Electronic Supplementary Material (ESI) for RSC Advances.

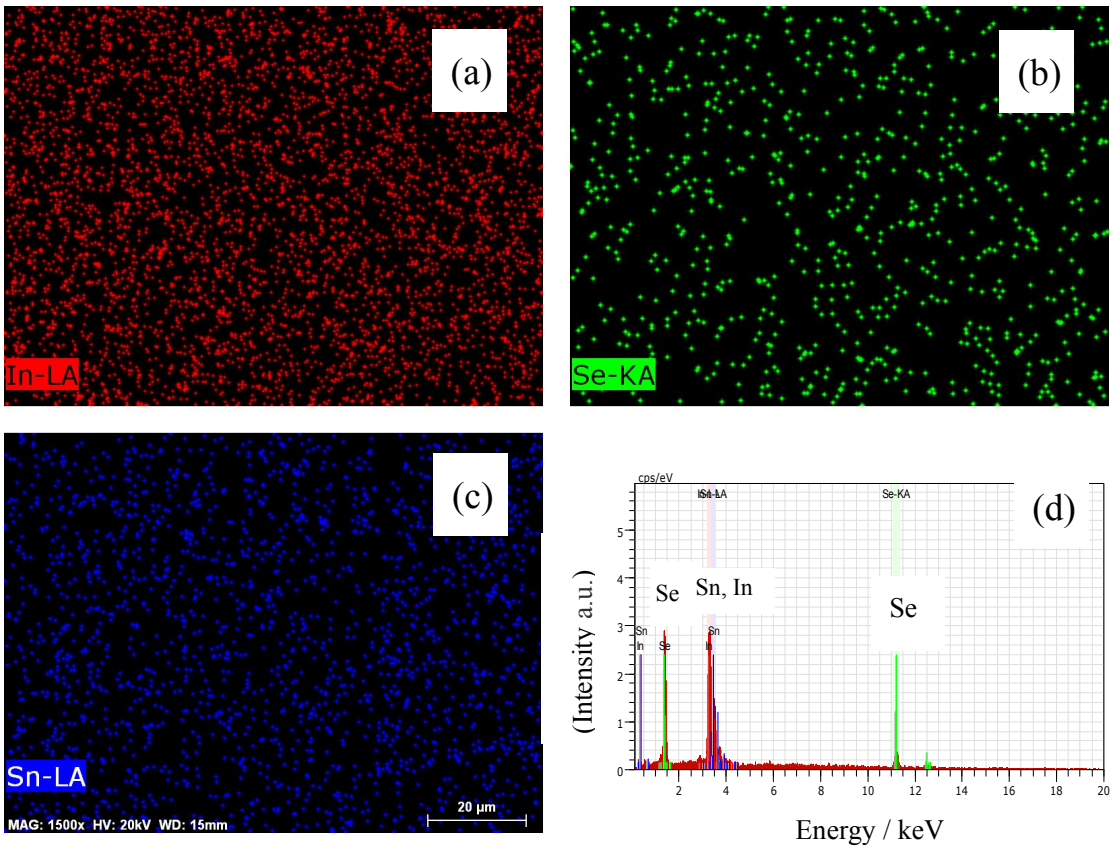

Fig.S1 EPMA mapping of three elements on polished $InSeSn_{0.01}$ surface (a) In, (b)Se, (c) Sn and (d) Energy dispersive x–ray spectrum.

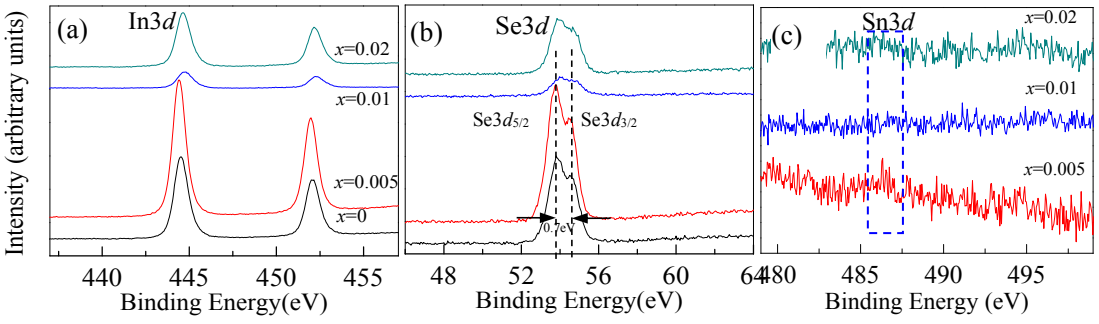

Fig.S2 XPS spectra of (a) In 3*d*, (b) Se3*d*, and (c) Sn 3*d* for $InSeSn_x$.

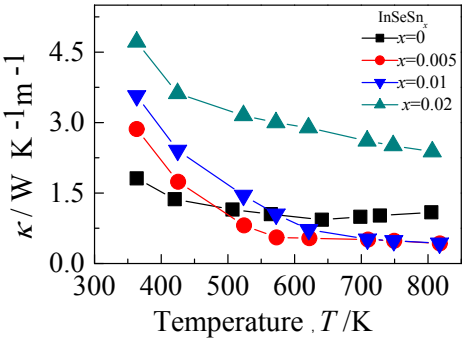

Fig.S3 Total thermal conductivities of InSeSn$_x$ in $C\perp$ (x=0, 0.005, 0.01, 0.02) as a function of temperature.

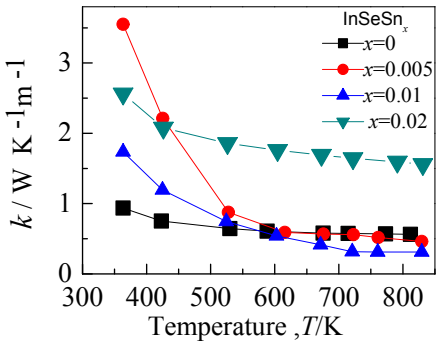

Fig.S4 Total thermal conductivities of InSeSn$_x$ in $C_{//}$ (x=0, 0.005, 0.01, 0.02) as a function of temperature.

Table S1 The chemical compositions (relative molars) identified using EPMA for InSeSn$_x$ (x=0, 0.01) (taken from mappings)

Compounds	In	Sn	Se
InSe	1.04	------	0.96
InSeSn$_{0.01}$	1.0	0.02	0.99

Table S2 Binding energies from the In3$d_{5/2}$, Sn3$d_{5/2}$ and Se3d core-level photoelectron spectra for the $InSeSn_x$ (x=0,0.005,0.01,0.02) compounds.

Compounds	**In3*d* (eV)**	**Se3*d* (eV)**	**Sn3*d* (eV)**
InSe	444.53	Peak 1: 53.85 Peak 2: 54.47	
$InSeSn_{0.005}$	444.44	Peak 1: 53.75 Peak 2: 54.43	486.29
$InSeSn_{0.01}$	444.73	Peak 1: 53.99 Peak 2: 54.59	485.95
$InSeSn_{0.02}$	444.66	Peak 1:53.88 Peak 2: 54.59	485.80