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## Improving gas sensing properties of multi-walled carbon nanotubes by vanadium oxide encapsulation

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**Abstract content (Max 300 words) <a href="http://events.saip.org.za/getFile.py/target="\_blank">Formatting & Special chars</a>**

Manipulation of electrical properties and hence gas sensing properties of multi-walled carbon nanotubes by filling the inner wall with vanadium is presented. Using a simple capillary technique, multi-walled carbon nanotubes are filled with vanadium oxide and this significantly enhances their sensitivity for gas detection. The encapsulated vanadium oxide inside the inner walls of carbon nanotubes increases the density of states around the Fermi level for the composite material and this improves the sensitivity of the filled carbon nanotubes. An adsorption mechanism on three different sites on the carbon nanotube surface based on the Langmuir model is proposed. This work further highlights the influence of ambient oxygen in carbon nanotubes based sensors an aspect which has not been clearly outlined in many earlier theoretical and experimental studies.

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

No

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

N/A

**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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No

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