

**Thermopile, 펄티어소자에 적용할 Bi_2Te_3 , Sb_2Te_3 의 annealing 온도변화에 따른
박막특성 분석**

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Thermoelectric Properties of Bi_2Te_3 , Sb_2Te_3 by varying annealing temperature

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Abstract : Thermoelectric devices were used to wide range of application. At present, increasing the efficiency of these devices, in particular, through the preparation of materials showing a high thermoelectric figure of merit, Z , Bi_2Te_3 and Sb_2Te_3 thin films on Si substrates are deposited by flash evaporation method for thermopile sensor applications. In order to enhance the thermoelectric properties of the thin film, annealing in high vacuum is carried out in the temperature range from 200 to 350°C. The microstructure of the film is investigated by XRD and SEM. The resistivity and Seebeck coefficient of the films are measured by Van der Pauw method and hot probe method respectively. At elevating annealing temperature, the crystallinity and thermoelectrical properties of films are improved by increasing the size of grains. At excessive high annealing temperatures, it is shown that Seebeck coefficient of films is decreased because of Te evaporation. By optimizing the annealing conditions, it is possible to obtain a high performance thin film with a thermoelectric properties.

Key Words : Bi_2Te_3 , Sb_2Te_3 , Thermoelectric properties, High vacuum annealing