



Nanostructured ZnO Thermoelectric Materials for Microelectronics

By Jingfeng Huang

LAP Lambert Academic Publishing. Taschenbuch. Book Condition: Neu. 220x150x4 mm. Neuware - Thermoelectric materials are more efficient at higher temperatures due to higher Carnot Efficiency. Nevertheless, its practical high temperature use is still limited due to the expensive surface protection coating required to prevent oxidation and vaporization. Zinc Oxide (ZnO), a cheap metal oxide with high melting temperature and chemical inertness, is a good candidate to solve this problem. ZnO is a semiconductive oxide but when Zn is substituted by Aluminium (Al), the electrical conductivity increases. However, when Al-doping is increased to above 2mol%, ZnAl₂O₄ spinel phase will be formed. This spinel phase reduces the efficiency of ZnO. In this book, we show that the solubility of Al₂O₃ in ZnO by can be increased by introducing NiO, which has dual valency, similar to that of Al and Zn, thus obtaining a thermoelectric material that could be used at high temperatures. 80 pp. Englisch.



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