Cornell Chemistry

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The Chairman's Notebook

WHO OWNS SCIENTIFIC DATA?

You can find it just about anywhere at Cornell. Some of it is more precious than gold or silver, yet rarely is it kept under lock and key and few of us know to whom it belongs. The commodity in question is scientific data, or tangible research property (TRP), and the debate about who owns it, who controls it, and who should have access to it has raised complex issues on university campuses.

Every day thousands of Cornell faculty, staff, and students report new experimental techniques, refinements, observations, and measurements. Some of their research involves epidemiological studies, population surveys, or other demographic analyses. TRP also includes concrete creations like new cell lines or genetically engineered biological materials, computer software and specialized code, and prototypes of new devices.

Although most researchers give far more thought to collecting and interpreting their data, how the data are subsequently treated has become a controversial issue. A sensational dispute recently surfaced in the popular press over access to the records and writings of C. G. Jung, one of the founding fathers of psychoanalysis. In *The Jung Cult: Origins of a Charismatic Movement* (Princeton University Press, 1994), Richard Noll, an author and clinical psychologist, suggested that Jung falsified data in developing his theory of the collective unconscious. In his book, Noll claims that he was denied access to important papers and notes he needed to complete another book, *Mysteria: Jung and the Ancient Mysteries.* Those records would, Noll believed, confirm inconsistencies in the data on which Jung based his teachings. The data in question are in notes compiled by Jung's research assistant, J. J. Honegger, and housed in the Library of Congress.

The Library of Congress is supposed to provide free and open access to its holdings. But Noll has been informed that he cannot see Honegger's papers without the permission of Jung's descendants and a former Jung collaborator to whom Honegger's original copies were entrusted. Angry over the author's allegations of dishonesty, both parties have denied Noll's request. Princeton University Press has stopped printing *The Jung Cult* and has abandoned Noll's second book project.

Such impediments to scholarly investigation and the free exchange of ideas concern universities like Cornell. Without access to the primary data, research is obstructed and open intellectual inquiry is undermined. The central question is not who owns the data or who has custody, but who *controls access* to the data. Cornell, like many research universities, is only now beginning to develop a coherent policy on data retention, ownership, access, and dissemination.

Most university scholars and researchers still believe the data they generate belong to them, although many granting agencies disagree. The National Institutes of Health (NIH) insists that data generated from research it sponsors are owned by the grantee institution. Moreover, the institution incurs legal responsibilities to secure and store new data for the benefit of NIH. Because federally sponsored research ultimately rests in the public domain, investigators are encouraged by NIH to grant access to data whenever possible for use by other investigators.

Standard practice in most cases gives the original TRP to the professor in charge of the project. Copies of research notebooks and other data may be provided to departing students, fellows, and other co-investigators for legitimate scientific uses. Few universities have explicit policies beyond that point, and for good reason. Sticky situations can arise when former students and their professors disagree over what and when to publish, or what data are appropriate for subsequent work by students who strike out on their own as independent investigators.

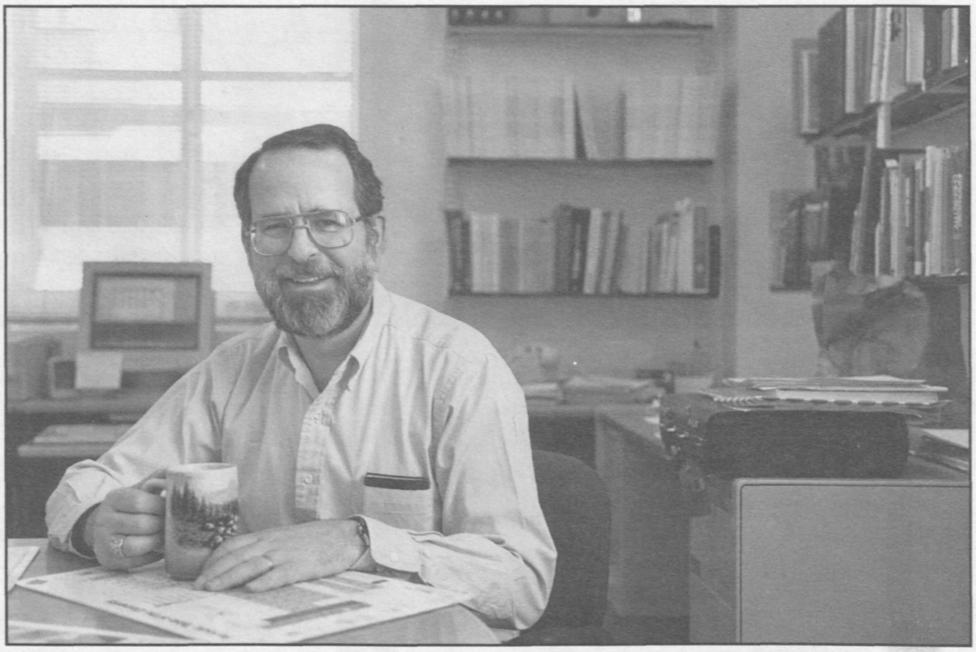
Control of the data becomes a real question when a principal investigator decides to move on to another university. Most records can be photocopied, but in the case of inventions or data that cannot easily be reproduced, investigators may have an obligation to hold such TRP in trust for the university they are departing. In cases where TRP has potential commercial value, as when a medically important cell line has been engineered, thorny issues such as when to publish findings and who owns patent rights must be resolved.

