

## Streszczenie w języku angielskim

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Tytuł rozprawy	Własności transportowe cienkich warstw półprzewodników szerokopasmowych

This PhD thesis has been devoted to research on the transport properties of thin layers of titanium dioxide deposited by reactive-magnetron sputtering in the rf system. This research examines the influence of the structural parameters of these layers on the optical and electrical properties. In particular, studies were conducted on the effect of the stoichiometry, resulting from the change of the oxygen content in the argon/oxygen mixture during the deposition process, and the thickness of the thin films on their electrical conductivity and absorption coefficient.

In the framework of this PhD project has been performed measurements of the transport properties of  $\text{TiO}_2$  thin layers and the quantitative analysis of these experimental data based on some hopping models of conductivity have been carried out.

For this purpose, an experimental stand, as well as the experiment, has been projected to measure the resistance of thin layers as a function of temperature. The data obtained from these experiments have been interpreted in terms of the two hopping models, namely, the nearest-neighbour and the variable-range hopping models introduced by Mott and Efros-Shklovskii. Furthermore, this analysis has been supplemented with the results obtained from the grain boundaries model.