SOLID-STATE AMPEROMETRIC GAS SENSORS

TECHNOLOGY PROFILE

OVERVIEW

Synkera Technologies is developing a line of solid-state amperometric gas sensors for the detection of toxic gases. These novel sensors are expected to be lower cost and more robust than traditional electrochemical sensors (which utilize a liquid electrolyte) while maintaining similar performance. The current development focus is on hydrogen sulfide, carbon monoxide and ethanol. Many other gases (including nitrogen oxides, sulfur dioxide and chlorine) are planned for eventual development.

Assorted Sensor Elements

CONCEPT

Synkera's solid-state amperometric gas sensors are based on the use of solid polymer electrolytes in conjunction with microelectrodes in a novel band geometry. By eliminating the gas permeable membranes that are traditionally used to seal electrochemical sensors, which contain liquid electrolytes, the gas diffusion path is reduced and sensor response times may be improved. Also, the elimination of liquid electrolytes eliminates the possibility of sensor failures due to leakage under harsh environmental conditions. Additionally, the multilayer manufacturing methods used to produce the sensor elements allows for fabrication of a very small sensor element, with significant cost savings, when compared to traditional electrochemical sensors.

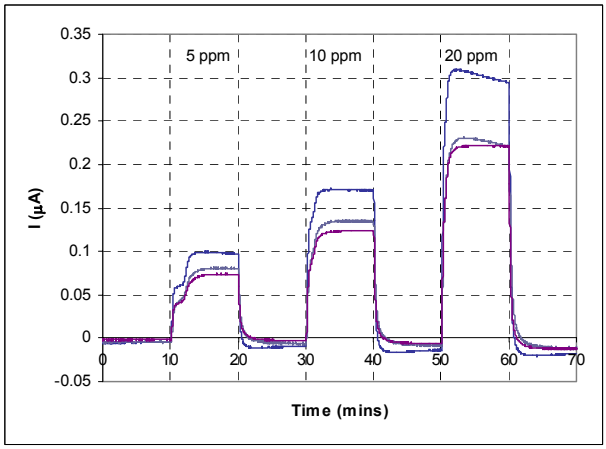

Figure 1: Sensor response to 5, 10 and 20 ppm H_2S in a dry gas stream.

SENSOR FEATURES AND BENEFITS

- Linear output
- Low detection limits (sub ppm H_2S detection)
- Low power (ambient temperature) operation
- Leak free
- Small size
- Rugged
- Low cost
- Solid state
- Sensor elements can be directly integrated with electronics for applications such as Smartcards

CURRENT STATUS

Synkera is currently working on H_2S sensor development under a SBIR Phase II grant funded by the NIH. Development work on carbon monoxide and ethanol sensors has been proposed, and is expected to commence soon. Patents are pending. Please call for more information regarding sensor availability.

PARTNERSHIP DEVELOPMENT

Partnerships are of interest for the continued development of solid-state amperometric gas sensors. This includes the development of sensors for the detection of other gases, sensor evaluation, and instrument development. To discuss further opportunities, or if you would like additional information, please contact:

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