

Project Report



Application No. 2004
Short title The performance testing of the hydrogen sensor based on polyaniline

Objectives: short, medium and long term (<250 words)

Short term objective was to observe the operation of the hydrogen sensor based on polyaniline under various conditions in environmental cell of SenTeF facility. Since gas sensors based on conducting polymers (e.g. polyaniline) are still subject of research and development, such characterization is important to reveal their application potential and also to validate previously measured characteristics of the sensor. One of the main advantages of polymer-based gas sensor is their ability to detect gases at room temperature. Thus no heating of the sensing element is necessary. Our mid-term objective is to license the technology of our gas sensor to the producers established in the sensor market. Long-term objective is the research of conducting polymers and their composites, deeper understanding into their properties, and development of novel technology for gas sensor preparation.

Brief summary of work carried out:

During one week of our access to the SenTeF infrastructure we carried out several tests on the gas sensors: calibration test (200 – 1000 ppm of hydrogen), humidity test (0 – 80 %) and temperature test (20 – 80 °C). Using the separated measurement workplace we performed also response time test (to 1% of hydrogen) and cross-sensitivity test to gaseous ammonia.

Main achievements intended for publication <250 words

Due to some measurement difficulties, data acquired from SenTeF did not correlate with measurements at our home institution. Thus, further work is required to improve the sensor performance and measurement repeatability.

Difficulties encountered <250 words

Since our samples were only research prototypes, we did not provide a readout circuits with our sensors. Thus, the main difficulty was the electrical measurement. High baseline resistance and limited measurement voltage made data acquisition very difficult, since SenTeF facility was designed mainly for industrial standards.

Further comments: No