

# Optical property of titanium-doped ZnO thin film prepared using dc magnetron sputtering technique

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In this research, the ceramic target with a mixture of ZnO (99.9% purity) and titanium (99.99% purity) was sintered at 1,000 °C for 4 hour. The content of Ti added to the ZnO target 10 wt.%. The diameter of the target was 51 mm and the thickness was 5 mm. The titanium-doped ZnO (TZO) films were deposited on glass substrates using the DC magnetron sputtering at room temperature. The deposition time was varied from 30 min to 90 min with the sputtering power of 150 W. When the deposition time of 30 min, the TZO film has the lowest sheet resistance of 72.2 /sq corresponding to the thickness of TZO films (determined using SEM image) of 1.2 m. The visible transmittance increased above 90% with the deposition time of 75 min corresponding to the optical energy gap of 3.87 eV which obtained using the Tauc plot method.

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