



## NANOSTRUCTURED $ZnCo_2O_4$ THICK FILM AS AN ETHANOL SENSOR

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*Abstract- Semiconductive nanometer-size material  $ZnCo_2O_4$  was synthesized by a solution combustion reaction of inorganic reagents of  $Zn(NO_3)_2 \cdot 6H_2O$ ,  $Co(NO_3)_2 \cdot 6H_2O$  and glycine as a fuel. The process was a convenient, environment friendly, inexpensive and efficient preparation method for the  $ZnCo_2O_4$  nanomaterial. The synthesized materials were characterized by TG/DTA, XRD, EDX, SEM, and TEM. Conductance responses of the nanocrystalline  $ZnCo_2O_4$  thick film were measured by exposing the film to reducing gases like Acetone, Ethanol and  $CO_2$ . It was found that the sensors exhibited various sensing responses to these gases at different operating temperature. Furthermore, the sensor exhibited a fast response and a good recovery. The results demonstrated that  $ZnCo_2O_4$  can be used as a new type of gas-sensing material which has a high sensitivity and good selectivity to Ethanol 200 ppm.*

**Index terms:** combustion technique, Nanostructure  $ZnCo_2O_4$ , XRD, SEM, TEM, Gas sensor.