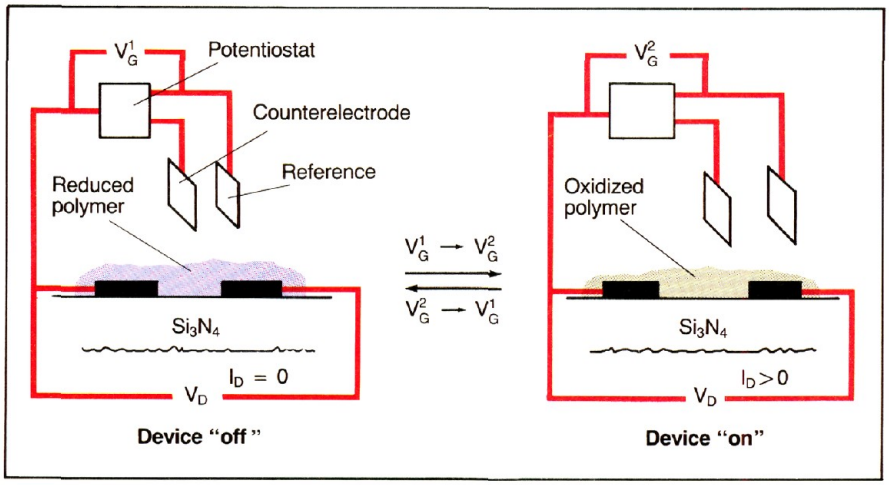

Figure 2. Selective polymer sensor developed by E. P. Lofton, J. W. Thackeray, and Mark S. Wrighton (*J. Phys. Chem.* **1986,** *90,* 6080–83).
In analogy to a field effect transistor, V_G = gate potential, V_D = drain potential, and I_D = drain current.

oxidized state it's either electronically or ionically conductive and a current will flow. The amount of charge it takes to switch this on and off is very small. Wrighton points out that it's an electrochemical analogue of a field effect transistor. You can think of one electrode as the source, one electrode as the drain, and the chemistry at the polymer as the gate. By making very thin layers of this material one can get very sensitive sensors."

Cybernetic electrochemistry

The state of the art of cybernetic electrochemistry is based on work done by Larry Faulkner and his co-workers, who developed a digital instrument with built-in instructions to control the electrochemical repertoire and interpret the data (He, Peixin et al. *Anal. Chem.* **1982,** *54,* 1313–26 A). But Bard explained that "the loop hasn't really been closed yet, and I think it will be closed. Closing the loop means feeding the data to a computer that's attached to the instrument through a communications port and then having a resident expert system analyze the data. Then the expert system will close the loop by saying, 'The conclusion from the first experiment indicates that another experiment should be done.' System control will then return to the cell, the next experiment will be done, and the data will be reanalyzed. You let this cycle around until it's happy and it tells an observer what the answers are.

"But my own feeling is that the human being is still the most important part of the system," he continued. "If we look at the history of electroanalytical chemistry, I think the blessing has not been in the instrumentation. The instrumentation has helped a lot, but it's really the great ideas and the people who implement them that have made it such a productive field, and I think the future still lies in the minds of its practitioners." *Stu Borman*