Abstract

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Fabrication and Characterization of a Polypyrrole Coated Copper Nanowire Gas Sensor

The paper presents a synthesis and experimental procedure for producing Nano elements such as Nano dots, Nano dashes, and Nano wires. The process is a temperature controlled reaction with certain temperature elevation and reduction profiles. The reactants are copper chloride, Sodium Hydroxide, and Polypyrrole. The resulting Nano element characterization is carried out using the scanning electron microscopy (SEM). This characterization determines the structure of the Nano element (dot, rod wire). This is followed by the X-Ray Diffraction (XRD) characterization that indicates the purity and intensity of the Nano element within the structure. The electrical characteristic of the sensor is determined by measuring the two terminal sensor’s resistance at different concentrations of the gas for different temperature ranges. An order of magnitude change in the resistance was found to occur in response to a 100% change in temperature for constant concentration. This is a good measure for pollution in industrial applications