

Enhanced Room-Temperature Thermoelectric Performance of 2D-SnSe Alloys via Electric-Current-Assisted Sintering

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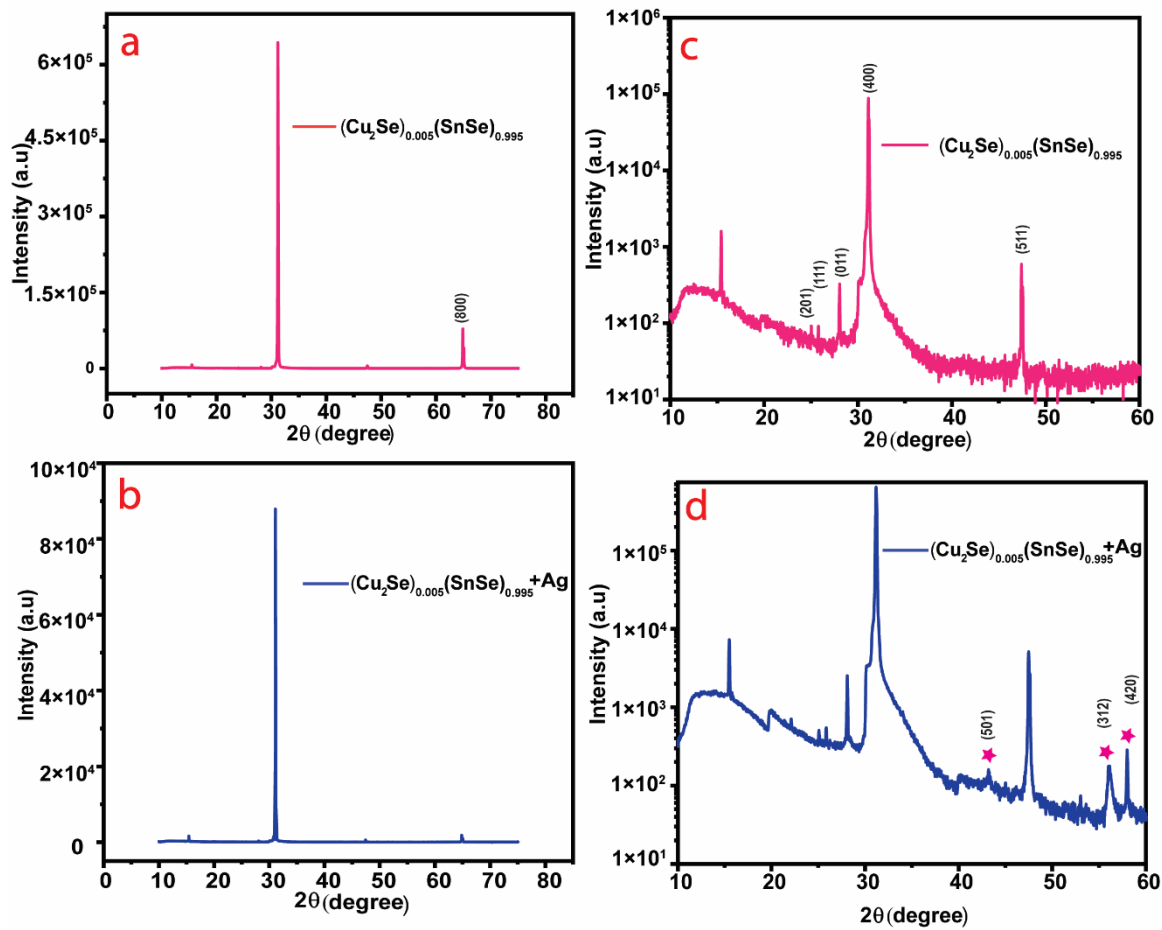


Figure S1. XRD analysis of $(\text{Cu}_2\text{Se})_{0.005}(\text{SnSe})_{0.995}$ alloy (a). XRD analysis of $(\text{Cu}_2\text{Se})_{0.005}(\text{SnSe})_{0.995} + \text{Ag}$ alloy (b). Corresponding stimulated pattern, respectively (c) and (d).

