

FORMAT FOR ABSTRACT

EFFECT OF RARE EARTH IONS (La^{3+}) ON HUMIDITY SENSING CHARACTERISTICS CADMIUM FERRITES

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ABSTRACT:

The nanocrystallite powders of La-Cd ferrites were synthesized by oxalate co-precipitation method. The structural analysis was done by XRD, SEM and FT-IR techniques. The X-ray diffraction study shows cubic spinel structure material with crystallite size of range of 28.86 to 30.40 nm. The grain size lies in the range of 0.67 to 1.2 μm . The grain size of La^{3+} added cadmium ferrite is smaller than Cadmium ferrite. FT-IR show two absorption band in high and low frequency region. The resistivity of the samples decreases with increase in percentage relative humidity (%RH). The decrease is found to be exponential for 40 to 80 %RH and linear for 80 to 90%RH. The samples are humidity sensitive at low humidity range of 40 to 80%RH. The sensitivity of La-Cd sensor is higher than Cd sensor. The response and recovery time of La-Cd sensor shorter than Cd sensor.

Keywords: Synthesis; crystallite size; Humidity; Response time.