Stanford University's policy on TRP is instructive on this question: it states specifically "that the principle of openness in research—the principle of freedom of access by all interested persons to the underlying data, to the processes, and to the final results of the research—is one of overriding importance."

—*Bruce Ganem*

WORLD'S SMALLEST WIRE SET IN POLYMER SLEEVE

by Larry Bernard, Cornell News Service



Cornell chemists have created the world's smallest wires and encased them in a plastic polymer, an accomplishment that could lead to a host of new electrical or optical uses at the nanometer scale. An electrical cord only a few atoms thick? That's about the size of it. Six angstroms or merely atoms in width, the wires could be kept separate or bunched into cables inside a polymer matrix. The wires can be drawn to at least 10,000 angstroms in length.

"No one has ever made wires this small before, so we're not sure what all the uses are going to be," said Francis J. DiSalvo, John A. Newman Professor of Physical Science, who led the work with his Cornell colleague, Jean M. J. Fréchet, the Peter J. Debye Professor of Chemistry.

The chemists published their report in the August 9, 1996, edition of *Science* with Josh H. Golden, a former doctoral student now at Cytek Industries in Stamford, Connecticut; John Silcox, professor of applied and engineering physics and director of Cornell's Materials Science Center; Malcolm Thomas, a research support specialist in the Materials Science Center; and Jim Elman of Eastman Kodak in Rochester. The recent work was funded by the National Science Foundation, with earlier work funded by the U.S. Department of Energy.

The wiresmiths took atoms of molybdenum and selenium separated by lithium. By putting them in a solvent of ethylene carbonate, which polymerizes into polyvinylene carbonate, the lithium was separated, leaving long strings of the metals. They added an agent to make the polymer. By doing so quickly, the organic polymers gelled before the wires had a chance to clump in larger strands.

"It's like trapping a small, skinny sausage in a big bowl of spaghetti," DiSalvo said. "We trapped the wires in the solution. The trick is to do it very fast, before they have a chance to clump." The result is a plastic block laced with subnanometer-sized wires. To make cables of more than one wire held together, the researchers just increased the amount of metallic grains.

"We polymerize it very quickly using light. It freezes the wires in whatever orientation they are in," said Fréchet, a polymer chemist. "What is remarkable is that this is so tiny—the size of a molecule—and we can do that. We can't do anything very useful with them yet, but this is the way science progresses. In time, we will. For now we can study their interaction with light."

The researchers did not know they had succeeded until they gave the samples to Cornell's Materials Science Center, where Silcox and Thomas subjected them to scanning transmission electron microscopy (STEM). The images confirmed that the wires were in place. The microscopists used an imaging technique in which the atomic number of the metallic ions is distinguished from the polymer's organic materials, which have lower atomic numbers.

The images showed single wires from six angstroms diameter, double wires of about twice that size, and groups of wires, or cables, up to 40 angstroms diameter, all of which can act as electrical conductors. "We could not have done this without the Materials Science Center," Fréchet said. "It brings together scientists from different disciplines who otherwise might not be collaborating." Also making the feat possible was having a graduate student, Golden, who was skillful enough to work in both solid-state and polymer chemistry labs.

Now that they have shown it is possible to make such materials, the researchers are turning their attention to what can be done with them. The chemists are trying to use the new structures as membranes in which the wires act as a solid-state catalyst. Other possibilities, they say, include, antistatic polymeric materials for microelectronics such as in the packaging of chips or for computer housings, and antistatic agents for film. In many cases, static discharges can destroy sensitive electronic equipment or leave a blotch on film.

"Part of the problem is in the basic science," DiSalvo said. "We can make these perfect wires six angstroms in diameter. How do you make electrical contacts for wire that thick? We have more basic science to think about. What happens to the properties when you go from bulk to a single thin wire? Maybe now we can test some theories that propose unusual behavior of such narrow wires." The scientists also would like to understand how these wires might behave under different temperatures.

BIOMOLECULES CHARACTERIZED BY NEW TECHNIQUE

by Larry Bernard, Cornell News Service

Cornell University scientists report the accurate characterization of a sample representing one percent of the protein in a red blood cell using electrospray mass spectrometry—a feat that will greatly widen basic medical exploration.

The technique allows researchers to take samples as small as a single cell and identify many of its components with unusually high confidence, something almost impossible with current analytical technologies. The technique could be used for molecular investigations about human medical disorders at the cellular level.

"We have three orders-of-magnitude better sensitivity than what was possible before. The biggest thing about this is that you can get a complete identification of a totally unknown molecule. Just knowing the molecular weight at our accuracy level is a big help," said Fred W. McLafferty, Peter J. W. Debye Emeritus Professor of Chemistry, who led the work. Their accuracy provides less than 0.01 percent error. "With this [technique] you can also measure masses of individual pieces of a molecule for further characterization."

The researchers—McLafferty; Gary A. Valaskovic, a postdoctoral associate in McLafferty's lab; and Neil L. Kelleher, a doctoral student—reported their studies in the August 29, 1996, edition of the journal *Science*. Their work was funded by the National Institutes of Health.

Previous methods of analysis at this level, such as laser detectors, are useful only if the researcher knows what to look for. "But if you start without knowing anything about what's in a single cell, you need mass spectrometry," McLafferty said. "We don't even need to know that it's a protein."

Electrospray is a method for ionizing larger molecules and getting them into the gas phase. The solution containing the sample is sprayed at high voltage, forming charged droplets that evaporate, leaving the sample's ionized molecules in the gas phase. These ions can then be weighed by mass spectroscopy. Using a spectrometer with a 6.1 Tesla superconducting magnet, the team took a sample representing one percent of the protein in a red blood cell and correctly deduced its molecular weight—28,780.6 daltons.

The breakthrough in sample reduction resulted from customizing small quartz capillaries for electrospray. Valaskovic used laser-heated fabrication, chemical etching, and vaporized gold plating to produce capillary tips with a diameter of only one ten-thousandth of an inch (2.5 micrometers).

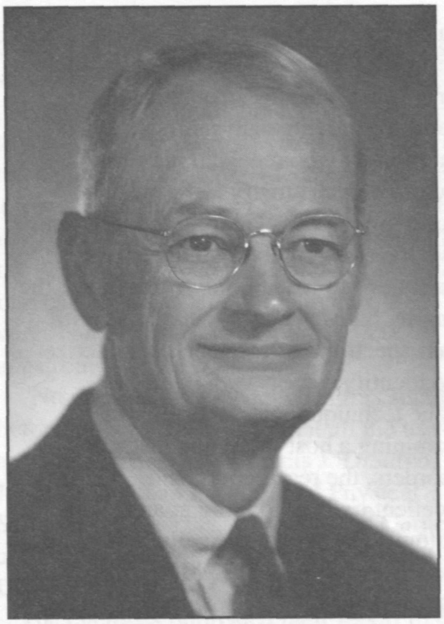
The capillary flow rate is about 1,000 times slower than is typical for electrospray, lowering sample requirements. Also, the spray diameter is reduced so that more of the sample goes into the mass spectrometer, creating greater efficiency. "The achievement really is due to two things—slowing down the flow rate and having one of the highest performing mass spectrometers in the world for protein analysis," said Valaskovic, who received his Cornell doctorate in chemistry last year with professor emeritus George H. Morrison. "We have extremely high analytical resolution, so we not only can analyze the sample, but we can tell what it is. With mass spectrometry, we can characterize and identify."

The technique may be useful for examining a host of human medical disorders, the researchers said. "This is an excellent tool for looking at an isolated biological system at the cellular level, like a single nerve synapse," McLafferty said. "Or say your microscopic examination shows suspicious red blood cells in a sample—do these contain new molecular components as clues to their formation? You could get a better idea of how a cell system works or how a single signal nerve functions. You can use it with RNA and DNA, as well as proteins."

