

## Electronic supplementary information

### Enhanced thermoelectric properties of p-type nanostructured PbTe-MTe (M = Cd, Hg) materials

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**Table S1.** Experimental thermal diffusivity ( $\text{mm}^2/\text{s}$ ) of PbTe-2% MTe-1% Na<sub>2</sub>Te SPS samples as a function of temperature.

Temperature (K)	M = Cd	Temperature (K)	M = Hg
823.3	0.842	822.7	0.76
773.3	0.862	772.7	0.715
723.3	0.925	722.8	0.699
673.4	0.999	672.8	0.72
623.3	1.094	622.8	0.761
573.3	1.215	572.8	0.822
523.2	1.376	522.8	0.91
473	1.623	472.7	1.022
422.8	1.922	422.2	1.171
373.2	2.285	372.4	1.374
319.9	2.748	322.1	1.617
298.9	2.966	298.7	1.753

**Table S2.** Experimental heat capacity  $C_p$  ( $\text{J/g}\cdot\text{K}$ ) of PbTe-2% MTe-1% Na<sub>2</sub>Te SPS samples as a function of temperature.

Temperature (K)	M = Cd	Temperature (K)	M = Hg
823.3	0.174	822.7	0.172
773.3	0.173	772.7	0.17
723.3	0.171	722.8	0.169
673.4	0.17	672.8	0.167
623.3	0.168	622.8	0.166
573.3	0.167	572.8	0.164
523.2	0.165	522.8	0.162
473	0.163	472.7	0.161
422.8	0.162	422.2	0.159
373.2	0.16	372.4	0.157
319.9	0.159	322.1	0.156
298.9	0.159	298.7	0.156

**Table S3.** Calculated Heat capacity  $C_p$  (J/g·K) of PbTe-2% MTe-1% Na<sub>2</sub>Te. The calculated value is the weight averaged value of PbTe (0.16 J/g·K), CdTe (0.21 J/g·K), and HgTe (0.16 J/g·K).

<b>M</b>	<b>Calc. heat capacity</b>
M = Cd	0.16
M = Hg	0.16

**Table S4.** Experimental density of the PbTe-2% MTe-1% Na<sub>2</sub>Te SPS samples. The calculated density is the weight averaged value of PbTe (8.164 g/cm<sup>3</sup>), CdTe (5.85 g/cm<sup>3</sup>), HgTe (8.1 g/cm<sup>3</sup>), and Na<sub>2</sub>Te (2.90 g/cm<sup>3</sup>).

<b>M</b>	<b>Density (g/cm<sup>3</sup>)</b>	<b>Calc. density</b>
M = Cd	8.05	8.091
M = Hg	8.02	8.136