

The Carnegie Mellon Chemist

CHEMISTRY ALUMNI NEWSLETTER




CARNEGIE MELLON UNIVERSITY
DEPARTMENT OF CHEMISTRY
January 1999

Chemistry Undergrads


1998 Graduating Class We are pleased to report that twenty five students received undergraduate degrees in Chemistry in the May 1998 commencement. Eight of these graduated with University Honors, and four received MCS Honors. Seven were inducted into the Phi Beta Kappa Honor Society and six into Phi Kappa Phi. The commencement was the first for President Cohon, and also the first in the setting of Gesling Stadium. Construction of Purnell Center, the new Fine Arts building on the 'Cut' next to Warner Hall, and across from the University Center, made it impossible to erect the tent used in recent commencements. Fortunately, the weather was good, and the event went off very well. The Departmental Diploma Presentation Exercise was held in the University Club in Oakland, for the first time. This provided an elegant venue for the Exercise, and a great buffet luncheon for students and their guests following the presentation of the diplomas.

Ten of the students plan to enter graduate school, including: UC Berkeley, UC Davis, USC, UCLA,

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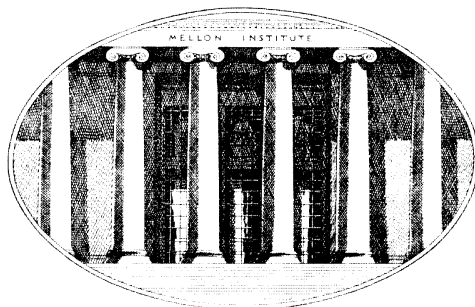
John A. Pople Awarded Nobel Chemistry Prize

The word that **John Pople** received the 1998 Nobel Prize in Chemistry will surely have reached most of our Alumni by now. As they will know, the work cited by the Nobel Prize Committee was done while John was a member of the CMU Department of Chemistry from 1964 through 1993. The Prize was shared with Walter Kohn, who did part of the work cited while in the Department of Physics of CMU, before he joined the University of California at Santa Barbara in 1960. The Nobel Prize citation states that "*John Pople is rewarded for developing computational methods making possible the theoretical study of molecules, their properties and how they act together in chemical reactions.*" These methods are based on the fundamental laws of quantum mechanics as defined by, among others, the physicist E. Schrödinger. A computer is fed with the particulars of a molecule or a chemical reaction and the output is a description of the properties of that molecule or how a chemical reaction may take place. The result is often used to illustrate or explain the

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Richard M. Cyert

Richard M. Cyert made seminal contributions to the development of Carnegie Mellon as we know it today. These were remembered in a Memorial Service on the campus on Nov. 9 in McConomy Auditorium. Cyert succumbed to a long illness on Oct. 7, at the age of 77. Speakers at the service included President Jared L. Cohon, daughter Martha Cyert, and current and past members of the faculty and administration who had worked with Cyert. President Cohon remarked that "It is fair to say that no single person had more to do with the development and rise of Carnegie Mellon than Dr. Cyert" and that "the university's growth under Cyert was at a pace and at a level that's unprecedented in higher education." Cyert began his 50-year career at Carnegie Mellon in 1948 as an economics instructor. He eventually became Professor of Economics and Industrial Administration, Dean of GSIA, and then, in 1972, the sixth President of CMU, a position he held for 18 years until his "retirement" to President Emeritus in 1990. As might have been expected, Dick remained very active in consulting, etc., after retirement, heading the Carnegie Bosch Institute.



The Department Head's Column

It is a great pleasure to address the Alumni on behalf of the faculty of the Department, and to inform you of some of the activities in the Department over the last year. First, I am pleased to say that in announcing my appointment last July, President Cohon and Dean Henry made it clear that the Department has the backing of the University to continue to build the Department along the directions in its Strategic Plan, and that the future of the Department is truly exciting, with a unique opportunity to continue to build on the tradition of excellence set forth by our faculty, students, and alumni. The Department's Strategic Plan provides for faculty recruiting to continue our areas of excellence, and to expand into additional directions. It is strongly influenced by the Strategic Plan for the University, and includes plans to develop additional interactions with other units of the University, both in MCS and CIT, in ways to benefit both undergraduate and graduate programs.