Fred McLafferty with Gary Valaskovic and Neil Kelleher

Frank DiMeo/University Photography

MILLER OBSERVES 60 YEARS IN CHEMISTRY DEPARTMENT



William T. Miller

Professor emeritus of chemistry William T. Miller marked his 60th year on the faculty at Cornell University as the guest of honor at a faculty luncheon in Baker Laboratory on September 12. His wife, Betty, was also present.

Miller arrived at Cornell in 1936 from Stanford University where he spent a postdoctoral year. Miller is a North Carolina native who holds a doctorate from Duke University. He came to the Cornell chemistry faculty as an organic chemist with a specialty in fluorine chemistry, a field in which he has made lasting contributions.

While he was a young faculty member at Cornell in 1941, the sudden acceleration of war research brought fluorine chemistry into its own. By that year the government had begun developing an atomic bomb using fissionable uranium-235. The only practicable gas for separation of U-235, Miller recalls, was uranium hexafluoride, a substance so highly reactive that almost no nonmetallic materials were resistant to it. Such resistant materials were needed as lubricants and sealants in the separation process. Teflon solids developed by DuPont were sufficiently stable, but related saturated fluorocarbons produced as liquids or waxes did not have the necessary stability.

Miller, who was initially told he was working on conventional munitions projects, proposed that fluorocarbons with the requisite inertness might be produced by the polymerization of fluoroolefins in a novel process, and, by late 1941, he and his graduate researchers were working in Baker Laboratory under a National Defense Research Committee contract. In 1943, the team was moved to Columbia University and he was named head of the fluorocarbon group for the Manhattan Project. Only then was he told the real purpose of his fluorine research. "We were the only group of organic chemists inside the project," Miller recalled later, "and I became a consultant on organic and fluorine chemical problems in addition to my other duties."

Miller's fluorine-based plastics and lubricants developed in the Manhattan Project are not only still used for uranium hexafluoride isotope separation but also have other commercial applications. These are being produced by firms such as Halocarbon and Hooker, which manufacture fluorolubes and greases, and by Kellogg and ICI, which produce plastics. He was honored in 1974 for his contributions when he received the American Chemical Society's Award for Creative Work in Fluorine Chemistry.

Professor Miller has also left a lasting mark on the Cornell campus—in addition to teaching generations of Cornell chemists, he served as head of the department's building committee, which designed and oversaw the construction of the S. T. Olin Chemistry Laboratory in 1967.

CORNELL CHEMISTRY INSTALLS DEBYE PROFESSORS

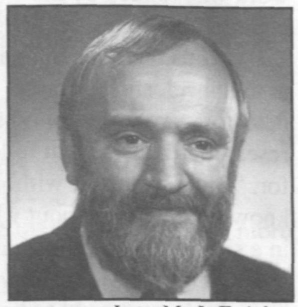
Adapted from an article in the Cornell Chronicle

Fred W. McLafferty

Members of the faculty, college administrators, and friends of the department convened in Baker Lab on Monday, October 7 to confer upon two of their colleagues the Peter J. W. Debye Professorship in Chemistry. The faculty members so recognized were Jean M. J. Fréchet, the first Peter J. W. Debye Professor of Chemistry, and emeritus professor Fred W. McLafferty, the first Peter J. W. Debye Emeritus Professor of Chemistry.

The professorship was established in March 1996 through an agreement with chemistry alumni to honor the late faculty member, department chairman, and distinguished chemist Peter J. W. Debye. A theoretical physical chemist, he was awarded the Nobel Prize in 1936. Debye served as an eminent teacher and scholar at Cornell from 1939 until his death in 1966.

Fréchet holds doctorates from SUNY College of Environmental Sciences and Forestry and from Syracuse University. He came to Cornell in 1987, following appointments at the University of Ottawa and the IBM Research Division at San José, California. He has established himself as a world-renowned polymer chemist.



Jean M. J. Fréchet

Fréchet is the architect and principal motivator of the Polymer Outreach Program at Cornell, which has propelled polymer chemistry to new prominence. He also has brought great visibility and productivity to the Materials Science Center. Through several collaborations, he

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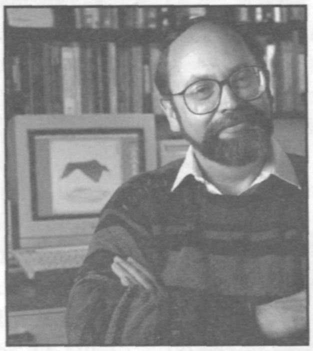
FOUR CHEMISTS EARN ACS RECOGNITION



Barry K. Carpenter

Cornell chemists have garnered three of the American Chemical Society's ten Arthur C. Cope Scholar Awards for 1997, and a fourth member of the chemistry faculty, Harold A. Scheraga, has earned the ACS Award for Computers in Chemical and Pharmaceutical Research.