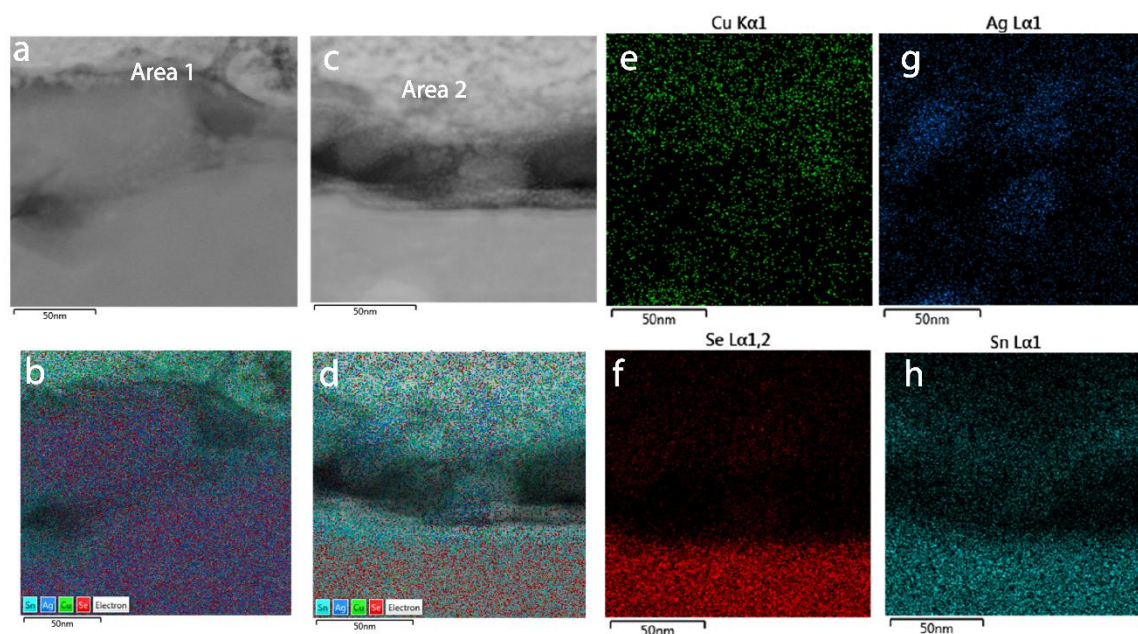


Figure S2. The TEM-EDS mapping of Ag element in the $(\text{Cu}_2\text{Se})_{0.005}(\text{SnSe})_{0.995}+\text{Ag}$ alloy (Different area).

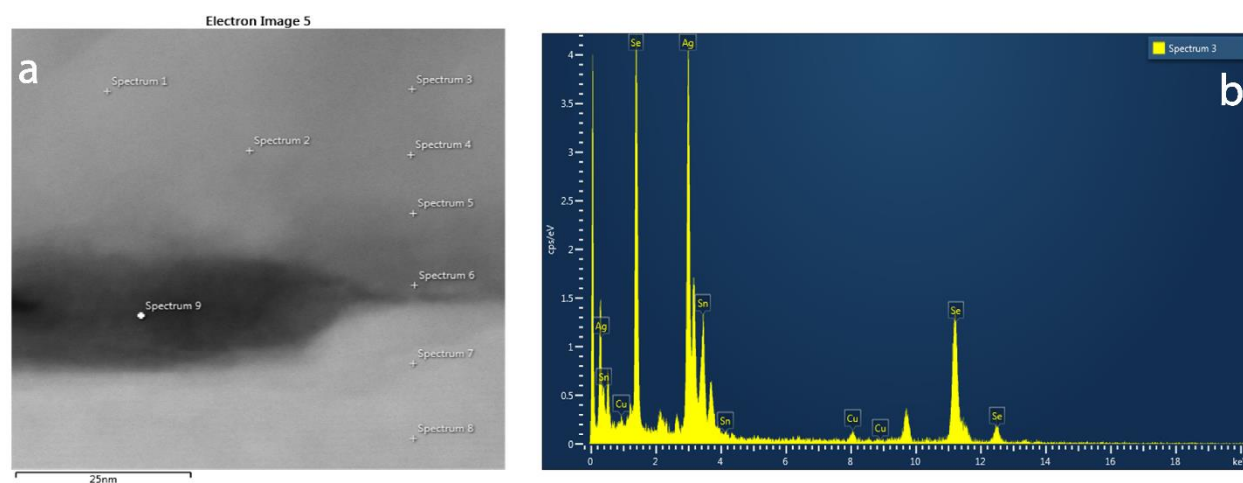


Figure S3. (A) TEM image of $(\text{Cu}_2\text{Se})_{0.005}(\text{SnSe})_{0.995}+\text{Ag}$ alloy (B) EDS elemental analysis of $(\text{Cu}_2\text{Se})_{0.005}(\text{SnSe})_{0.995}+\text{Ag}$ alloy, (C-F) TEM elemental mapping of $(\text{Cu}_2\text{Se})_{0.005}(\text{SnSe})_{0.995}+\text{Ag}$ alloy.

Table S1. Reported method TE properties related to bilayer/interfacial layer based SnSe alloys in comparison to $(\text{Cu}_2\text{Se})_{0.005}(\text{SnSe})_{0.995} + \text{Ag}$ alloy at 303 K.

Alloy	S ($\mu\text{V K}^{-1}$)	σ (S m^{-1})	PF ($\text{mW m}^{-1} \text{K}^{-2}$)	κ ($\text{W m}^{-1} \text{K}^{-1}$)	Reference
$(\text{Cu}_2\text{Se})_{0.005}(\text{SnSe})_{0.995} + \text{Ag}$	554	494	0.1487	1.43	This work
SnSe + $\text{Ag}_{0.020}\text{SnSe}_2$	350	1600	0.0016	1.4	23
$\text{Sn}_{0.95}\text{SeK}_{0.05}$	400	-	0.08	1.1	24
$\text{Sn}_{0.93}\text{Pb}_{0.02}\text{Se}$	270	12	0.008	0.9	25
$\text{Sn}_{0.97}\text{Ge}_{0.03}\text{Se}$	220	13	0.001	1.0	26
6% Cl-doped $\text{SnSe}_2/\text{SnSe}$	200	5000	0.2	1.42	27
$\text{Na}_{0.005}\text{Ag}_{0.015}\text{Sn}_{0.98}\text{Se}$	215	47	0.23	1.18	28

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