It has been an unbelievable year for the Department. John Pople, who was here for 30 years, won the Nobel Prize (you will find more information on John Pople in this edition), Krzysztof Matyjaszewski was installed as the Warner Professor of Chemistry, Terry Collins was recognized for his work in Green Chemistry, the Graduate Program in Polymer Science received top-10 ranking from US News and World Report, David Yaron's educational web site, Iridium, received a top10 citation, and the R. K. Mellon Foundation made a \$11 million grant to support the undergraduate laboratory project. Additional grants include \$1.6 million for education programs in Chemistry and Biological Sciences from the Howard Hughes Medical Institute, for a total of \$4.3 million since 1989, a five-year award for \$650,000 for an undergraduate program in Computational Chemistry and Biology from Merck and Co. Inc., and a grant for outreach programs for K-12 students and teachers given by a local anonymous foundation. The Center for Macromolecular Engineering was founded by Kris Matyjaszewski has close to \$2 million of external funding and 11 corporate sponsors. The Department hopes to secure funding for an Institute for Green Oxidation Chemistry centered around the work of Terry Collins.

Some of the other awards received by our faculty recently are summarized elsewhere in this edition. Also, many of our faculty are invited speakers at international conferences, organize international conferences, and are on the editorial boards of prestigious chemistry journals; almost 1/3 of our faculty serve on editorial boards.

As you have read in the past editions, the Department has strengthened its infrastructure through grants and help from the University. The Department expects to add up to 10 new faculty members. We currently have an offer to a senior theoretical chemist and have searches for a polymer physical chemist at the senior level and a junior bioinorganic chemist. Next year we will search for an organic chemist. The Department has the full support of the administration for such a vigorous hiring program. The Department's hiring is well-integrated into the University Strategic Plan. The planning activity last fall was highly successful at bringing various Departments and Colleges together to learn about the broader CMU community, and promote research and educational initiatives through cross-university connections.

Richard D. McCullough

Chemistry Faculty:

B. A. Armitage
G. C. Berry
T. J. Collins
S. T. Graul
M. P. Hendrich
M. Kaplan

P. J. Karol
H. J. Kim
M. Llinás
K. Matyjaszewski
R. D. McCullough
E. Münck

G. D. Patterson
L. A. Peteanu
S. W. Staley
R. F. Stewart
K. H. Stump
C. H. Van Dyke
D. Yaron

Resident Emeriti


A. A. Bothner-By
E. F. Casassa
A. A. Caretto Jr.
J. Dadok
R. L. Kay
T. P. Kohman

Faculty Profiles

This issue features profiles of two of our long-time members:

Paul J. Karol

has been a member of the Chemistry Department faculty for nearly thirty years. A former winner of the college's science teaching award, he currently is committed to developing a multimedia approach to the first semester introductory chemistry course. He also chaired a university task force on the broad issue of technology enhanced learning for consideration in the university's strategic planning. After returning from a year at the Laboratory for Nuclear Physics of the University of Padua in Legnaro, Italy, he served as chair of the ACS Division of Nuclear Chemistry and Technology and also served as chair of the Commission on Nuclear and Radiochemical Techniques of IUPAC (International Union of Pure and Applied Chemistry). Prof. Karol, a long-standing member of the ACS Committee on Nomenclature, has been

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Robert F. Stewart

joined the Department in 1967 as Assistant Professor of Chemistry after a previous position as a Junior Fellow in the Mellon Institute. His research has explored theoretical models of x-ray and neutron scattering for the elucidation of electrostatic properties based on accurate, relative cross-section data from diffraction experiments. Applications of these theories can be carried out by a suite of computer codes, most of which were developed here. The latest version, VALRAY98, has been distributed to several x-ray diffraction laboratories in Europe on a trial basis. The properties include electrical field gradients, electrical force fields, electrostatic potentials, and mean thermal self-energies in a crystal. Both molecular and crystalline features of the charge density and Laplacian of the electron density can be extracted with these programs. In addition, all properties can be appraised with attendant standard deviations. Recently, inelastic, coherent neutron scattering data have been

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Chemistry Undergrads

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Cornell, Columbia, CMU Heinz School, Harvard Dental School, Purdue, and Stanford Medical School. Organizations hiring last year's graduates included Pfizer, IBM, PPG, Anderson Consulting, and the U.S. Patent Office.

The Richard King Mellon Foundation has given \$11 million to the university to construct new state-of-the-art science laboratories in the Mellon College of Science. The labs will provide facilities for students of all academic disciplines to master the fundamentals of science through experimentation. We hope to enter into the final design stages, after approval from President Cohen and Provost Christiano, and expect to begin phased reconstruction of the Doherty Hall laboratories in 2000. The gift builds on the university's strengths in basic science, engineering and computer science, and supports Carnegie Mellon's strategic plan to lead interdisciplinary scholarship and research in science and technology. The Richard King Mellon Foundation has long been one of Carnegie Mellon's most important benefactors. "Their pledge is one of the largest commitments received in the Centennial Campaign, and is a tremendous boost to a top priority project," said Eric Johnson, vice president for development.

Beginning in the spring '99 semester, the departments of Biological Sciences, Chemistry, Mathematical Sciences, and Physics will be offering 3-unit minicourses to a group of Mellon College of Science students as part of a new program called the "MCS Freshman Seminar Series". The mini courses are intended to expose freshmen to modern scientific concepts and to develop an understanding and appreciation for a current area of research. Enrollment in each minicourse is limited (10 students or less), permitting students to participate in an inquiry-based, collaborative mode of learning not available in

large lecture classes. The Chemistry courses being offered are:

Issues in Environmental Chemistry (S. W. Staley)
Polymers and the Modern World (G. C. Berry and G. D. Patterson)
Water Quality Analysis (K. H. Stump and R. J. Bauer)

Four of the Department's Alumna addressed the Women in Science Group during its 1998 series, speaking on their career paths:

Linda F. (Hood) Jansen, BS 70, Director, International Marketing and Sales for Lockhart Chemical Company;
Jane S. (Potter) Cookson, BS 61, President of Cookson, Pierce & Co, an investment marketing firm;
Irene J. Dinning, BS 59, Manager of Environmental Affairs, Mine Safety Appliances Co;
Diane L. (Laurizio) Smith, BS 74, Manufacturing Manager of Pharmaceuticals and Sterile Products for Merck & Co., Inc.

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Graduate Program

Our graduate program enrolled 14 new students this academic year, while graduating 5 with Ph.D. degrees. The later took positions at Scripps Research Inst., Univ. of Aberdeen, St. Andrews Presbyterian Coll., Research Triangle, and Carnegie Mellon. The dedication to excellence in teaching bore fruit in awards to several graduate students: Greg Martin (University Graduate Student Teaching Award), Len Vuocolo (MCS Graduate Student Teaching Award), Kelly Davis, Richard Pilston and Rick Edgington (Departmental TA Award); Joanne Kehlbeck, Nadine Fattaleh-Diggs and Dan Savin (Teaching Fellows for the Eberly Center for Teaching Excellence)

The Department recently learned that other than the dissertations themselves, there is no complete record of the Advisors of thesis prepared by its Ph.D. graduates. This came to the fore when **Truman Kohman** asked the Department for a list of Ph.D. advisees of J. C. Warner, in connection with an article he has in preparation. In

order to rectify this state of affairs, **G.C. Berry**, working in collaboration with Mellon Institute Librarian **Lynn Labun**, has compiled a list of Ph.D. advisors as it could be gleaned from various records. Unhappily, this did not include the theses themselves, as these are literally in cold-storage, awaiting a freeze-dry process to restore them from a mold outbreak (the Library would be pleased to receive copies from anyone who might be able to make a gift of such). The list is in a data-base that may be sorted, etc., by various criteria. One version, in two parts, sorted by Advisor and Advisee, has been placed at the url: www.chem.cmu.edu/Berry/theses.pdf as a pdf file. Please address additions or corrections to the attention of G.C. Berry, either via mail to the Department, or e-mail to gcberry@andew.cmu.edu.

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A Special Profile

Karen H. Stump is certainly well-known to the many Carnegie Mellon undergraduates who have taken laboratory courses in the Chemistry curriculum. She is Principal Lecturer and Director of Laboratories in the Chemistry Department. At our request, Karen has written the following to tell you something of her past and present activities in the Department.

I would first like to say hello to all the chemistry majors I have had the great delight in working with over the years, and thank those of you who somehow manage to find the time to stay in touch once in a while. It is the highlight of a day to receive an e-mail, card, or most especially, a visit! The people I have met through my position here are among the joys of my life and easily carry me through the not-so-fun stuff!

I have been at Carnegie Mellon since 1976 when I came to Pittsburgh as a graduate student. I guess I can now say that one of the highlights from that time was taking quantum from a future Nobel Prize winner, Dr. John Pople. Though he was an excellent lecturer, quantum was certainly not a highlight at the time. After three years at

Washington and Jefferson College from 1980-83, I returned to Carnegie Mellon in 1983 to work with Dr. Debra Aromatorio on the fledgling freshman chemistry lab for CIT. When Debbie left in '85, I stayed as Senior Lecturer, teaching in the freshman lab and Tech I.

Today I teach Laboratory I: Introduction to Chemical Analysis, in the fall to chemistry and biology majors and in the spring to chemical engineers. This semester Bob Bauer, a special faculty member, and I have proposed offering one of two freshman seminar mini courses. The first is a lab-based experience in water analysis and the second a program working on the development and implementation of hands-on science outreach programs for elementary school students.

Over the past 6 years I have also been learning a lot about laboratory design as the departmental liaison for the undergraduate lab renovation project. It is a complicated and expensive endeavor to develop a plan with enough space to meet our program while impacting the other occupants of the building in the most positive way. We hope we have finally hit on a plan that involves a building addition that will renovate and expand the chemistry and physics labs and provide a multidisciplinary space for science lab experiences for freshmen.

I have also spearheaded efforts to continue to develop and improve our TA training program. Fortunately I have always been able to work with some of the most dedicated and talented TAs in the university and working closely with them is always a pleasure. Three of our graduate students hold teaching fellowships with the Eberly Center for Teaching Excellence this year, and were instrumental in giving sessions last August.

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Nobel Prize

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experiments. Pople made his computational techniques easily accessible to researchers by designing the GAUSSIAN computer program. The first version was published in

1970. The program has since been developed and is used world-wide by thousands of chemists in universities and commercial companies.

Links to that Nobel Prize Citation and to articles on the award may be found on the Department's web page (www.chem.cmu.edu). Articles in *C&ENews* (Oct. 98) and *Physics Today* (Dec. 98) discuss the contributions of Pople and Kohn, with the *Physics Today* article providing detailed insight into the developments and their place in current science and technologies.



John Pople receives a commemorative Galilean Thermometer from Guy Berry following John's Lecture

The Department was pleased to recognize John's accomplishments during his visit to CMU in October, during which he delivered a lecture on the current status of his research, and also was interviewed by a team from the Nobel Committee, to produce a video to be used in conjunction with the award ceremony. Additional photographs taken during the reception after his lecture may be found on the web: <http://beach.res.cmu.edu/chemhandbook/popleweb/pople.html>. A university-wide celebration in 1999 is in the planning stage.



Noble Laureates John Pople and Herb Simon at the Reception



John Pople with Provost Paul Christiano and Rick McCullough at the Pople Reception

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Faculty Affairs

Richard "Rick" D. McCullough became Head of the Department of Chemistry in July, 1998. In announcing Rick's appointment, Dean Henry and President Cohon demonstrated the support enjoyed by the Department when they wrote: "We have appointed a Department Head, Dr. Richard McCullough, who has the full support of the Department and the Administration. Dr. McCullough has come up through the ranks at Carnegie Mellon and is considered on every level to be an outstanding scholar and leader. He was identified after a two-year exhaustive national and international search led by Dean Susan Henry. Last year, Rick McCullough emerged as the leading candidate over external candidates and received the unanimous endorsement of the Department and the Search Committee. Dr. McCullough has been given every resource to build the Chemistry Department that would have been extended to any external candidate."

Rick joined the Department in 1990 as an Assistant Professor, coming from graduate studies at the Johns Hopkins University, and a postdoctoral stint at Columbia with Professor Ronald Breslow. His research interests are in materials chemistry, with particular emphasis on the synthesis of self-assembling polymers that will exhibit useful electronic properties, e.g., conduction, color change in response to an external stimulus, etc. His research

group uses the "McCullough synthesis" to prepare regio-regular polythiophenes with a variety of side-group substituents. The regio-regularity promotes efficient packing of the substituents, and the resultant planar organization of the thiophene repeating units that produces the desired electronic properties. For a glimpse of his work, visit his web site, via the Departmental Home Page (www.chem.cmu.edu).

Krzysztof Matyjaszewski has been named the John Christian Warner Professor in Natural Sciences, becoming the second person to hold that Chair, following John Pople, who occupied the Chair from its inception until his retirement. Kris, who also received a Humbolt Research Award for Senior U.S. Scientists this year, is currently on sabbatical leave in France as the holder of the ELF Chair of the French Academy of Sciences. The year also brought him the Reed Lectureship Award (RPI) and the Milkovitch Lectureship Award (Univ. Akron). A nice summary of the work of his Group on Atom Transfer Radical Polymerization appeared in the *Pittsburgh Post-Gazette*; as of this writing, the article is still posted on the PG's web page (www.post-gazette.com/healthscience/19980831polymers5.asp), but if that is missing, a version is posted on www.chem.cmu.edu/polymer/atrp.PG.html. For more information on his work, visit his web site or that for Polymer Science at CMU via the Departmental Home Page (www.chem.cmu.edu).

The appointment to the Warner Professorship was announced in

June at a Reception hosted by MCS. It was the first occasion for many to meet Tom and Bill Warner, sons of J. C. Warner. As you will know, "Jake" Warner held many positions in the University, including Professor and Head of the Department of Chemistry and President of the University. In addition to the Professorship, Kris received a "real chair", one with the University logo emblazoned on it for all to see.

David Yaron's Web site (ir.chem.cmu.edu) has been selected as an outstanding science Web site by The Alchemist, a weekly "webzine" of ChemWeb, a worldwide club for the chemical community. The site distributes Java applets and other educational materials for use in introductory chemistry courses. The applets include "Why things have color" and "Acclimatizing on Everest", a game in which students use their knowledge of chemical equilibrium to climb Mt. Everest without passing out from lack of oxygen. They are currently developing a flexible networked laboratory simulation, that allows students to select from hundreds of chemical reagents and combine them in any way they see fit. In lecture courses, this web software allows faculty to supplement current paper-and-pencil exercises with open-ended activities involving actual chemical manipulations. In laboratory courses, it enables students to design and test procedures in a safe environment, before entering the chemical laboratory. And all without a spill on the computer!

Faculty Awards: On the subject of awards, several of our faculty have received research awards in the last several years. **Kris Matyjaszewski** won the American Chemical Society Creativity in Polymer Chemistry Award and the Humbolt Research Award for Senior U.S. Scientists. **Terry Collins** won an Inorganic Chemistry award in Japan for outstanding achievements in inorganic chemistry. **Susan Graul** was awarded a Dreyfus Young Faculty Award. **Guy Berry** won the Bingham Award given by the Society of Rheology of the American Institute of Physics for achievements in polymer rheology and characterization (Professor Emeritus **Hershel Markovitz** was a previous winner) and the Pittsburgh Award of the American Chemical Society Pittsburgh Section. Others of our faculty who have received the Pittsburgh Award are Professors Emeriti **John A. Pople** (75), **Robert B. Carlin** (81) and **Aksel A. Bothner-By** (88), along with the late **John C. Warner** (45) and **Fredrick D. Rossini** (59). The Award was also received by several persons affiliated with the former Mellon Institute, starting with **Andrew W. and Richard B. Mellon** (36).

Promotions/Reappointments

Hyung Kim to Associate Professor with indefinite tenure;
R. D. McCullough to Professor;
Colin Horwitz and **Mark Bier** reappointed to the research faculty.

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Japanese Award for Green Chemistry

Terry Collins received the 1997 Japan Society of Pure and Applied Coordination Chemistry Award for his work in green chemistry. Collins has developed a new class of oxidation catalysts that activate hydrogen peroxide in aqueous solution over a range of temperature and pH, so that nanomolar quantities of the catalyst are able to activate hydrogen peroxide to a level competitive with chlorine-based oxidants. The advance was made possible after the Collins research group found a way to protect their catalyst from the very reactive form of hydrogen peroxide it was used to create. The new catalysts

consist of hydrogen, carbon, nitrogen and oxygen atoms around a reactive metal core of iron. They work at extremely low concentrations, and are very stable; being held together by chemical bonds which resist breakdown by the highly reactive oxygen species formed as active intermediates from the hydrogen peroxide. Four patents have been granted, including applications in laundry and pulp and paper. Because its bleaching action is very selective, the catalyst could allow hydrogen peroxide to be used in the first stages of pulp bleaching. The new bleaching technique could work with existing equipment, thereby saving manufacturers the
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expense of retooling their facilities. The catalyst may find use as a bleach in laundry detergents since the activated hydrogen peroxide is a good bleaching agent, but less likely than chlorine bleaches to affect textile dyes. Collins, who teaches a course in Green Chemistry in the Department's curriculum, joined Paul Anastas, Chief of the Industrial Chemistry Branch of the US Environmental Protection Agency, and director of the EPA's Green Chemistry Program, as a speaker on Green Chemistry at the 7th Annual Professors and Heads of Departments of Chemistry Conference in Australia, as a guest of the Royal Australian Chemical Institute. In an article in *Chemistry in Australia* (Oct. 1998), Collins points out that though it has a new identity, there is nothing new about green chemistry: over the past 150 years, the refrigeration industry has progressed from the decidedly toxic chemicals used in early refrigerators, to the nonflammable, nontoxic refrigerants developed in the 1920s, and used until recently, when their role in ozone decomposition in the stratosphere has promoted the development of more environmentally benign refrigerants. Visit Terry's web site via www.chem.cmu.edu.

Faculty Profile (Continued from p. 2)

Karol

asked to chair a joint working group of IUPAC and IUPAP (International Union of Pure and Applied Physics) on establishing the priority of discovery of elements 110, 111 and 112. Current research interests involve such esoteric phenomena as modeling interactions of ultrarelativistic cosmic-rays detected at energies ($> 10^{20}$ eV), where models predict they should be much rarer than observed, and the diffusion of positronium (the ephemeral hydrogen-like "atom" formed by the union of an electron with its antiparticle, the positron) in liquid media. For the 1998-99 academic year, Paul has been elected chair of the Faculty Senate, and serves as an *ex officio* member of the university's Board of Trustees in that capacity. Visit Paul's web site via the Departmental Home Page (www.chem.cmu.edu).

Stewart

used to determine the density of phonon states in diamond-type crystals; the mean square amplitude of vibration for Si at 293 K has been determined to a precision of 0.35% with a Born-Kármán force-constant model up to sixth nearest neighbors. Bob has had an active collaboration with a chemical physics laboratory at the University of Copenhagen in Denmark for the last seven years. Over the years Bob has taught a number of graduate and undergraduate courses in physical chemistry at Carnegie Mellon. A graduate course in group theory on a biyearly basis has been offered since '92. In '90, he developed a course for second-year chemistry majors entitled **Physical Principles of Analytical Chemistry** in connection with a redesigned physical chemistry sequence that reduced the number of required p-chem courses, to help open the curriculum for our undergraduates.

ALUMNI NEWS

Your generous responses to the questionnaire in the *Newsletter* and requests for continued issues are much appreciated--we now have heard from 240 of you (many more than once as you update us on your whereabouts and career)--keep it coming!

Elizabeth P. Hartner (Pearsall), BS MMCC 31 MS 37, writes that though retired, she keeps busy, and can be found as a volunteer at the Carnegie Museum of Natural History and the Discovery Room.

Alvin Edward Bicht, BS 40, has kept current with modern word processing since retiring from the Air Force Corrosion Engineering Laboratory, with several pieces of prose and poetry in progress, despite the diversions offered by seven grandchildren--being retired may help?!

Joanne O. Luther (Tishlarich), BS 42, remembers that she and Norma Squitieri Rocchini (BS 42) were the first women to work at Gulf Research Lab in Harmarville. She subsequently worked at the Mellon Institute for a period before joining the Union Oil Laboratory in California; she now lives in San Diego.

Howard B. Palmer, BS 48, sent a news clip from the *Penn State Intercom* with a brief synopsis of his career on the occasion of his receipt of the 1998 Alfred C. Egerton Gold Medal from the Combustion Institute in recognition of "distinguished, continuing, and encouraging contributions to the field of combustion". He is now Professor Emeritus of Energy Science, and Associate Dean Emeritus of the Graduate School of Penn State Univ., and has served as President and Vice President of the Combustion Institute, in addition to editing the Institute's journal for a dozen years.

James R. Patterson, BS 50, retired from GE Silicone Products, Waterford, NY, but is still living in New York, after a career there from 1966 to 1990, following his first post-BS position with Neville Chemical Co. in Pittsburgh, from 1950 to 1966.

John A. Bornmann, BS 52, writes that though he is now legally blind, he has managed to stay active through the help of Sandy, his wife of 44 years, and modern technology. He contributes a monthly column *Letters, Words and More* to the newsletter of the St. Louis Section of ACS, and was honored to receive the 1998 Distinguished Service Award Section.

Susan H. Craig (Hart), BS 62, loves living in four-season Vermont, where she enjoys golf and skiing, when not traveling to Boston, NYC, Washington & San Francisco to visit five children and two grandchildren. She still works part-time and does volunteer work.

Alfred G. Zielske, BS 62, is a group leader in organic chemistry at the Clorox Technical Center in Pleasanton, CA.

Eric H. Erenrich, BS 65, is a Technical Manager with Allied Signal Corp. He and his wife Evelyn are reaching the age of emancipation (well, almost anyway) as their children are now 22 (Amy) and 18 (Jordan).

Michael M. Cook, BS 67, earned a Ph.D. and has been with Morton International, Inc., for 23 years. He writes that Morton is the world-wide leading manufacturer of sodium borohydride. Over the past three years, he has had the responsibility of organizing multi-client seminars on boron hydride chemistries at locations around the world, including Milan, Lyon, Seoul, Tokyo, and Hyderabad, India. He gives talks on technical and safety issues at these seminars, to complement lectures by local experts. He organized symposia at two meetings in the US, including one at the ACS Meeting in Boston in Aug '98. He notes that though he and his wife have no children, they do have 16 sled dogs, which he has used in middle distance (50-150 km) races.

Joseph Piolet, BS 73; MS 74, is working on specialty additives for lubricants and functional fluids with Lubrizol, Corp. He writes that he has just received his 19th US patent.

James J. Huttner, BS 74, earned a Ph.D. from Ohio State and an MD from Medical College of Ohio, both in 1981. He is currently practicing pediatrics in Maumee, OH, where he is also VP/co-owner of a medical device manufacturing company. He and his wife, also a physician, have four children.

Eric G. Hawk, BS 74, earned an MS in marine sciences from the Univ. of Puerto Rico. He retired from NOAA Corps in June 1997, and now lives and works in Florida, when not surfing in Puerto Rico.

Diane L. Smith (Laurizio), BS 74, paid a visit to CMU this Fall to give a talk to Women in Science. She is Manufacturing Manager of Pharmaceutical & Sterile Production of the Manufacturing Division of Merck & Co., Inc., in Elkton, VA. She has progressed through various positions of increasing responsibility at Merck since joining the firm in 1974. Prior to her current position, which she assumed in Sept. 1997, she had direct responsibility for the Quality Operations Groups at several Merck locations, as well as Quality Management of Merck pharmaceutical products released to the marketplace from sites in North America. She has been recognized by the 1996 National Hammer Award from the Office of Vice President Gore, and the 1997 Tribute to Women and Industry Award. In her obviously voluminous spare time, she was a member of the 1994 and 1997 Women's North American Flying Scot Championship teams in one design sailing.

John V. Nelson, BS 76, who earned a Ph.D. from Cal Tech after leaving CMU, was promoted to Laboratory Head of the Color Systems Engineering Lab in the Imaging Science Division at the Kodak Research Labs in October 1997. John has been active in the NY Clan, and has visited the Department to speak to the under-

graduates. He writes that he remembers that he and fellow student Mike Dulick took the initiative to maintain the "Student Affiliate Coke machine", thereby increasing its revenues to the point where the Department could initiate a new prize for a graduating senior.

Tom Yogan, BS 80, is the sales and marketing manager for Chris-Craft Industrial Products, a specialty plastic film manufacturer in Indiana. He and his wife Lissa have two sons.

Kimberly A. Ames, BS 81, has moved to Pusan, South Korea, to become a lab manager with Nike, working with factories to improve product quality and performance--sounds like a culture-gap of the first magnitude! Kim has developed several rubber compounds that have been used on millions of shoes and currently has several patent applications pending. Hope you'll let us know how your experience works out!

Leanne J. Henry, BS 82, became an Assistant Professor of Physics at US Military Academy, West Point, NY, in July 1998 (she writes that there is one Air Force position in each department at West Point). As Captain in the US Air Force, she has held positions at several Air Force facilities since earning a Ph.D. in 1989 at the Univ. of Pittsburgh, most recently with the Air Force Research Laboratory at Hanscom AFB, MA, doing research on Si/Ge epitaxial growth.

Neil A. Shapiro, BS 84, is working with Wilson Sporting Goods as a materials engineer, in the design and manufacture of golf balls.

Gilbert N. Belofsky, BS 85, is starting as Assistant Professor of Organic Chemistry at the University of Tulsa in January 1999, following a two year postdoctoral stay at the Scripps Institution of Oceanography. He expects to focus on natural products chemistry and his new wife (as of June 1998) Rachel DiLorenzo--not necessarily in that order!

Daryl Thomas, BS 90, is working on novel pathogen discovery and diagnostics at Sentinel Biosciences, Menlo Park, CA, and is another of our recently married alumni, to Marcy Kawadler during the Memorial Day Weekend.

Cindy Lou Chepanoske, BS 95, writes that she is pursuing a Ph.D. at the University of Utah in biological chemistry; her advisor is Sheila David, an Assistant Professor in Biological Chemistry.

GRADUATE STUDENTS

Arnold E. Reif, MS 49 PhD 50, writes simply "It is good to hear from the Chemistry Dept.", to which we say thanks; he was one of the investigators who discovered relevant antigens in the diagnosis and treatment of human leukemias and lymphomas.

James A. Forstner, MS 61 PhD 62, received an 'offer too good to pass up', and has retired from DuPont Co. after 36 years, full, he says of "many interesting and

ALUMNI NEWS (Continued from prior page)

exciting opportunities" the legal field. He has joined the 400-lawyer firm Alston and Bird as a Senior Counsel in its Washington, DC, office, where his experience in international patent law at DuPont will help the firm in a new initiative in this area.

John J. Krajewski, PhD 59, has remained active by consulting in polymers and teaching Polymer Chemistry at DePaul University following his retirement from Allied-Signal in '94.

Erich C. Blosssey, PhD 63, was an ACS tour speaker in 1998 for the Lake Erie Circuit (Ashland, Toledo & Cleveland in OH; Sharon & Erie), speaking on "Application of Polymer Support Reactions and Reagents" and "Application of Capillary Electrophoresis to Proteins".

Ralph H. Obernauf, PhD 72, is President of SPEX CertiPrep, a manufacturer and supplier of chemical reference materials and laboratory equipment located in Metuchen, NJ; the services of the company, many directed toward the inorganic spectroscopist, are described on its web site: <http://www.spexcsp.com>.

Mohan Srinivasarao, PhD 90, let us know from North Carolina State Univ. that he has received a Career Development Grant from the NSF. Congratulations on winning one of these very competitive awards!

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Chemistry Newsletter on the Web

Recent issues of the *Chemistry Newsletter* may be found on the Chemistry Department Web site:

<http://www.chem.cmu.edu>

The Home Page includes

- Graduate Studies
- Undergraduate Studies
- Faculty Research Interests

along with many other items. Take a look, and send us your suggestions to make it more useful to you and others.

THANKS FOR YOUR SUPPORT!

We want to thank the many Alumni who have made gifts to the University and/or Department. These are extremely important to our efforts to provide a quality educational experience to our students. Tax-deductible gifts may be made directly to the Chemistry Department by explicit request to that effect, or by instructions that your gift be directed to account number 1-31296. The Department has many activities in both undergraduate and graduate education that benefit from your generosity, including:

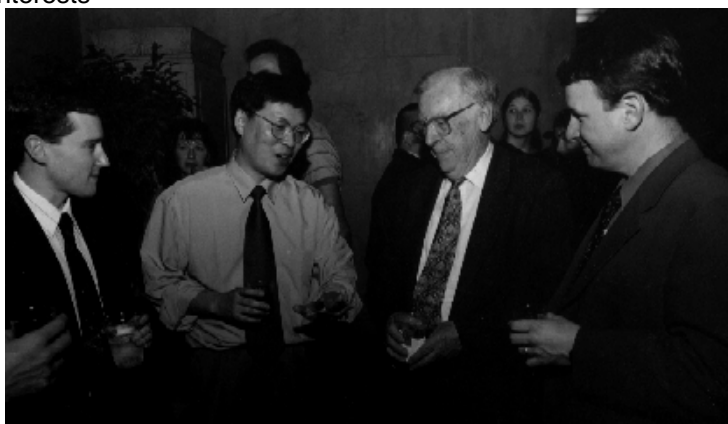
- Grants for undergraduate and graduate students for travel to scientific meetings
- Support for Departmental Colloquia
- Support for undergraduate research projects
- The Annual Chemistry Department Retreat

This year we have established an Alumni Fund for student travel to scientific meetings. It is very difficult to get funds to send our students to meetings; almost no money is available in normal grants. This robs our students of participation in national and international meetings--a critical part of their education. Please donate to this fund by mailing your contributions directly to the Chemistry Department. Some of you may be able to take advantage of gift-matching programs at your place of employment. In any case, thanks again for thinking of us!

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Chemistry Alumni Directory

Many of you responded affirmatively to our offer to oblige your classmates in locating you from our files. If you have not responded, and wish to do so, please check the "Yes" box in the Questionnaire



Bruce Armitage, