

The National Institutes of Health – Center for Disease Control (NIH - CDC) has issued a Phase II SBIR grant to Synkera Technologies Inc. for the development of new gas sensor arrays. The goal of the proposed project is the development of improved sensors for the detection of volatile hydrides (including arsine and phosphine) for protection of worker health and safety. This project brings together advances in nanotechnology, micromachining and materials chemistry to create sensors that are substantially better than current state of the art devices. The improved sensors will be the basis for improved personal and permanent monitors for increased protection of workers in the semiconductor industry.

The sensor arrays will build upon Synkera’s growing product portfolio of sensors based on our patented ceramic microsensor platform. Based upon this robust yet extremely high surface area platform, this family of sensors offers an unprecedented combination of low power consumption, ruggedness, reliability and performance. The new hydride sensor arrays will include the following key features.

- Sensitivity and selectivity over a wide concentration range (no hydrogen interference)
- Reliable performance over a very wide temperature range (-50°C to +60°C)
- Negligible effects from changing humidity levels
- Low power consumption
- Fast response and recovery
- Stable response over time
- Long storage and operational lifetime
- Affordability

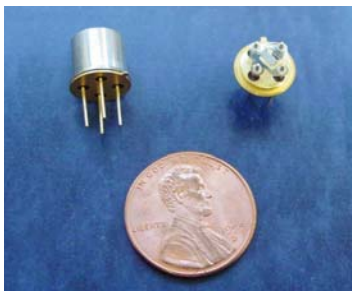


Figure 1: Packaged microsensor with thick film material on top

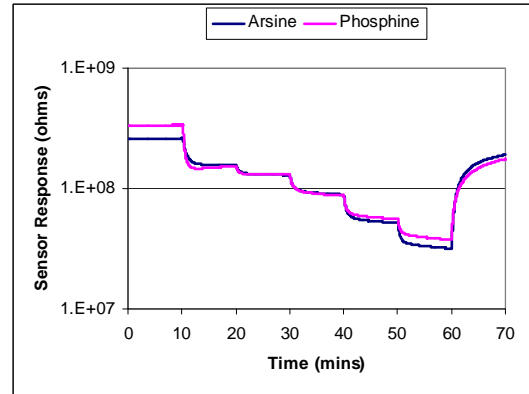


Figure 2: Microsensor response to hydrides and hydrogen. Exposures are 0-0.25-0.5-1-2-3-0 ppm arsine and 0-1-2-5-10-15-0 ppm phosphine.

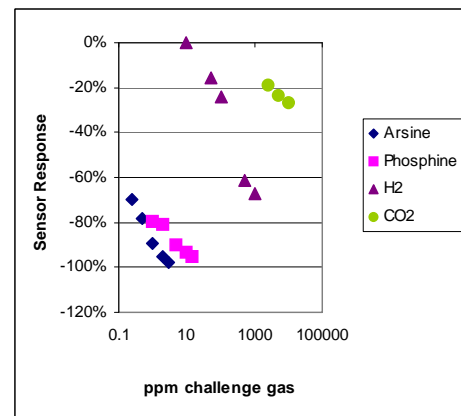


Figure 3: Selectivity of the microsensor to hydrides

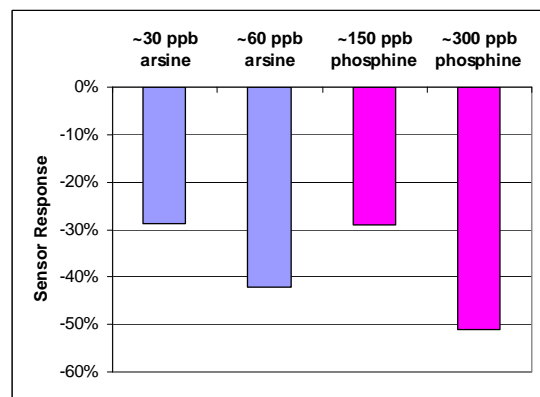


Figure 4: Response of the microsensor to low levels of arsine and phosphine