

## MODIFICATION OF OPTICAL AND ELECTRICAL PROPERTIES $\text{SnO}_2$ UNDER THE INFLUENCE OF ARGON ION BEAM

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The transparent conductive oxide films are widely used in various industries. These optically transparent electrodes are for displays, solar panels, photoelectric devices, touch panels, etc. One of them is tin oxide, which has found wide practical application.

Thin films of tin oxide were deposited on the glass substrates at a room temperature using reactive magnetron sputtering. The ratio  $\text{O}_2/\text{Ar}$  and the discharge voltage was maintained in such a mode when the deposited films are dielectrics. After the deposition, the films were irradiated with an argon ions beam. The modification of the optical and electrical properties of the films depending on the irradiation time was studied. Optical properties of the films were analyzed in the range of 300–1100 nm using photometry and structural X-ray diffraction. The diffractometric research showed that the films, deposited on a substrate, had a crystal structure, and after argon ions irradiation they became quasi-crystalline (amorphous). The average value of the transmission of the films on the impact of the ion beam first dropped and then increased exceeding the initial value. It was determined that as a result of exposure the argon ions dielectric films  $\text{SnO}_2$  became electroconductive. The surface electric resistance of the films with the increase of the ions exposure time initially decreases but then begins to increase. Observed a good direct correlation between optical and electrical properties of the films

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