

Szczurek, A., Maciejewska, M. The Concept of System for the Measurement of Volatile Organic Compounds Based on Sensor Array. *Ochrona Srodowiska* 2013, Vol. 35, No. 1, pp. 39–46.

Abstract: There was presented a novel concept of sensor system for the quantitative measurement of volatile organic compounds (VOCs), based on the sensor array and the dynamic mode of operation. At the core of the concept there are modules which realize the following functions: i) sampling, sample treatment and its delivery for the analysis, ii) chemical to measuring electrical signal conversion, iii) sensor signal conditioning, iv) measurement data acquisition, v) sensor signal preprocessing, vi) data analysis. The concept presentation was illustrated with the results of experiments related to sensor measurements of VOCs. Based on the provided examples we conclude that the proposed solution allows for: i) errorless recognition of gas mixtures which contain one or two VOCs as well as their categories, ii) content determination of major VOCs (accuracy of several percent) and minor VOCs (accuracy of over a dozen percent) in a gas mixture, iii) determination of organic carbon atom concentration for multicomponent VOC mixtures of known qualitative composition. As for the latter, case the assessment error is between several and over a dozen percent depending on the complexity of the mixture.

Keywords: Semiconductor sensor, gas analysis, aliphatic compound, aromatic compound.