

## **Study the optical characteristic of ZnO nanostructure through annealing at various time period**

### **Abstract**

Main purpose of this research is to study the optical and electrical characteristic of zinc oxide material after undergoing annealing process at various time period. Hypothesis of this research have proved that the physical properties of zinc oxide material have changed by increasing time period for annealing process due to changes of optical and electrical characteristic of ZnO material. Morphological observation shows that, the transmittance properties of ZnO material on glass substrate varies after annealing at time period 5 hours compare to annealing time of 3 hours followed by annealing time of 1 hour. All the annealing process is conducted at temperature 200°C. Zinc oxide is synthesized through a facile method which is known as sol-gel method. Sol-gel solution is prepared based on mixture of zinc acetate dehydrate and stabilizer mono ethanolamine (MEA) with ratio 1:1 and the mixture solution is left for more than 24 hours for precipitation process to occur. The prepared solution is then coated with 3 layers on silicon oxide substrate and annealed at time period of 1 hour, 3 hours and 5 hours. The annealed samples with different period of time is further characterized through UV-Vis test and electrical test.

**Keywords;** Annealing, Crystalline, Silicon Substrate, Sol-Gel, Zinc Acetate Dehydrate, Zinc Oxide (ZnO)