

Identification of Toxic Gases Using Steady-State and Transient Responses of Gas Sensor Array

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In this paper, we report the performance of a gas identification system based on a metal-oxide gas sensor array. Analyses of single gases, such as ammonia, hydrogen sulphide, carbon monoxide, nitrogen monoxide and acetylene diluted in air, are performed with these nonselective sensors. Both the transient and steady-state behaviors of sensors are measured. The sensor array consists of six gas sensors operating at three temperatures (from 300°C to 500°C). Principal component analysis (PCA) is applied in order to identify the target gases. We obtain a good classification of the four gases using the steady-state response and the dynamic response (response time). However, the dynamic response shows a higher repeatability than the steady-state response.

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