



Business Week, September 4, 2000 Number 3697; Pg. 78



DEVELOPMENTS TO WATCH

YOU LOOK LIKE A MONKEY, AND YOU SMELL LIKE ONE, TOO

edited by ELLEN LICKING

SHAKESPEARE WROTE THAT A rose by any other name smells just as sweet, but what does it objectively smell like? Imagine if we could use chemistry to describe quantitatively the essence of rose - or stinky socks or spoiled meat. Researchers at the University of Illinois report in the Aug. 17 issue of Nature that they have developed such an artificial nose. The technology uses off-the-shelf chemistry to give an answer in half a minute. It works by visualizing odors.

To create the "smell-seeing" device, two chemists, Neal A. Rakow and Kenneth S. Suslick, arranged 11 different vapor-sensitive dyes on a glass plate. When the dyes come into contact with air-borne odor-producing chemicals, the dyes change color -- from orange to green, say, or red to blue. Using a scanner and special image analysis software, the color changes are read out as a diagnostic pattern, or "fingerprint," for the chemical being tested. Identifying a mystery chemical is as easy as comparing its test pattern with a library of color fingerprints.

Suslick claims the digital nose is so sensitive that it can detect chemical concentrations as low as 32 parts per billion. That's 10 to 100 times as sensitive as the human nose in most cases. And unlike many other polymer-based technologies, Suslick's artificial sniffer isn't affected by changes in humidity. "It does not matter if you are in the Gobi Desert or downstate Illinois. The color change will be identical," brags Suslick. He and Rakow are now making sniffers loaded with as many as 400 different dyes. That's nothing to sneeze at.