

## Micro and Nano Sensors Snoop Around

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Vision and hearing, smell and taste, and the tactile senses are bridges between the external world and our brain. Micro and nano sensors are miniaturized electronic devices which pick up physical, chemical, or biomedical signals and enter them into the computer. The miniaturization of most kinds of sensors has been achieved, but the "electronic nose" able to detect a broad range of "smells" caused by complex mixtures of airborne chemical compounds is still a dream. But application specific gas sensors or "narrow band noses" are being developed, which can detect and identify gas mixtures in given application areas, such as air conditioning, dry cleaning, oil refineries, or food production. Integrated gas sensors based on CMOS IC technology with on-chip micro structures (CMOS MEMS) coated with gas absorbing polymers or metal oxides are presented. The quest of sensor selectivity is tackled by combining various polymers with different transducer principles (mass sensitive, capacitive, calorimetric). The combination of different types of transducers on a single CMOS MEMS chip with dedicated circuitry, and the assembly of several such chips, each with different chemically sensitive polymer layer, in a handheld "snooping instrument" are discussed. An outlook will address the combination of CMOS MEMS with bio materials and living cells.