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### Hydrothermally synthesized 1D ZnO and their NO<sub>2</sub> Gas Sensing Performance

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ZnO thin films were prepared by simple Hydrothermal method on glass substrate for detection of NO<sub>2</sub> gas in the low concentration range of 5–100 ppm and characterized for structural and morphological -properties by means of X-ray diffraction (XRD) and Field emission scanning electron microscopy (FESEM). X-ray diffraction which proved the formation of 1D ZnO nanorods. The porous surface morphology was observed for the same which is useful morphology for gas sensing applications. The 1D ZnO sensor was used to study high temperature gas sensing properties for oxidizing (NO<sub>2</sub>, NH<sub>3</sub>) as well as reducing (CO, CH<sub>3</sub>OH, C<sub>2</sub>H<sub>5</sub>OH) gases. It was observed that 1D ZnO sensor operating at high temperature exhibit maximum response of 560% for 100 ppm of NO<sub>2</sub> gas and able to detect low concentration of 5 ppm NO<sub>2</sub> gas with reasonable response of 20% with fast response and recovery time. The sensor exhibits excellent reproducibility and stability also.

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