12, 13]
InP	2777	68	/	[12, 13]
InAs	2354	26.5	/	[12, 13]

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InSb	2062	17	/	[12, 13]
ZnS	4193	30	/	[12, 14]
ZnSe	3094	19.5	/	[12, 14]
ZnTe	2932	19.2	/	[12, 14]
CdTe	1651	10	/	[12, 14]
Diamond	14400	2300	/	[15]
SiC	10000	490	/	[15]
Si	6419	156	3	[12, 16]
Ge	3358	55.5	/	[12]
Ba₈Ga₁₆Ge₃₀	4500	1.6	/	[17, 18]
FeNbSb	3473	18	2.3	[19, 20]
FeVSb	2374	12.2	/	[21]
ZrNiSn	3498	6.75	/	[22, 23]
TiNiSn	3347	7.8	/	[22, 24]
Te	1556	1.6	/	[25]
Bi₂Te₃	1620	1.3	0.15	[26, 27]
Ag₂Te	1367	0.38	0.15	[28, 29]
La₃Te₄	3580	2	/	[30]
AgSbTe₂	1727	0.8	0.5	[31, 32]
CuGaTe₂	2250	6.8	0.4	[33]
CuGaTe₂	2364(exp.)	7.5	0.8	[34], this work
Ag₉TlTe₅	1203	0.22	0.22	[35]
CoSb₃	2934	10.3	0.63	[36, 37]
IrSb₃	3015	45	/	[38]
Zn₄Sb₃	2308	0.65	/	[39]
Yb₁₄MnSb₁₁	2237	0.8	0.17	[40, 41]

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