

Success Story



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Optomem Sensors Inc. | Toronto

Optomem and OCE breathe new life into air quality analysis

Hand-held gas sensor detects multiple airborne contaminants

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Antonio Liberatore
Director, Business Development
Optomem Sensors Inc.

For factory workers, a strange smell in the air can be extremely dangerous. What’s more, some odourless gases can be just as deadly. With today’s manufacturing facilities and the potential exposure to high levels of hazardous chemicals, air quality monitoring is crucial for workplace and personal safety.

Until now, complex gas analysis has been conducted using large, expensive laboratory equipment, with canisters of air having to be shipped off-site for analysis. Significantly reducing both time and cost, Toronto-based Optomem Sensors Inc., with support from Ontario Centres of Excellence (OCE), is developing a new air quality sensor that puts the power of a lab in a chip no larger than a postage stamp.

Dr. Harry Ruda, Dr. Carlos Fernandes and researchers at the University of Toronto are working with Optomem and OCE to create the industry’s first miniature sensor on a silicon wafer that is capable of detecting more than one gas through plasma technology – a proven technology used to energize gas to emit specific colours.

Every gas compound, when energized, emits a wavelength unique to its chemical make-up – like a spectral fingerprint. Optomem’s technology captures the characteristic wavelengths emitted by energized gases within a tiny air sample, alerting the user of its presence. This chip can be programmed to detect one or several gas types, depending on a facility’s chemical use.

“The chips could easily be modified to fit into a PDA, a cell phone, a car or even a thermostat, providing real-time analysis to immediately warn of any dangers,” says Antonio Liberatore, Optomem’s Director of Business Development, who expects this technology will be market-ready by the summer of 2010.

Having funded the early proof-of-principle research for this gas sensor technology, OCE then reviewed its commercial potential with the University of Toronto research team and helped identify Optomem as the receptor to license and commercialize this technology worldwide.

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Optomem intends to first use this technology for the detection of benzene at oil and gas refineries, distribution centres and gas stations. A known carcinogen, benzene is used as an additive in gasoline. It’s also an industrial solvent in the production of drugs, plastics, synthetic rubber and dyes.

“But that’s just the beginning,” says Liberatore. “This technology is so versatile, the applications for monitoring air quality in workplaces, even public spaces, is enormous.”

