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# Studies of Zinc and Zinc Oxide Nanofilms of Different Thickness Prepared by Magnetron Sputtering and Thermal Oxidation*

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Polycrystalline zinc films with the thickness of about 20, 40, 60, and 80 nm and mainly granular morphology comprising nearly spherical particles involving hexagonal crystals are obtained by magnetron sputtering on cover glass supports. Subsequently, the prepared layers were subjected to thermal oxidation in the air to obtain transparent zinc oxide layers. The synthesized films are studied by SEM and UV-vis spectroscopy. Based on the obtained spectra, optical properties of the layers are studied as a function of their thickness. The optical band gap $E_g$ for the films with the thickness from 40 to 80 nm is estimated on the level about 3.28 eV similar to the reference value 3.3 eV for bulk zinc oxide, while for the thickness of 20 nm $E_g$ slightly drops to about 3.24 eV.

**Keywords:** zinc; zinc oxide; nanolayers; magnetron; oxidation; surface morphology; transparency; optical bandgap.

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