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Chemiresistive Gas Sensing Properties of Vanadium Pentoxide nanoparticles

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Abstract content
   (Max 300 words)
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Special chars

Nanoscale materials are very suitable for gas detection at molecular level due to their inherent small size, high conductance and large surface-to-volume ratio. Semiconductor metal oxides like SnO2, ZnO, WO3, V2O5 and TiO2 are widely investigated materials for gas sensors application because of their simplicity, easy to synthesis, cost effective and capability of detecting large number of toxic and volatile gases under different conditions. Vanadium pentoxide (V2O5) nanoparticles were prepared using microwave hydrothermal synthesis technique. The structure, symmetry and thermal property of the material was studied with X-ray diffraction, Raman spectroscopy and Differential scanning calorimetry, its morphology with Scanning electron microscopy and physical adsorption analysis with Brunauer-Emmiter-Teller technique. The material's gas sensing capabilities was tested for ammonia (reducing gas) and nitrogen dioxide (oxidizing gas) keeping operating temperature constant. It was observed that the sensor's resistance decreases when ammonia gas was injected to the measurement chamber but decrease in resistance was also recorded as opposed to increase when nitrogen dioxide gas was added.

Apply to be
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Yes

Level for award
 (Hons, MSc,
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MSc

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

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Yes

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