



SEMINAR



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Micro and nanotechnologies fostering the optimisation of low-cost gas sensors

Seminar room, Polo Ferrari 2, via Sommarive 9, Trento
December 2nd, h. 11:30 am

Speaker

Andrea Gaiardo, MNF - Micro Nano Facility Unit, Sensors and Devices Center, Bruno Kessler Foundation

Nowadays, the detection of gaseous molecules has become crucial in several applications, including medical screening, air quality monitoring and precision agriculture. Analytical tools, such as gas chromatographs, mass spectrometers and analyzers based on chemiluminescence or FT-IR, are the most widely used instruments for gas analysis, allowing for quantitative and qualitative detection with high reliability. Despite their good performances, these tools are expensive and cumbersome, limiting their sustainable widespread use. As a result, in the last few years an ever-higher effort has been focused in the investigation of innovative smart gas sensors, with the aim of develop low-cost and portable devices that can be used in application in which a high spatial-temporal resolution is required. Among the various technologies developed, the most studied are chemoresistive gas sensors because of their great versatility. These sensors are particularly low-cost, small, highly sensitive and have shown the advantage of higher throughput and the possibility of large-scale integration. However, their low selectivity and lack of long-term stability limited the use of this sensor type in many applications, representing a boost for the investigation of innovative approaches aiding to overcome these drawbacks. This seminar is focused on the working principle of chemoresistive gas sensors, as well as the micro- and nanotechnologies recently developed at FBK towards the optimisation of the production process and the improvement of sensing performance