Caltech Electronic Nose Innovation

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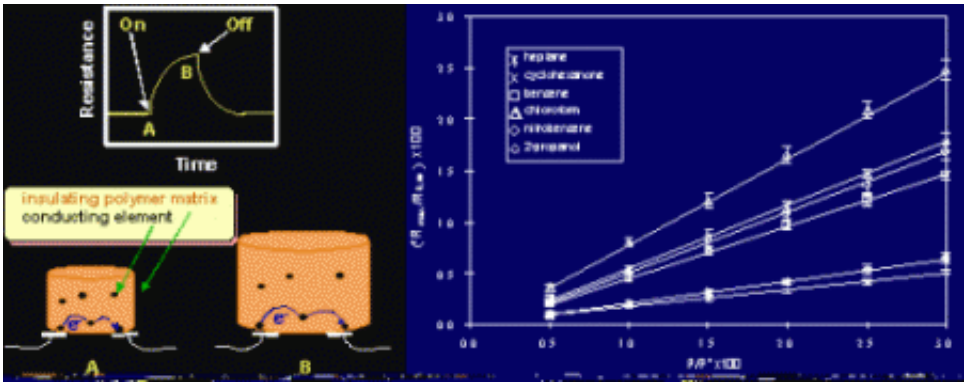

Smelling occurs as an odorant partitions into the polymer. Credit: Cal Tech Graph

Research Scientists at Caltech Developing Electronic Nose. The Chemistry and Chemical Engineering Division at Caltech are combining efforts with NASA and other engineers at Caltech to test ranges of applications.

The Lewis Group a division of Chemistry and Chemical Engineering at Caltech have a working model of an electronic nose. The efforts of Cal Tech scientists has led to an array of simple, readily fabricated chemically sensitive conducted polymer film.

An array of broadly-cross reactive sensors respond to a variety of odors. However, the pattern of differential responses across the array produces a unique pattern for each odorant. The electronic nose can identify,

classify and quantify when necessary the vapor or odor that poses a concern or threat.

The electronic nose responds much like the mammalian olfactory sense produces diagnostic patterns and then transmits the information to the brain for processing and analysis. The range of uses for the electronic nose in a commercial setting is phenomenal. The electronic nose could provide a remote sensing device for oil and gas exploration, generators, electrical generators and any type of manufacturing setting where an odor or vapor may be the first signal of a malfunction.

The Caltech Nose has shown the ability to function well in normal room temperatures and varied setting. It can detect an odor and then by robotics turn its attention to the odor or vapor it identifies as a concern.

The research with the Caltech Nose is continuing and currently is combining efforts with NASA and other engineering groups who specialize in VLSI and integrated chip design. A series of queries are being tested by the Caltech Nose team. One inquiry is can one assign a numeric factor for the human judgment of smell. Other inquiries involve calibration and sophisticated application of the innovation.