

Visual VOC Sensor: Low-cost, Real-time Detection

Liquid crystals for rapid, continuous, visual detection of Volatile Organic Compounds



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Market:

The global volatile organic gas sensors market is projected to reach \$186.7 million by 2025 with a CAGR of 4%. Non-industrial applications are limited due to lack of low-cost, rapid sensors with on-site readouts for real-time continuous monitoring.

Technology:

This technology is a liquid crystal sensor that can detect volatile organic chemicals (VOCs), especially aromatic VOCs. The sensor operates by liquid crystals that change phases and colors upon contact with VOCs. These features allow quick, visual detection with the unaided eye when recommended exposure levels have been exceeded.

IP and Stage:

1 issued patent. Prototyped microarray chips and tested for optical detection of toluene vapor at concentrations as low as 10 ppm to demonstrate concentration-dependent color change, reversibility, and temperature stability at 25-40°C

Impact:

This liquid crystal technology can be used in low-cost chemical sensor badges or continuous monitors. Traditional passive chemical sensors require sending samples for analytical testing, which increase the cost and creates a considerable lag time between exposure and notification. By eliminating the need for off-site, expensive, analytical testing, this technology will lower the cost of VOC detection and could help broaden adoption of VOC detection beyond traditional industrial settings.

Ask:

Introduction to chemical sensor industry

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