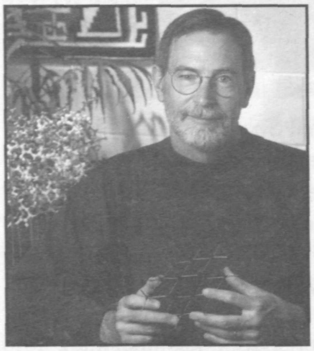
The three Cope Scholars are professors Barry K. Carpenter, David B. Collum, and Jon C. Clardy, Horace White Professor of Chemistry. Arthur C. Cope Scholar Awards recognize excellence in the field of organic chemistry and require the recipients to lecture at the annual Cope symposium held in conjunction with the August 1997 ACS national meeting in Las Vegas.

Scheraga, George W. and Grace L. Todd Professor Emeritus of Chemistry and an internationally renowned protein chemist has been recognized for his "use of computers in the advancement of the chemical and biological sciences."

Scheraga's research group has long used computer modeling and simulations in computational analysis of the complexities of protein folding. In early studies of proteins and other polymers, he pioneered the development and application of physicochemical methods to understand interactions in model polypeptides, in proteins, and between enzymes and substrates. He was the first to recognize the implications for physical chemistry in the discovery that amino acid sequences dictate the three-dimensional structures of particular proteins.

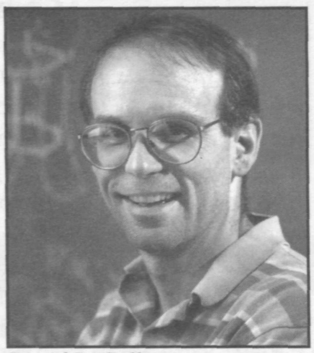
Professor Carpenter's research group uses both experimental and computational techniques to understand the mechanisms in reactions of organic molecules. Recently, these studies have focused on the behavior of transient intermediates, often unobservable factors in organic reactions that may not be properly described by current theories. Carpenter is developing new theories that may change the way organic chemists think about such reactions.

Clardy's investigations in chemical biology have determined the structures of 'red tide toxins', extremely potent neurotoxins produced by marine algal blooms that help to understand the functioning of nerve cells. His group also described the structure of anticancer agents such as bryostatin, now undergoing human clinical trials. The team is currently investigating how natural products from fungi that live inside plants or insects exert their biological effects, and the larger related question of how small organic molecules interact with their much larger biological receptors.



Jon C. Clardy

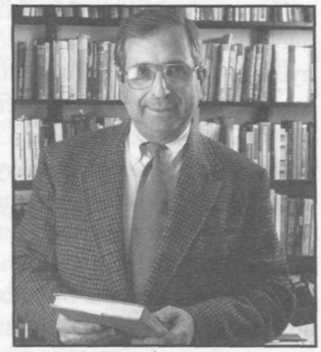
Collum's group studies the very complex chemistry of lithium, one of the most widely employed metals in organic chemistry with applications ranging from lithium-based catalysts for the synthesis of synthetic rubber and related polymers to the synthesis of complex pharmaceutical agents. Collum uses both computational and experimental methods to investigate the self-association and solvation of lithium-containing species.



David B. Collum

FREED WINS 1997 LANGMUIR PRIZE

Professor Jack H. Freed, a physical chemist in the Department of Chemistry, has been awarded the 1997 Irving Langmuir Prize in Chemical Physics by the American Physical Society.



Jack H. Freed

The APS has honored Freed "For his development of new magnetic resonance methods and theory, including computational algorithms for the stochastic Liouville equation, time-domain electron spin resonance methods for the study of molecular dynamics in liquids, applications of ESR to surface science, and the discovery of nuclear spin waves in spin-polarized H atoms."

The research for which Freed has been cited by the APS has principally been his development of sophisticated theoretical and experimental electron spin resonance (ESR) techniques to understand molecular motions in liquids of varying complexity such as liquid crystals, in membranes, and in macromolecules. These techniques elucidate how molecules move, react, and interact with one another. The molecules under investigation are characterized by having an unpaired electron spin, but are typically stable. The interpretation of these ESR signals in terms of molecular dynamics had posed a major theoretical challenge, which Freed overcame with new and powerful algorithms. In recent years he has developed ESR methods to study directly the time evolution of these spin-bearing molecules, thereby providing enhanced detail about these complex motions. He is applying these methods to clarify complex modes of internal and overall molecular reorientation that characterizes large molecules such as proteins and polymers, and to better understand collective

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processes in liquid crystals, in glassy liquids, on surfaces, and in biological membranes.

