

## **Gamma Irradiation Effects on the Crystal Structural and Transport Properties of Bi<sub>2</sub>Te<sub>3</sub> Thin Films Grown by Thermal Evaporation**

**Authors :** Shoroog Alraddadi

**Abstract :** In this study, the effect of gamma irradiation on the structural and transport properties of Bismuth Telluride (Bi<sub>2</sub>Te<sub>3</sub>) thin films was investigated. Bi<sub>2</sub>Te<sub>3</sub> thin films with thicknesses varying from 100 nm to 500 nm were grown using thermal evaporation in vacuum 10<sup>-5</sup> Torr. The films were irradiated by Gamma radiation with different doses (50, 200, and 500 kGy). The crystal structure of Bi<sub>2</sub>Te<sub>3</sub> thin films was studied by XRD diffraction. It was showed that the degree of crystallinity of films increases as the doses increase. Furthermore, it was found that the electrical conductivity of Bi<sub>2</sub>Te<sub>3</sub> increase as the doses increase. From these results, it can be concluding that the effect of radiation on the structural and transport properties was positive at the levels of irradiation used.

**Keywords :** bismuth telluride, gamma irradiation, thin film, transport properties

**Conference Title :** ICCMMP 2019 : International Conference on Condensed Matter and Materials Physics

**Conference Location :** Boston, United States

**Conference Dates :** April 24-25, 2019