



## Thermoelectric Materials for Energy Conversion

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Deadline for manuscript  
submissions:

**closed (31 January 2018)**

### Message from the Guest Editor

Thermoelectrics can enable direct energy conversion between heat and electricity, based on thermoelectric effects, which has been considered as a green and sustainable solution to the global energy dilemma. Energy conversion efficiency of thermoelectrics is weighed by the dimensionless figure of merit,  $ZT = S^2\sigma T/\kappa$ , where  $S$ ,  $\sigma$ ,  $\kappa$  and  $T$  are, respectively, the Seebeck coefficient, electrical conductivity, thermal conductivity (including electronic component  $\kappa_e$  and lattice component  $\kappa_l$ ), and the working temperature. Thus far, significant progress has been achieved in enhancing  $ZT$  via increasing powder factor ( $S^2\sigma$ ) (by band convergence, reversible phase transition, quantum confinement) and/or reducing  $\kappa$  (by nanostructuring, hierarchical architecturing, matrix with nano-precipitate). This Special Issue will focus on recent advances in thermoelectric sector on a wide range of topics from material design to applications in energy conversions, including:

- Thermoelectric materials
- Thermoelectric refrigeration
- Thermoelectric power generation
- Thermoelectric water generation
- New type therm





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## Message from the Editor-in-Chief

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