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Hydrothermal Synthesis of NiO/graphene electrode and their application in CO sensing

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Monitoring trace concentrations of harmful gaseous chemical species are increasingly needed in different areas such as indoor, outdoor, vehicle air control, mining, and manufacturing sites. Hence, the fabrication of highly sensitive and selective chemical gas sensors are imperative. Chemi-resistive gas sensors based on semiconducting transition metal oxide are potential candidates due to their ease of operation, low cost of manufacturing, microscale miniaturization and good thermal and long-term stabilities [1–3]. In this work, spherical NiO/graphene foam (GF) composite with flowerlike structures was successfully synthesized for their application as CO reducing gas sensor via a hydrothermal reflux process. X-ray diffraction (XRD), scanning electron microscope (SEM), Fourier transforms infrared spectroscopy (FTIR) and gas sorption analysis was used to characterize the structure and morphology of the samples. The results obtained from the SEM micrographs showed that the flowerlike NiO spheres successfully coated the entire surface area of the GF. The performance of the composite towards CO gas sensing was studied. The results reveal that the incorporation of graphene into flowerlike NiO spheres not only improved the conductivity and surface area of NiO/GF composite but also enhanced the performance of the composite towards CO sensing. These results suggest that the composite could be a potential active material for CO reducing sensors.

References

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

Yes

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

PhD

Main supervisor (name and email) and his / her institution

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Would you like to submit a short paper for the Conference Proceedings (Yes / No)?

No

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