

Thermoelectric Properties of Spark Plasma Sintered Te Doped Cu_3SbSe_4 : Promising Thermoelectric Material

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Abstract : Various groups have attempted on enhancing the thermoelectric figure-of-merit (ZT) of the Cu_3SbSe_4 compound by employing doping process. Efforts are made to study the thermoelectric performance of Cu_3SbSe_4 material doped with Te in different compositions (i. e. $\text{Cu}_3\text{Sb}_{1-x}\text{Te}_x\text{Se}_4$, $x = 0.005, 0.01, 0.015, 0.02$). The different doping concentration has been selected to identify the suitable doping to increase the thermoelectric performance. Compared to pristine Cu_3SbSe_4 , an enhancement of thermoelectric figure-of-merit was achieved for 0.005 Te doped Cu_3SbSe_4 . This improvement can be attributed to the reduction of thermal conductivity for 0.005 Te doped Cu_3SbSe_4 .

Keywords : figure-of-merit, polycrystalline, thermal conductivity, thermoelectric

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