

HUMIDITY SENSING PROPERTIES OF COBALT OXIDE/SILICA NANOCOMPOSITES PREPARED VIA SOL-GEL AND RELATED ROUTES

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Ultrafine $\text{Co}_3\text{O}_4/\text{SiO}_2$ nanocomposites were obtained via sol-gel (SG) method and related routes. The samples were characterized using X-ray diffraction (XRD), transmission electron microscopy (TEM) and N_2 adsorption-desorption techniques. The obtained phase, size of crystallites and specific surface area of the composites vary with the Co: SiO_2 weight ratio and preparation route. Humidity sensing properties measured by monitoring the DC conductivity for the obtained nanocomposites are reported. Conductivity changes amount to four orders of magnitudes were observed in response to 10–90% relative humidity change in the measuring chamber. Results indicate that humidity sensing properties depend on Co content and specific surface area of the composite.

Keywords: Cobalt Oxide/Silica; nanocomposites; sol-gel; humidity sensing.

1. Introduction

Next to temperature, humidity is the second most important environmental parameter in storage,

preservation and transport operations. Sensing of humidity is also very important in agricultural, food, medical and other industrial production fields