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Alpha Iron Oxide (α -Fe₂O₃) Nanoparticles doped with Ruthenium for Gas Sensing Properties.

Increased air pollution in the city and environment affects human health negatively. WHO data shows that 91% of the world's population lives in areas where air quality exceeds the safe levels. Carbon monoxide extremely toxic exposure to about 80-100 parts per million may have a high risk of serious health problems, according to the (NIOSH). In the market, the CO sensors are operated at high temperatures and are not portable. Therefore, there is a great need to develop portable CO sensors that can operate at low temperatures. CO gas was detected by using hematite doped with ruthenium chloride as a sensing material. A simple chemical precipitation method was used to synthesize hematite doped with ruthenium chloride in this study. We examined the characteristics of the synthesized hematite nanoparticles by X-ray diffraction (XRD), transmission electron microscopy (HRTEM), scanning electron microscopy (SEM), X-ray photoelectron spectroscopy (XPS), Brunauer-Emmett-teller (BET), (TGA) Thermogravimetric analysis and the kenosis-Tec machine was used to study the gas sensing properties of the material

key word: doping, XRD, HRTEM, SEM, XPS, BET, TGA, and kenosis Tec machine.

Apply to be considered for a student ; award (Yes / No)?

Yes

Level for award; (Hons, MSc, PhD, N/A)?

MSc

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