He was further cited for his research on nuclear spin waves in spin-polarized hydrogen atoms, a collaborative investigation with Cornell physicist and 1996 Nobel laureate David Lee. The team demonstrated that whereas hydrogen atoms at ultra-low temperatures (around 0.1 degree above absolute zero) behave randomly as an ideal gas, when their nuclear spins become oriented in the same direction these same atoms exhibit long-range cooperative quantum effects. In short, because of weak atomic interactions and the Pauli Exclusion Principle, the nuclear spins collectively behave in a cooperative fashion even while individual atoms behave randomly.

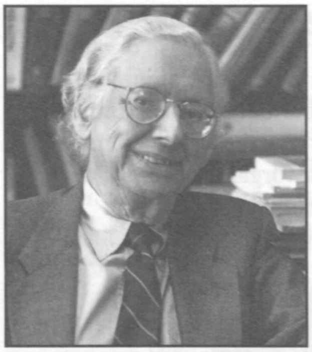
Freed is a fellow of the American Physical Society, a member of the American Chemical Society, and a fellow of the American Academy of Arts and Sciences. He has served on the editorial boards of the *Journal of Physical Chemistry*, the *Journal of Chemical Physics,* and of *Chemical Physics Letters.* He has been an Alfred P. Sloan Foundation Fellow and a John Simon Guggenheim Memorial Fellow. He received the ACS Buck-Whitney Award, the Bruker Award of the Chemical Society, U.K., and the Gold Medal Award of the International Electron Spin Resonance Society.

The Langmuir Prize was established in 1964 to recognize and encourage outstanding interdisciplinary research in chemistry and physics. It is awarded to a chemist or a physicist in alternating years, the American Chemical Society in most cases selecting chemists who are so honored. Previous Cornell chemists who have received the award are former department chairman Michael E. Fisher (1971), now at the University of Maryland, and Benjamin Widom (1982).

The award will be presented at the annual APS meeting in April in Washington, D.C.

MEINWALD AWARDED HEYROVSKY MEDAL

Professor Jerrold Meinwald, Goldwin Smith Professor of Chemistry, was awarded the 1996 Heyrovsky Honorary Medal for Merit in the Chemical Sciences, the most prestigious honor of the Academy of Sciences of the Czech Republic, at the August meeting of the International Society of Chemical Ecology in Prague. The award commemorates Czech scientist Jaroslav Heyrovsky, the 1959 Nobel chemistry laureate.



Jerrold Meinwald

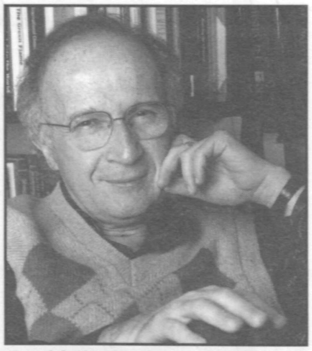
Meinwald was cited, among other achievements, for his studies of novel rearrangement reaction mechanisms, highly-strained ring systems, and organic photochemistry; for the discovery of long-range spin-spin couplings in proton magnetic resonance spectroscopy; for the characterization and synthesis of natural products; and for his pioneering research in insect chemical ecology done in collaboration with Cornell biologist Thomas Eisner. He was also cited for establishing closer scientific ties between the Institute of Organic Chemistry and Biochemistry and members of the Czech Academy of Sciences.

The presentation ceremony concluded with a performance of J. S. Bach's Suite in B-minor for Flute and Strings by the *Musica Quinta Essentia,* featuring the awardee as guest flutist and conductor. The ceremony and the concert were held in the recently restored St. Agnes Cloister, the oldest surviving Gothic building in Prague. "The chance to play Bach with a group of young Czech musicians in a historic building with magnificent acoustics was as much a thrill as receiving the award itself," Meinwald reported.

SYMPOSIUM TO MARK HOFFMANN'S 60TH BIRTHDAY

Roald Hoffmann, Frank H. T. Rhodes Professor of Humane Letters in the Department of Chemistry, will be recognized by a symposium on Saturday, July 19, 1997, marking his 60th birthday on July 18.

