In This Issue

Celebrating 75 Years!

The Cover

Comet Hale–Bopp streaks across this month's cover. Starting on page 1472, Sorkhabi, Jackson, and Daizadeh describe how cometary spectra obtained from the Hubble space telescope can be analyzed in an advanced physical chemistry course. Their discussion of the vibronic bands of carbon monosulfide could replace or complement the more typical analysis of Franck–Condon factors based on absorption and emission spectra of molecular iodine.

photo by Wally Pacholka, used with permission

Interdisciplinary Approaches

Chemistry can be connected to a wide variety of other disciplines in addition to cometary science, and many such connections provide for enhanced pedagogy. Epstein (page 1399 ◭) uses bad science (mistaken or even fraudulent results) in creative ways to teach how to approach problems in a critical and open-minded way. Crippen and Curtright (page 1434 ◭) show how high school students can use a calculator to model nuclear decay, integrating chemistry and mathematics principles. Angel and LaLonde (page 1437) describe a course that helps students learn both mathematics and chemistry and is based on results of research on learning styles.

Tracy (page 1442) has used molecular modeling to link general, organic, and biochemistry topics in a course designed to satisfy the needs of those planning to enroll in nursing and sports medicine programs. Sokolik (page 1500), together with an undergraduate student, has used the Maple software package to provide an animation and graph showing the effect of pH on the charge of any polypeptide molecule.

Collaboration of a chemist and a photographer-scientist has resulted in a book that is both beautiful and instructive. Kampmeier's review of what he calls a "wonder-book", *On the Surface of Things: Images of the Extraordinary in Science*, begins on page 1363 ◭. Wink's report on the NSF Web site (page 1370 ◭) indicates that science and information technology are being combined into an electronic library system that will be of interest to anyone who has used the Web or other electronic access to scientific information.

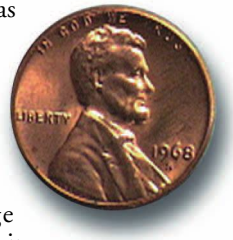
◭ designates articles of special interest to high school teachers.

Polymers for Everyone

The importance of polymer chemistry in our everyday lives is obvious to a chemist, but not necessarily to the average person or the average student. This issue provides a variety of ways by which polymer chemistry can be made interesting, exciting, and understandable. Bermudez, Passos de Almeida, and Seita (page 1410 ◭) use poly(vinyl alcohol) and poly(vinyl acetate) to illustrate unusual viscoelastic properties of materials related to the commercial products Slime and Silly Putty. Their experiment is both entertaining and educational, and can be related to common observations of ball-point pens, beach sand, ketchup, and quicksand. Collard and McKee (page 1419 ◭) survey presentations of polymer chemistry in science centers and museums and suggest ways that additional displays and interactive exhibits could be developed.

The group of Waldman, Schechinger, Govindarajoo, Nowick, and Pignolet (page 1430 ◭) have devised a polymer demonstration based on crosslinking and decrosslinking alginate, a polysaccharide of molar mass about 240,000 g/mol. The demonstration is used effectively in presentations to the general public. Hunter (page 1424) provides a capstone writing experience for an introductory polymer chemistry course. Tarazona and Saiz (page 1425) show how theoretical models for the behavior of polymer molecules are related to similar models applied to macroscopic analogies for polymer molecules, such as a chain of people holding hands. The juxtaposition of the two types of model building helps make the atomic-scale models more understandable. Beginning on page 1479, Martín, Mendicuti, and Tarazona show how a homemade dilatometer can be used to study the radical chain polymerization of methyl methacrylate.

A Penny for Your Thoughts



The "penny lab" was an excellent example of the new discovery-lab approach (*J. Chem. Educ.* **1991**, *68*, 228–231), and it has spawned many variations. Stolzberg (page 1453) uses one of these in a project-oriented sophomore analytical lab where students are asked to test the hypothesis that the copper content of a post-1982 penny decreases with time, presumably because the copper shell wears away at a measurable rate. Students sometimes do not believe their own results when they find that the copper content increases with year of minting. More variations on the penny (or perhaps "coin") lab are provided in a letter from Leenson (page 1362 ◭), who suggests several ways in which the shells of copper-plated coins can be removed leaving the rest of the coin intact. You may be carrying the potential for some interesting chemistry in your purse or pocket right now!