



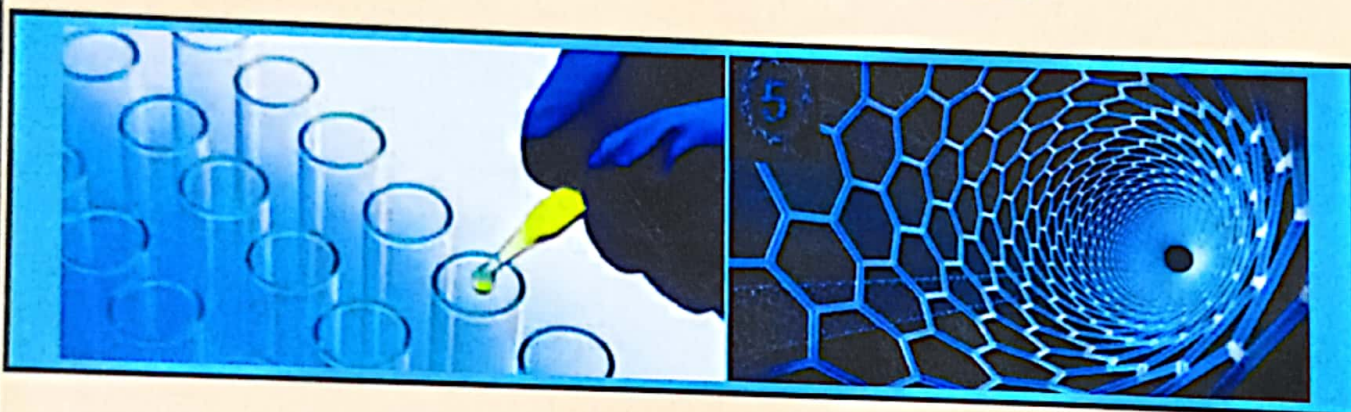
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**“Characterization of Spin Coated (Co, Cu, Ni, Zn) Ferrite Thin Films”**

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**Abstract:**

Thin films of (Co, Cu, Ni, Zn) ferrite were deposited on alumina substrate by spin coating technique using iron chloride ( $\text{FeCl}_3$ ), citric acid, diethylene glycol and respective metal chlorides as precursor solutions. Structural characterization of the deposited films were performed with X-ray diffraction, scanning electron microscope. It is confirmed that the films were of (Co, Cu, Ni, Zn) ferrite having polycrystalline nature and possessing single phase spinel structure with crystallite size 40-70 nm. Scanning electron micrographs reveal the porous nature of the ferrite films. The gas response of all the films towards methane gas is studied.

**Introduction:**

Ferrite thin films are used in production of microwave devices, high frequency devices, magneto-optical memory devices and gas sensors. Properties of ferrite thin films are often found to be different from that of the bulk for various reasons such as crystallite size, high defect density, grain boundaries, texture, fabrication parameters. Spin coating technique is preferred because of its ability to quickly and easily produce very uniform films from a few nanometer to a few micrometer in thickness.