

**STRUCTURAL AND ELECTRICAL PROPERTIES OF PURE ZINC
OXIDE AND ZINC OXIDE WITH TITANIUM DIOXIDE FOR DYE-
SENSITIZED SOLAR CELL PERFORMANCE**

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ABSTRACT

STRUCTURAL AND ELECTRICAL PROPERTIES OF PURE ZINC OXIDE AND ZINC OXIDE WITH TITANIUM DIOXIDE FOR DYE-SENSITIZED SOLAR CELL PERFORMANCE

Zinc oxide (ZnO) is a as the semiconductor material in dye-sensitized solar cell (DSSC). In this research, the structural and electrical properties of Zinc Oxide thin film doped with titanium dioxide (TiO₂) has been investigated. The sample undoped ZnO and ZnO doped with 1wt%, 3wt%, 5wt%, 7wt% and 9wt% of TiO₂ were prepared using solution immersion method. All samples have been characterized using X-Ray Diffraction (XRD), Ultraviolet Visible (UV-Vis) and Current-Voltage characterization (I-V). Diffraction peak for all samples from XRD result shows the presence of dominant ZnO phase at (002) plane with hexagonal wurtzite structure. The sample prepared with 5wt% of TiO₂ has the highest transmittance range while the sample with 7wt% of TiO₂ has the highest absorbance in UV analysis. The resistance value for all samples was obtained from the analysis of I-V curve. The resistance value is decrease as the concentration of TiO₂ increase.