CURRENT-VOLTAGE CHARACTERISTICS OF CDTE AND CZT X-RAY SENSORS*

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Cadmium telluride (CdTe) and cadmium zinc telluride (CZT) are promising semiconductor materials for X-ray detection. These materials have a high atomic number, which ensures high absorption efficiency high-energy X-ray photons. The wide band gap of these materials allows them to operate at room temperature. CZT sensors have high sensitivity to X-rays and can be used in a range of fields, including medical imaging, nondestructive testing, and security systems.

The paper presents the results of experimental investigation and simulation of the current-voltage characteristics of X-ray sensors based on high-resistivity cadmium telluride and a “cadmium-zinc-tellurium” structures. It has been established that the experimental current-voltage characteristics are symmetrical with respect to the polarity of the applied voltage and have regions with different functional dependences of the current value on the voltage.

The current-voltage characteristics were simulated and compared with experimental dependences [1-2]. The results of comparison are discussed.

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