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АКАДЕМІЯ НАУК ВИЩОЇ ШКОЛИ УКРАЇНИ

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XVI МІЖНАРОДНА КОНФЕРЕНЦІЯ З ФІЗИКИ І ТЕХНОЛОГІЇ
ТОНКИХ ПЛІВОК ТА НАНОСИСТЕМ

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(dedicated to memory Professor Dmytro Freik)

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Effect of Thermal Annealing on the Optical Properties of Thin Films of Cadmium Telluride

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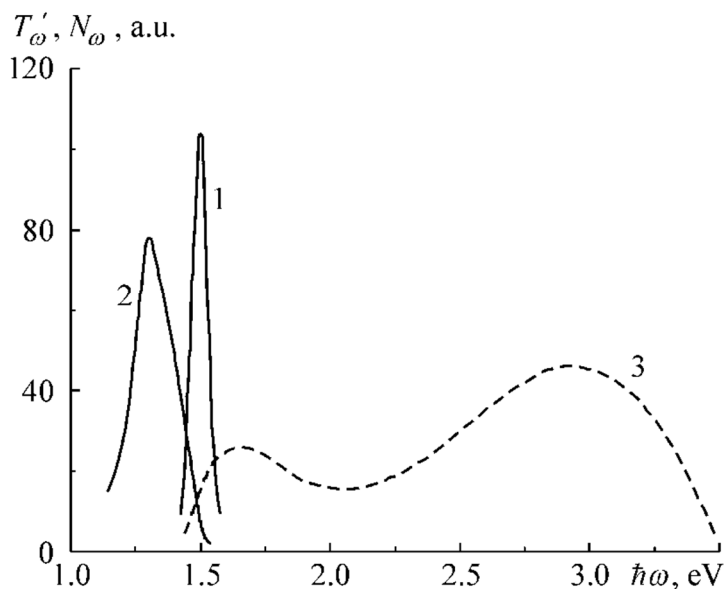
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CdTe occupies a special place among semiconductor solar cells suitable for forming. It has a number of advantages over the materials currently used. These include, in particular, significantly higher temperature and radiation stability than in Si, as well as a simpler and less expensive technology of growing CdTe crystals allows the use of thin film technology in producing solar cells, which can lead to further reduction of costs of materials and of products.

In this regard, currently, intensive large scale search for effective methods of synthesis of relatively simple thin films of CdTe is being made. Since the parameters of grown films do not always meet the necessary requirements, additional processing technologies are applied for correcting them.

This paper examines the effect of annealing temperature on transformation of optical transmission spectra and photoluminescence films CdTe, obtained by the method of the hot wall on mica substrat. Maximums of transmission T'_ω (curve 1) is located at $\hbar\omega_m = 1.5$ eV and is consistent with E_g cadmium



telluride. Annealing of the films in the air under the conditions that lead to the formation of nanostructures on the surface of single crystal substrates CdTe, result in the displacement of the maximum of the curve T'_ω to ~ 1.3 eV (curve 2), and the emergence of a wide spectrum of photoluminescence (curve 3) in the field of energies greater than E_g teluridu of cadmium.

The mechanisms responsible for the optical properties transformation of the objects of research are discussed.