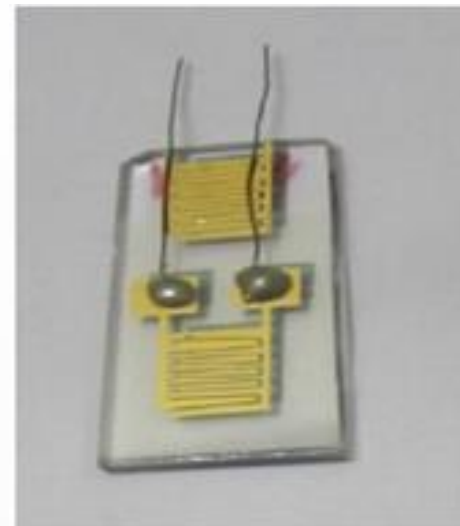


Portable Room Temperature Ammonia Sensor

Gas sensors are usually operated at high temperature to achieve fast response and reversibility and this leads to shorter lifetime of the sensor. Nanocrystalline SnO₂ thin films fabricated from the thermal decomposition of Langmuir-Blodgett (LB) film precursor, exhibit room temperature gas sensitivity comparable to that required for air quality monitoring. LB technique offers control over SnO₂ film thickness and crystallite size. By controlling the crystallite size and film thickness room temperature operation is achieved. The sensor is specific to NH₃ gas at room temperature and shows fast response and recovery without any carrier gas flow. The stability studies of the sensor indicated that these sensors are stable at least for a year with no significant change in sensitivity.



ADVANTAGES

- Room temperature operation, low power requirement and portable.
- Reliable over a period of 1 year.

APPLICATIONS

- Heavy water plants
- Fertilizer plants
- Pollution monitoring agencies

NH ₃ detection range	5-40 ppm
Operating temperature	Room temperature
Safe operating temperature	25-50°C
Response time (time to reach 90% of the resistance change)	40 sec
Recovery time (time to reach 10% of the resistance change)	20 min
Response at 5 ppm NH ₃ $[(R_{gas} - R_{air}) \times 100] / R_{air}$	10-15%
Selectivity for NH ₃ (comparison to CH ₄ , CO ₂ , H ₂ S, SO ₂ , H ₂ etc.)	Detectable decrease in current only for NH ₃ among these gases
Life time under operating conditions	~ 1 year