Electronic Supplementary Information for:

Scalable colloidal synthesis of Bi$_2$Te$_{2.7}$Se$_{0.3}$ plate-like particles give access to high-performing n-type thermoelectric material for low temperature application

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Fig. S1. Sintering profile for spark plasma sintered Bi$_2$Te$_{2.7}$Se$_{0.3}$.

Fig. S2. Schematic representation of direction and geometry for measurement of (a) thermal, and (b) electrical characterisation.
**Fig. S3:** Repeated measurement of temperature dependent electrical transport for synthesized Bi$_2$Te$_{2.7}$Se$_{0.3}$ alloys (a) electrical conductivity, and (b) Seebeck coefficient.

**Fig. S4.** Left: doping and temperature effect on band structure. Special points correspond to the first Brillouin zone of rhombohedral lattice.$^{1,2}$ Right: correspondence between conventional hexagonal (solid lines) and primitive rhombohedral lattice (dashed lines).

**References:**