

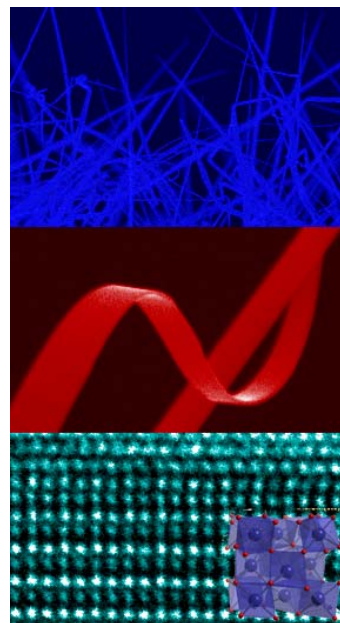
**SENSOR LABORATORY**  
**CNR-INFM AND UNIVERSITY OF BRESCIA**  
**VIA VALOTTI 9, 25133, BRESCIA, ITALY**

**Since 1987, the SENSOR laboratory established its scientific research in gas/flavour sensors and artificial olfactory systems based on semiconducting metal-oxide nanostructures.**

The activity of SENSOR extends from the investigation of basic sensing process to the development of industrial applications. A large variety of semiconducting metal oxides such as SnO<sub>2</sub>, In<sub>2</sub>O<sub>3</sub>, TiO<sub>2</sub>, and composite materials is developed for gas detection. A new research horizon in the field of gas-sensing has been recently opened towards nanostructured systems with reduced dimensionality like semiconducting quantum nanobelts, porous silicon, and carbon nanotubes.

For advanced applications such as food processing control and environmental monitoring, SENSOR develops the Artificial Olfactory System (AOS) or Electronic Nose, based on array of specifically-developed gas sensors. The data analysis necessary to the AOS derives from the research regarding learning from data, comprising explorative analysis and supervised learning. SENSOR has developed two generations of AOS, and engineered a commercial device jointly with the SACMI-scarl company.

[As fast-approaching scientific event for 2006, SENSOR will organize in Brescia the XI International Meeting on Chemical Sensors -IMCS.](#)



**Instrumentation and Research Facilities**

Two DC/RF magnetron sputtering with load-lock systems;

Thermal evaporation plant;

Programmable spin-coating system

High temperature synthesis of nanobelts;

Two stations for sensor conditioning.

Atomic Force Microscope with LFM, NC-AFM, IC-AFM, Phase and STM.

Field-emission SEM with SE, BSE, STEM and EDX detectors.

Single-nanostructure testing and patterning via manipulators and Dip-Pen lithography.

Four advanced systems for sensor calibration to gas concentration, humidity, and temperature. Electrical conductivity, work function, photoluminescence and reflectance spectra are recorded as multiparametric sensors response.

**Sensor Laboratory Staff**

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