INVESTIGATION OF THE SWITCHING PHENOMENA IN SOME THALLIUM BASED III-V-VI2 TERNARY CHALCOGENIDES SINGLE CRYSTAL

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Abstract

The current work was aimed to prepare and investigate switching phenomena effect in single crystals made from TlBiS2 under static Condition Current. Negative resistance (CCNR) has been controlled in TlBiS2 single crystals and observed for the first time. Both polarities of switching process take place on the crystal possessing symmetrical shapes. The prepared single crystals exhibited a bistable or memory switching with S-type form. A resulted symmetrical shaped current and voltage characteristics,CVC, for sandwiched TlBiS2 single crystal with Ag electrodes exhibited two main regions as high resistance OFF state region and low resistance ON state region featuring negative differential resistance, NDR. Results have shown that the phenomena of switching in the samples show strong sensitivity to the surrounding sample temperature, thickness and light intensity of illumination. The main parameters for switching such as i(th),V-th,P-th,,E-th, and R-OFF/R-ON) were calculated under influence of various factors of the nearby conditions.

Keywords

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KeyWords Plus: MEMORY; SEMICONDUCTOR

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