

## Synthesis, characterization and application of HFCVD fabricated WO<sub>3</sub> thin films

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In recent year, tungsten oxide (WO<sub>3</sub>) films are of great importance in technological applications due to its excellent chemisorption ability. WO<sub>3</sub> thin films are increasingly being explored as an effective gas sensing electrode owing to its selectivity towards toxic gases such as NH<sub>3</sub>, SO<sub>2</sub>, H<sub>2</sub>S etc. In this study WO<sub>3</sub> thin film was synthesized by hot filament assisted chemical vapor deposition (HFCVD) technique and utilized as efficient sensing electrode for the detection of toxic gases. In a typical experiment, the parent material Tungsten (W) was subjected to oxidation and subsequent gasification of WO<sub>3</sub> occurred at high temperature (~1000 - 1700oC). The oxide layer then condensed onto a substrate which resulted in the formation of WO<sub>3</sub> thin film. The structural, morphological and compositional properties of the synthesized films would be investigated using different characterization techniques. The prepared WO<sub>3</sub> thin films based sensing electrode could be applied for the possible detection of toxic gases such as nitrogen dioxide (NO<sub>2</sub>).