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DEVELOPMENT OF METHODS FOR STUDYING INTERGRANULAR SURFACE FEATURES IN SEMICONDUCTOR HETEROGENEOUS POLYCRYSTALS OF BISMUTH-ANTIMONY TELLURIDES WITH THE IMPOSITION OF ELECTRIC AND DEFORMATION FIELDS

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ABSTRACT

The article discusses the technique and tools for studying the role of the effective density of electronic surface states innanocrystalline semiconductor films when cyclic deformation is applied directly from the analysis of experimental data. The surface electron states play the role of recombination and trapping centers depending on the number of carriers, the electron capture section and hole, the concentration of surface states of their type and energy position . To determine the effective density of surface states, we found both a change in the Fermi level and a change in the density of the effective surface charge. The effective density of electronic surface states was determined from the measured variations in the active resistance and capacity of nanocrystalline films of bismuth-antimony tellurides upon the application of irreversible deformation, and its strain dependence was found. From data analysis, one can judge the irreversibility of heterogeneous structures during deformation, that is, the electronic structure of a nanocrystalline semiconductor film changes greatly when cyclic deformation is applied.

KEYWORDS: *Nanocrystalline Films, Grain Boundaries, Surface Electron States, Fermi Level, Interface Charge, Surface States, Effective Density Of Electron Surface States*

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