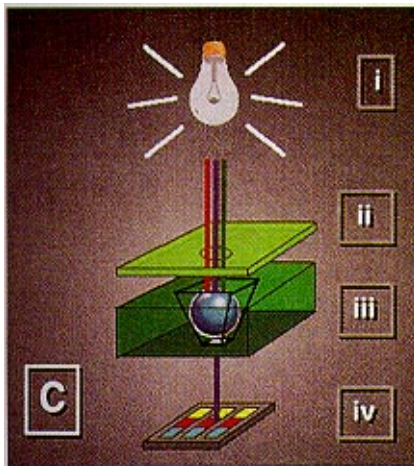


“Say 'ah',” in *Analytical Chemistry News & Features*, News: Analytical Currents section, September 1, 1998, p. 567A.

Say "ah"

Move over, electronic nose. The "electronic tongue" is here. The device, made by Dean Neikirk and colleagues at the University of Texas at Austin, is modeled after the mammalian mouth's sensor and is designed to detect analytes in solution. Like the original organ, the electronic version has "taste buds"-actually a 3 x 3 array of poly(ethylene glycol)/polystyrene beads bearing chromogenic indicator molecules. The beads sit inside micromachined wells, made to mimic the cavities that hold real taste buds. The beads typically change color within a minute after being exposed to a solution, and a charge-coupled device measures the changes in red, green, and blue light intensities for each bead.

Like the natural tongue, the electronic version is designed to use pattern recognition to discriminate among samples. The indicator molecules themselves are selective - one type reacts to simple sugars; the second to pH; the third to pH plus Ca^{2+} ; and the last to pH, Ca^{2+} , and Ce^{3+} . But the array as a whole reacts differently to various combinations of analytes, and it is the overall pattern, rather than the response of any single sensor, that can identify the test solution. Efforts to apply pattern recognition to the light-intensity data have already begun. (*J. Am. Chem. Soc.* **1998**, *120*, 6429-30)



Schematic representation of the electronic tongue. A light source (i) irradiates a series of beads held in wells (iii) through a cover plate (ii). The transmitted light is detected with a CCD (iv).