

Portable Electronic Nose System Utilizing Single Gas Sensor Array Fabricated by Si Bulk Micromachining

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A portable electronic nose system has been developed utilizing a single 16-channel sensor array chip. It was fabricated by Si bulk micromachining and equipped with the sensing materials of carbon-black-polymer composites. This system consists of a small sensing module containing the sensor array chip, signal processing circuits and vapor delivery components on a printed circuit board, and a laptop personal computer equipped with data acquisition and pattern recognition programs. Experimental results show that the sensor array chip can measure and recognize volatile organic compounds even by simple principle component analysis. In addition, our portable electronic nose system has successfully classified real complex samples, i.e., brandy and whiskey.

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