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Supporting Information

Optimizing the thermoelectric performance of In-Cd codoped SnTe by introducing Sn vacancy

Xiaofang Tan[1,2], Xiaojian Tan[1], Guoqiang Liu[1,*], Jingtao Xu[1,†], Hezhu Shao[1], Haoyang Hu[1], Min Jin[1], Haochuan Jiang[1], Jun Jiang[1,‡]

[1] *Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Science, Ningbo 315201, China*

[2] *Nano Science and Technology Institute, University of Science and Technology of China, Suzhou 215123, China*

Supporting Tables

Table S1. Densities of all samples investigated in this study.

Compositions		Density(ρ, g/cm^3)	Relative density (%)
SnTe		6.478	99.66
$Sn_{0.97-x}In_xCd_{0.03}Te$	x=0	6.478	99.66
	x=0.005	6.449	99.22
	x=0.01	6.489	99.83
	x=0.015	6.419	98.75
$Sn_{0.96-z}In_{0.01}Cd_{0.03}Te$	z=0.005	6.477	99.65
	z=0.002	6.440	99.08
	z=0	6.489	99.83

[*] E-mail: liugq@nimte.ac.cn
[†] E-mail: xujingtao@nimte.ac.cn
[‡] E-mail: jjun@nimte.ac.cn

Table S2. The hole concentration n, mobility μ, electrical conductivity σ, Seebeck coefficient S, and power factor $S^2\sigma$ of $Sn_{0.97-x}In_xCd_{0.03}Te$ (x = 0, 0.005, 0.01, and 0.015) samples. at room temperature.

Samples	n (10^{20} cm^{-3})	μ (cm^{2}V^{-1}s^{-1})	σ (Scm^{-1})	S (μVK^{-1})	$S^2\sigma$ (μWcm^{-1}K^{-2})
x = 0	1.4	142	3331	40	5.4
x = 0.005	1.6	57.9	1438	72	7.4
x = 0.01	2.0	32.2	1160	75	6.3
x = 0.015	3.1	22.1	1094	83	7.6

Supporting Figures

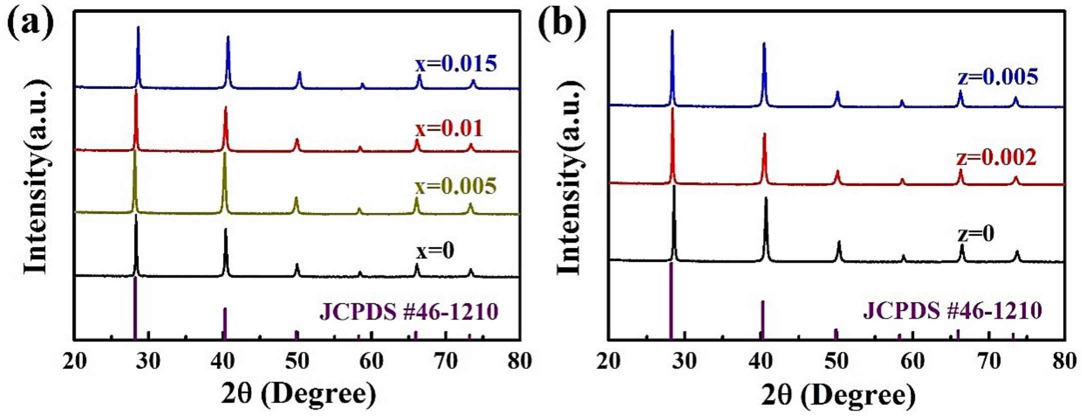

Figure S1. Powder XRD patterns for (a) $Sn_{0.97\text{-}x}In_xCd_{0.03}Te$ (x = 0, 0.005, 0.01, 0.015) and (b) $Sn_{0.96\text{-}z}In_{0.01}Cd_{0.03}Te$ (z = 0, 0.002, 0.005). No second phase can be observed within the detection limit.

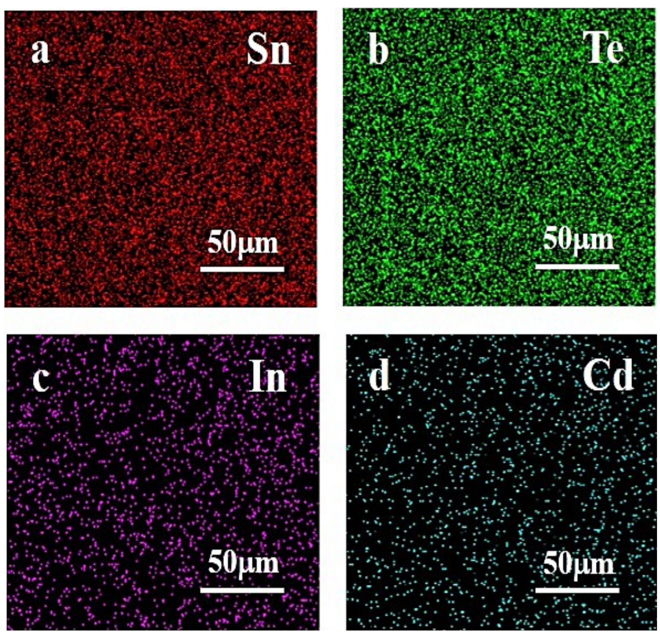

Figure S2. (a)- (d) the EDS mapping for Sn, Te, In and Cd in $Sn_{0.958}In_{0.01}Cd_{0.03}Te$ sample, respectively.

Elements of Sn, Te, In and Cd are all uniformly distributed suggest a homogenous doping of In and Cd.