

## **66. Fabrication of Multilayer Thin Film Sensor (MgO-TiO<sub>2</sub>-ppy) For Sensing Application Of CO<sub>2</sub> Gas**

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### **ABSTRACT**

We have prepared solid solution of (MgO-TiO<sub>2</sub>-ppy) Multilayer thin films for the CO<sub>2</sub> gas detection. The sensor (90MgO-10TiO<sub>2</sub>-ppy) shows maximum sensitivity towards CO<sub>2</sub> gas detection at room temperature (303K). The plot shows the linear nature against concentration of CO<sub>2</sub> gas. The sensitivity of all the samples was found to be increasing with the change in concentration of CO<sub>2</sub> gas.

The sensing mechanism is described as the surface oxygen atoms are desorbed when sample was exposed to CO<sub>2</sub> gas. A p-n junction like structure is formed where at equilibrium flow of electron from lower work species to higher work species. As there is no electron present between them the flow of electron becomes very easy. As the flow of electron is more, this will decrease the electrical resistance with increase in CO<sub>2</sub> gas concentration.

**Keywords:** (90MgO-10TiO<sub>2</sub>-ppy) Solid solution, CO<sub>2</sub> gas sensors, p-n junction structure.