GREGORY H. ROBINSON

SOUND BYTE OR THE WHOLE STORY?

Fundamental chemistry research still has essential place in our instant-gratification society

In many respects, chemistry presents an odd dichotomy: It is as broad as it is finely focused; it is frequently simple and just as often strikingly complex; it is buoyant, yet it can be oppressively dense. At times, chemistry seems to be equal parts science and art. The essence of chemistry is as rhythmically intricate as a Mozart sonata, yet it can be as logically soothing as a jazz composition from Ellington. Indeed, in another sense, chemistry is neither Mozart nor Ellington yet both at the same time.

Our high-tech society has made us obsessed with immediate gratification. Effectively, "We want what we want when we want it." Deferred gratification—the concept of working toward a goal to be realized at some later point—has long since lost its appeal. Consider that we often feel compelled to skip to our favorite tracks on a compact disc as opposed to embracing the artist's entire recording. On ESPN's SportsCenter, we are fed a constant, if well-chosen, diet of brief sports highlights.

Decades ago—before MTV, MP3, DVD, digital cable TV, and HDTV—radio was a family's main source of entertainment. We listened to music for its own sake, often constructing mental images, personal "private analog videos." We would often enjoy the entire album of an artist, not only a track or two. Arguably, quintessential works such as the 1959 recording of "Kind of Blue" by Miles Davis, often cited as the greatest jazz album of all time, owes a measure of its acclaim to the fact that it was recorded and released during a period in our history when we were encouraged to embrace—or at least listen to (partially thanks to the technology of the day)—albums in their entirety.

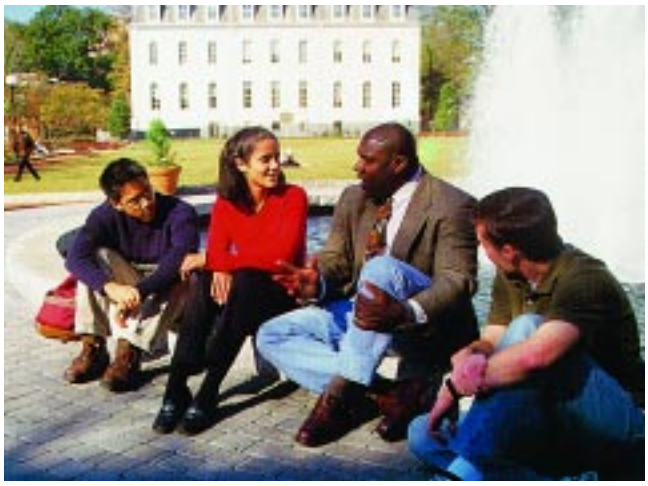
ESPN has changed the way we view sports. For example, a tennis match that lasts two hours or more can be quickly distilled to two or three highlights in a SportsCenter broadcast. As a result, we have less opportunity to savor the more subtle aspects of the game. Thus, it is difficult for us to appreciate Pete Sampras' seemingly easy volley, which actually requires enormous skill as the point is strategically constructed, even orchestrated, over a series of seven or eight well-executed shots. In the same way that the winning volley is the culmination of the preceding shots, the everyday conveniences that modern science has wrought are the culmination of fundamental research.

The everyday conveniences that modern science has wrought are the culmination of fundamental research.

It is a legitimate concern that the practice of science in general, and of chemistry in particular, may be affected by our immediate gratification-crazed culture. Certainly, high-quality research in chemistry has always received priority. It appears, however, that curiosity-driven or fundamental research is increasingly called upon to justify its existence. "Your research is interesting, but what is it good for?" is an all-too-frequent question posed to the practicing chemist. Although this question certainly has some legitimacy, there is a larger issue at play.

Research, at its best, cannot be forced to complement an existing commercial practice or industrial process. It is problematic to view the virtues of fundamental research in this fashion. Even though the citizenry funds most academic research, it is unreasonable for them to expect to see the fruits of that research manifest on the shelves of the local supermarket the next year. Fundamental research is a long-term endeavor. The history of science is replete with important discoveries that did not have an immediate application at the time when they were made. Serendipity, a central component in the discovery process, is encouraged most by curiosity-driven research. Therefore, it remains crucial to support research that investigates classic problems or describes a new method for synthesizing a chiral center. Such endeavors need not cure cancer and simultaneously be a room-temperature superconductor to be worthwhile.

The synthesis of Zeise's salt, ferrocene, adamantane, and the triphenylcyclopropenium cation are all landmarks in chemistry. Also noteworthy were the preparation of the first "inert gas" compounds and the discovery that a simple coordination compound, *cis*-diamminedichloroplatinum(II), or "cisplatin," possessed significant antitumor activity. These discoveries and multitudes more were consequences of fundamental research. I hope that such wisdom will be omnipresent as chemistry continues to be practiced by individuals who ponder perhaps the most important question in science: "I wonder what would happen if ...?"



TAKE TIME **In addition to researching the organometallic chemistry of main group elements, Robinson works with undergraduate students in Georgia's Honors Program.**

Gregory H. Robinson *is Distinguished Research Professor of Chemistry at the University of Georgia. He received a B.S. in chemistry from Jacksonville State University in 1980 and a Ph.D. from the University of Alabama in 1984. Robinson began his academic career at Clemson University.*