

IEEE P2520 Seminars on Fundamentals of Odor Monitoring & Analysis
May 10, 2021

Title: **Instrumental Odour Monitoring Systems (IOMS) Testing & Performance Evaluation** ([recording](#) [slides](#))
Speaker: Laura Capelli
Politecnico di Milano
Department of Chemistry, Materials and Chemical Engineering “Giulio Natta”

Since electronic noses (or, more generically, IOMS) are used more and more for air quality monitoring purposes, and in some countries are starting to have a legal value, there is a need for standardization and programs for the quality verification of instruments. Such quality programs have the aim to guarantee the main characteristics of the instrument for both the final user and local authorities, let the user establish a suitable maintenance procedure and give information on measurement uncertainty. One critical aspect when dealing with electronic noses for environmental odour monitoring is that environmental odours are complex mixtures that are hardly reproducible in a laboratory. Laboratory testing with synthetic odours can be used to obtain preliminary information about the IOMS functioning (e.g., lower detection limits, repeatability and stability towards temperature and humidity variations), but it cannot prescind from field testing. Field performance verification can be carried out with different purposes, depending on the specific application and the final goal of the monitoring. Lower Detection Limit towards olfactory classes of interest, accuracy indexes relevant to detection and classification performances, and limits of acceptance for odour quantification are parameters that can be effectively used to evaluate the IOMS performance for different environmental applications. This presentation illustrates the work done at Politecnico di Milano over the last 15 years in the field of developing testing procedures to evaluate electronic nose performances to be used for environmental odour monitoring.

Biography



Laura Capelli is Associate Professor at the Department of Chemistry, Materials and Chemical Engineering of the Politecnico di Milano University. Her research activity focuses on several aspects of odour measurement in different fields, but she has been working mainly in the development of electronic nose applications in the environmental sector. She published more than 170 papers in journals, books and conferences (ca. 100 ISI/Scopus indexed publications; Scopus H-Index = 22). She is scientific coordinator and organizer of the NOSE international conference series on environmental odour monitoring and control, and member of the scientific committee of other relevant conferences in this field (e.g., MKO, IWA).

Organized by the IEEE P2520 Standard for Testing Machine Olfaction Devices and Systems
in cooperation with the
International Society for Olfaction and Chemical Sensing ([ISOCS](#))

Sponsored by the IEEE Sensors Council Standards Committee
Co-Sponsored by the IEEE Industrial Electronics Standards Committee