Environmental Gas Sensors 2018-2028

Technologies, manufacturers, forecasts I IDTechEx research

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Poor air quality causes more deaths annually than HIV/AIDS and malaria combined. A lack of low cost environmental monitoring equipment prevents individuals from taking action to improve air quality. Currently environmental monitoring methods are expensive and provide low spatial coverage, making their usefulness to individuals limited.

Sensors are based on tried and tested technology, new methods of manufacture are enabling smaller, lower power and more selective sensors. This has led to a tipping point in the industry, enabling the integration of sensors into low cost devices and into everyday consumer electronics such as mobile phones and wearable devices. In the future, a range of detection principles will be used to assess the wide range of pollutants in the environment. By 2028, more than 700 million sensors will be used in mobile phones.

At the same time, sensors will play a key role in IoT development and will be used extensively in smart home and smart city programmes. Heating, ventilation and air conditioning (HVAC) systems, air purifiers, smart windows and other applications will employ sensors to improve the quality of life of individuals across the world. We expect a growing market for gas sensors used in smart homes and smart cities.

In this report, we forecast the market for environmental gas sensors from 2018 to 2028. The atmospheric pollutants under examination include CO2, volatile organic compounds, NOx, Ammonia, SO2 and CO. Many pollutants exist at similar concentrations in the region of parts per billion (ppb). Consequently, there is a greater need for selective sensors in environmental monitoring. Another main focus is the particle pollutant of micron size, as the concern of smog is growing.

This report covers biosensors based on techniques of:

- pellistor gas sensor
- infrared gas sensor
- metal oxide semiconductor (MOS) gas sensor
- electrochemical gas sensor
- and optical particle monitor (OPM) gas sensor

These techniques were compared with the traditional methods such as ultraviolet adsorption or filter dynamics measurement system. Gas sensors present an opportunity to attain good spatial coverage on environmental information, unobtainable with traditional monitoring methods. Microelectromechanical systems and screen printing techniques open the door to miniaturising these sensors, which is the key for the future use of these gas sensors

The market forecast is based on six major market segments:

- automotive
- air purifier
- smart devices (mobile)
- smart home
- smart city
- and wearables.

The environmental sensor market is currently dominated by the automotive industry, where sensors are used to automate air flow into the drivers' compartment. Over the coming years, IDTechEx expect to see large increases in sales across several new markets, primarily to the mobile device and air purifier industries.

We provide a list of main manufacturers of gas sensors, and a SWOT analysis of ten. We also give a comprehensive study on current available devices that using gas sensor to monitor environment, including sensors in mobile devices, wearable, air purifiers, automobiles, smart cities and to measure indoor air quality.

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