ISOEN2026

Chongqing, China

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International Symposium on Olfaction and Electronic Nose

SPECIAL SESSION 06

Biomimetic Olfactory Perception and Intelligent Electronic Nose

Olfactory and gustatory senses, fundamental to human experience, are crucial for interpreting environmental conditions. In 2004, American scientists Dr. Richard Axel and Dr. Linda B. Buck were awarded the Nobel Prize for their groundbreaking work on the principles of olfaction and odor recognition. The development of various artificial olfactory systems, or electronic noses, has been pursued because of their significant commercial potential.

Biomimetic olfactory perception and intelligent electronic noses emulate animal olfactory systems to detect odors and chemical components using sensitive materials, and have proven highly beneficial across fields such as the food industry, environmental protection, and biomedicine. For example, they have been used to identify disease-associated odors in breath, including markers indicative of diabetes and lung cancer.

Although some achievements have been made, this method still has limitations in sensitivity and specificity, compared with the biology binding of specific odorants to the olfactory receptor cells. Thus, the study of biomimetic olfaction perception and intelligent electronic nose is still at an early stage. Only a few kinds of olfactory systems are in commercial use. Therefore, the research on intelligent electronic noses is still very important for future development.

This Special Session will focus on research related to the design, modeling, and application of Biomimetic Olfactory Perception and Intelligent Electronic Noses, including but not limited to:

1. Bio-inspired olfactory, odor sensing materials and transducers.
2. Novel nanomaterials-based electronic nose systems and multi-gas sensor array platforms.
3. Signal processing, pattern recognition, and machine learning methods for olfactory interpretation.
4. Novel olfactory sensing approaches using optical, chemical, biological sensitive techniques, e.g. receptors, nanotechnology, cell and organoids etc.
5. Biomedical and clinical applications, including metabolic screening, disease markers detection and olfactory repair, etc.
6. Novel flexible or wearable biomimetic olfactory perception and intelligent electronic Noses technologies.

Special Session Organizers

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Zhejiang University, China

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*The accepted papers after proper registration and presentation will be included in the conference proceedings, which will be published in **IEEE Xplore**. The proceedings will be submitted to be indexed by **EI Compendex** and **Scopus**.

* Paper Submission Closes: **19 January 2026**

Conference Sponsors

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