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Development Thermoelectric Properties of Al-doped ZnO Materials for Thermoelectric Module and Power Generator

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The main objective of this work is to synthesized Zn0.96Al0.04O thermoelectric materials for fabrication thermoelectric modules and invention thermoelectric generator. The Zn0.96Al0.04O sample was prepared by a conventional solid state reaction method. The formation of structure was proved by X-ray diffraction and the thermoelectric properties were measured. The results showed that the Zn0.96Al0.04O displayed thermoelectric materials and showed thermoelectric properties as higher than that of ZnO based. The Zn0.96Al0.04O thermoelectric modules displayed the power output was increase with number of module, increase difference temperature and operating at high temperature. The Zn0.96Al0.04O thermoelectric generator showed high performance for electric generator at high temperature. The sixteen Zn0.96Al0.04O legs thermoelectric generator of this work produced electric power at1.4 mW at 800 (when T = 600 ◦C). The Zn0.96Al0.04O materials can be applied for application of thermoelectric generator at high temperature.

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