For effectively fabricating nanocrystalline ZnO thin films by the sol-gel method, the relationships between the temperature of the heat treatment and the quality of the ZnO thin films was observed. The decomposition of the sol was analyzed by TG-DTA. The orientation of the c-axis of the ZnO thin film was identified by XRD. The morphology was observed and estimated by SEM. The experimental results did show that the orientation of the c-axis is determined by the pre-heating and annealing temperatures, and that the grain size and roughness of the ZnO thin films are mainly influenced by the annealing temperature. A qualified ZnO thin film was prepared by using a sol-gel with a pre-heating temperature of 275 °C for 10 min and an annealing temperature of 550 °C for 60 min.

**Key words:** Zinc Oxide; Dip-Coating; Microstructure.