

Nickel decorated graphene composite with Fe₂O₃ hollow nano cube for gas sensing material

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Graphene has been considered as a promising candidate for vapor sensor since its high surface area, conductivity and sensitivity to its surroundings which are attributed to its unique 2D structure and conjugated carbon system. However, graphene should be functionalized to assign selectivity and higher response to bare graphene itself. On the contrary, metal oxide gas sensors have been reported as high responsive and selective sensors, but its operating temperature is usually higher than 150°C which is not appropriate for our daily lives. In this regard our research group convert graphene oxide into Nickel functionalized graphene oxide composite with Fe₂O₃ hollow nano-cube for toxic gas sensor at room temperature, expecting synergistic effect of them. As prepared materials were characterized by Scanning electron microscope, transmission electron microscope and gas sensor test system. We found that functionalized graphene oxide has better selectivity and response to formaldehyde gas among ammonia, trimethyl ammonia and formaldehyde gas.