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New approaches to thermoelectric materials

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A deeper understanding of the parameters that affect the dimensionless figure of merit, the development of new concepts (such as the so-called phonon-glass/electron crystal) and the use of new synthesis techniques has recently led to new systems with better thermoelectric performances. Here we present part of the work that has been recently performed in our groups in order to get new and improved thermoelectric systems. Special emphasis will be done on the possibility of electrical conducting glasses and doped tellurium films representing new families of enhanced thermoelectrical materials. In particular, results will be presented and discussed on $\text{Cu}_x\text{Ge}_y\text{Te}_z$ general composition glasses and on bismuth doped tellurium films.