Invitations are being issued to Hoffmann's colleagues to address the gathering on the range of topics, both scientific and humane, which reflect Professor Hoffmann's broad interests.



Roald Hoffmann

For further information or to be included on the mailing list, you may contact Professor Frank DiSalvo (fjd3@cornell.edu) or Professor Gregory Ezra (gse1@cornell.edu) by post to the department or by e-mail.

LECTURE SERIES INAUGURATE NEW ACADEMIC YEAR

The 1996–97 academic year was ushered in by three prestigious chemists who addressed members of the department in some of its major yearly lecture series. The Peter J. W. Debye Lectures, sponsored by the Cornell chapter of the American Chemical Society, were delivered on September 16–17 by Richard Lerner of the Scripps Research Institute in La Jolla, California. Lerner's lectures were entitled "Dominating reaction coordinates of difficult transformations by antibody catalysis: Pi-route cationic cyclizations," and "Programming mechanistic details into antibody catalysts: Reactive immunization and the enamine-based aldol addition."

Besides being a noted chemist, Lerner is also an immunologist and director of the research institute. He holds a degree in internal medicine and has served as a consultant to the National Cancer Institute.

Lerner is a fellow of the National Academy of Sciences, a member of the American Society of Pathologists, the Biophysics Society, the American Society of Microbiologists, and of the American Society of Immunologists. As a chemist, his research has concentrated on molecular medicine and biomolecular differentiation.

On September 17–18, the Franz and Elisabeth Roessler Lectures were delivered by Arndt Simon of the Max-Planck-Institut für Festkörperforschung in Stuttgart. His topics were "Metal–metal bonding and magnetism with reduced rare earth compounds," "A chemist's view of the phenomenon of superconductivity," and "Suboxides and subnitrides in groups I and II—Metals with atomic-sized bubbles and tunnels."

Simon has been a member of the Max Planck Society and director of its Institute for Solid-State Research since 1974. Professor Simon's investigations in metal-rich compounds have focused on the development of the concepts of structure and bonding (e.g., systematization of condensed clusters; concepts in intermetallic phase radii); on the development of new materials (metal-rich compounds, transition metal clusters, reduced rare earth halides, hydride and carbide halides, alkali metal suboxides, alkaline earth subnitrides); and on understanding phase relationships and relations between structure, chemical bonding, and properties. Simon has also lent his applied expertise to the development of sophisticated experimental apparatus such as an area detector diffractometer and the Guinier-Simon camera.

Arndt Simon

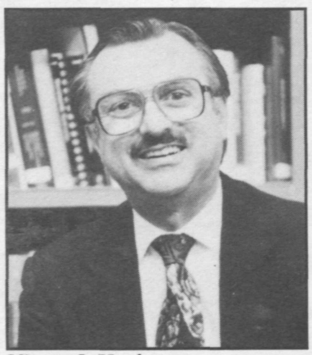
This was Professor Simon's second visit to Cornell University, having served as a visiting professor in 1985. He has also been a recent visitor at Texas A&M University and at the University of Chicago, as well as at universities in Asia and Europe. He is a member of the *kuratoria* of the Gmelin Institute and of *Angewandte Chemie;* of the scientific board of the Fritz Haber Institute in Berlin; and currently serves as vice chairman of the chemical-physical-technical section of the Max Planck Society.

A former doctoral student of Alfred T. Blomquist delivered the memorial Blomquist Lectures on October 21–22. Victor J. Hruby PhD '65 addressed his Baker Lab audience on the topics of "Conformational and topographical considerations in *de novo* design of bioactive peptides and peptidomimetics" and "Combinatorial chemistry: A critical examination."

Since 1968, Dr. Hruby has been a member of the chemistry faculty at the University of Arizona, and he currently holds joint faculty appointments with the Department of Biochemistry, the Program in Neuroscience, and the Arizona Research Laboratories at the university.

These appointments reflect Dr. Hruby's broad expertise and research interests in organic and biological chemistry, among them the investigation of the host-guest relationship, peptide and neurotransmitter structure and function, brain chemistry, the relation of protein conformation to biological activity, the organic synthesis of proteins, peptides, and amino acids, and the relationships of these processes with neurological and biological activity, with drug design, and cancer therapy.

Among Dr. Hruby's many recognitions and honors, he is a fellow of the American Association for the Advancement of Science, the American Institute of Chemists, the New York Academy of Sciences, and has been a Guggenheim Fellow. He is a member of the American Chemical Society, the American Peptide Society, the Protein Society, and the American Society of Biochemistry and Molecular Biology. He is currently editor-in-chief of the *International Journal of Peptide and Protein Research* and serves as a member of editorial boards and referee panels for other professional publications.



