PARTNER PRESENTATION AND INTEREST IN HORIZON EUROPE PARTICIPATION

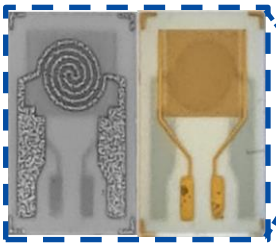
Sensors and Smart Systems for Pollutant and Hazardous Gases

Short description

A multisensory array is proposed for the detection of gases in three main areas: environmental monitoring, with the target being pollutants such as CO_x, NH_3, CH_4 and NO_x; indoor air quality monitoring, with the target being the detection of VOCs such as CH_2O and C_6H_6; and the detection of explosives (TNT and RDX). An array of sensors dedicated to each targeted gas is proposed such that the constituent sensors can be mixed and matched based on the addressed problem. Thus, a series of sensors based on metallic oxides and including a heater patterned on the back of the chip are developed for the environmental and indoor gases. Sensors based on graphene oxide and polyaniline are also tested a potentially complimentary sensors. To address the high cross sensitivity issues of such sensors an algorithmic correction algorithm is proposed, which determines the range of each gas present in the environment based on the calibration of the sensors to each gas.

Organisation

Romelgen was established in 2000 and has had as its goal the distribution and technological support of a range of temperature control device and gas measurement components.

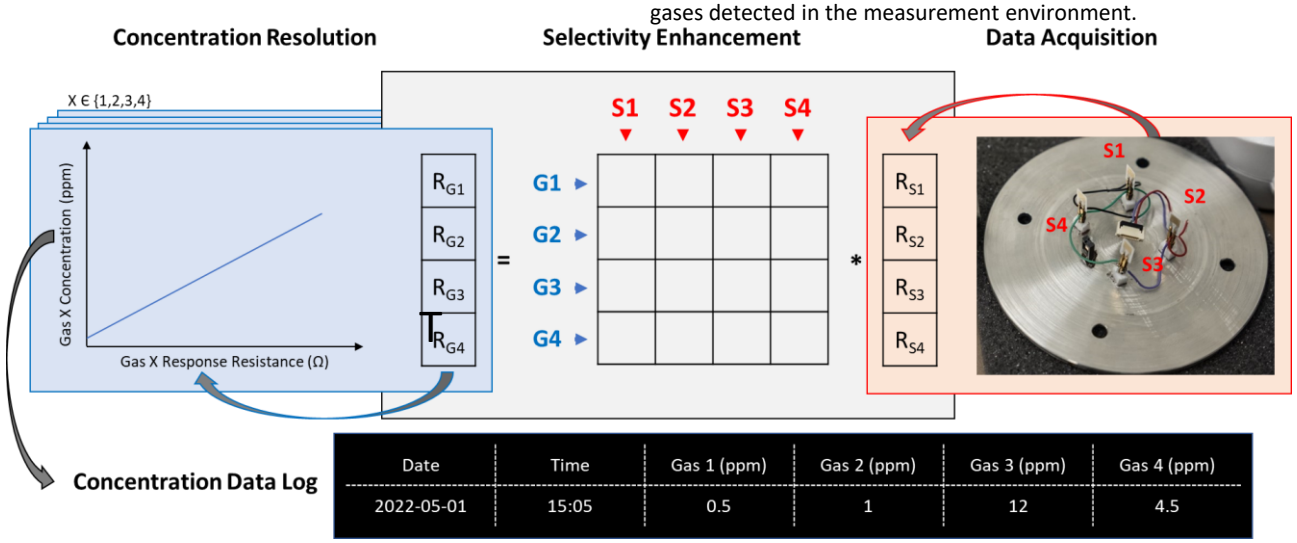


Heater: on sensor back

Sensing area: on sensor front

Data Acquisition

Data acquisition is performed continuously and transmitted to a readout platform (e.g. smartphone). On receiving data from four sensors with specific selectivity to different families of gases (e.g. NH_3, NO_2, CO and CH_2O), the results are sent through a selectivity enhancement matrix. This compares the resistances to those obtained by the sensor to set combinations of the four gasses and on comparing with the calibration curves of the sensors, it gives a readout for the gases detected in the measurement environment.



Date	Time	Gas 1 (ppm)	Gas 2 (ppm)	Gas 3 (ppm)	Gas 4 (ppm)
2022-05-01	15:05	0.5	1	12	4.5

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