

Thermoelectric ceramic modules for electrical power generation

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Nanoceramic powders of electron-doped, *n-type* $\text{Ca}_{1-x}\text{Sm}_x\text{MnO}_3$ ($x = 0-0.9$) and hole-doped, *p-type* $\text{Ca}_{3-x}\text{Ag}_x\text{Co}_4\text{O}_9$ ($x = 0-0.5$) were prepared using various routes as sol-gel, co-precipitation and solid state reaction. Several processing strategies have been used to produce the thermoelectric oxide ceramics, including sinter-forging for grain texturation and spark plasma sintering to control the nano-structure and sample densification.

Thermoelectric properties of both *n-* and *p- types* were measured and the influence of the fine grain size and processing on these properties were evidenced. Thermoelectric modules based on several *n* and *p-type* legs have been elaborated with different heights and shapes. Their performances are discussed.