Victor J. Hruby

Debye Professorships, continued

is also involved in the Cornell Nanofabrication Center. In recent years he has taught the department's largest undergraduate organic chemistry lecture course.

McLafferty is a highly distinguished analytical chemist with over 400 publications, memberships in the National Academy of Sciences and the American Academy of Arts and Sciences, and numerous prestigious awards including the Sir J. J. Thomson Medal, the University of Naples Gold Medal, and the Robert Boyle Medal in Analytical Chemistry.

He earned his doctorate at Cornell in 1950 with Professor Miller. After postdoctoral work at the University of Iowa and service as director of Dow Chemical's Eastern Research Lab, he joined the chemistry faculty at Purdue in 1964 and arrived at Cornell in 1968. Although he retired in 1991 as professor emeritus, his record only hints at recent activity in publications, memberships, awards, and editorial and advisory service. McLafferty, in emeritus status, and Fréchet will share the honor as holders of the Debye professorship.

Retorts

"Best wishes to chemistry at Cornell, now in its halcyon days, from one who knew it in the dim and dour days of the early 1940s," writes **Christian Sporck** PhD '46 from Cupertino, California. Dr. Sporck knew both Leo Mandelkern and Harold Scheraga, to whom we referred in the August newsletter as a "younger protegé" of Mandelkern's. "When Harold arrived at Cornell in 1947 he was an instructor; Leo was probably finishing his doctoral work. . . .Harold would not have been a *younger protegé* of Leo's. They could have been and probably were protegés of Paul Flory.

"And there you see how a fussy grammarian like myself can exploit to five paragraphs what was probably nothing more than an editorial oversight," concludes the grammarian, historian, and chemist.

As it turns out, Harold Scheraga mentioned to the chronologically challenged author of the article that "Leo will get a laugh out of this."

News from Alumni and Friends

1931–40

Peter Gross PhD '36 recommends to our notice *Enough for One Lifetime,* a biography of Wallace Carothers published by ACS. Carothers was the inventor of nylon, and his biography includes "scores of references to Professor John R. Johnson, who was a longtime close friend of Carothers's. I took my graduate study at Cornell with Professor Johnson in 1932 to 1936." Gross recalls having a 1936 interview with Carothers himself in Wilmington, Delaware, "and once in Baker Lab," he recalls, "Johnson introduced me to Speed Marvel." Gross was employed at DuPont from 1936 until 1970.

1951–60

Raymond Firestone AB '51 announces his retirement as Distinguished Research Fellow from Bristol-Meyers Squibb Pharmaceutical Research Institute in Wallingford, Connecticut, and his elevation to Highly Distinguished Scientific Fellow at Boehringer Ingelheim in Ridgefield, Connecticut.

"I would also like to add my congratulations to Professor Scheraga on his 75th birthday celebration," he adds. "I took a class with him in 1949 and remember him well as an excellent teacher."

Albert Goldstein PhD '54 has been a chemical consultant since 1971, shifting his expertise from chemical synthesis to the preparation and application of hydrophilic polymers, even manufacturing some as an entrepreneur in Venture Chemical Co. The coating has led to the development, for example, of powder-free surgical gloves manufactured by President Goldstein's Hydrogelix, Inc. He also has his hand in Hydro Slip Technologies and Vanguard Research, all Goldstein companies that use such resins in the manufacture of medical products. Lately, his operations, which had grown to employ 10 chemists and now employ but a pair, suits his "present desire to declare myself 20 percent retired and take off a day a week for golf."

1981–90

Sharmila Makhila AB '88 has completed medical school and is currently a gynecologic oncology fellow at Memorial Sloan Kettering Cancer Center in New York.

1991–96

Andrew Yeh AB '96 sends his greetings to the department he just vacated. "I've been here at Caltech since the beginning of July. Although I have been here for a couple of months already, I am still adjusting to the new environment. Southern California is quite different from upstate New York, and not just in terms of the weather, either. But overall, I like it so far. I am doing research in the same area as I did before in Professor [Steven] Ealick's lab at Cornell, namely, protein crystallography. I am currently working in Professor Doug Rees' lab for the summer and will be continuing to work in his lab at least for the fall term. . . . One project I'm currently working on involves determining the amino acid sequence of a bacterioferritin, and in doing so I've been doing a lot of PCR and cloning."

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