



國內自主研發感測器 (空品) Indigenously Developed Air Quality Sensors

執行單位：經濟部產業技術司 (工研院)

經濟部產業技術司科技專案委託工研院智慧感測與系統科技中心開發「複合長效空品感測器」可同步量測懸浮微粒(PM2.5)、臭氧(O3)、一氧化碳(CO)、揮發性有機物(VOC)等空品監測項目。利用光學檢測方式，來偵測空氣中懸浮微粒(PM2.5)與臭氧(O3)濃度，以創新雙流道微粒分篩、微粒訊號特徵辨識、LED動態光源穩定與多元環境因子補償關鍵技術，提高感測器使用壽命與準確性。以及利用半導體與微機電技術，製作出微型加熱晶片，搭配氣體奈米感材及感測控制電路單晶片，可將偵測到的氣體感測電阻變化轉換為一氧化碳濃度值來偵測一氧化碳(CO)、總揮發性有機氣體(TVOC)等有害氣體與異味氣體濃度。

The Ministry of Economic Affairs, Department of Industrial Technology has commissioned the Industrial Technology Research Institute's Center for Smart Sensing and System Technology to develop a "Composite Long-Term Air Quality Sensor." This sensor is capable of simultaneously measuring particulate matter (PM2.5), ozone (O3), carbon monoxide (CO), volatile organic compounds (VOC), and other air quality monitoring parameters. The sensor utilizes optical detection methods to detect concentrations of suspended particulate matter (PM2.5) and ozone (O3) in the air. Innovative key technologies, including dual-channel micro-particle sieving, micro-particle signal feature recognition, LED dynamic light source stability, and multi-environmental factor compensation, are employed to enhance the sensor's lifespan and accuracy. Furthermore, semiconductor and micro-electromechanical (MEMS) technologies are utilized to create a micro-heating chip. This chip, combined with gas nano-

sensing materials and a single-chip sensing control circuit, converts the detected gas sensing resistance changes into carbon monoxide concentration values for the detection of carbon monoxide (CO), total volatile organic compounds (TVOC), and other harmful and odorous gas concentrations.

微型氣體感測技術

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複合式光學空品感測技術

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MOX 氣體感測器



複合式光學空品感測器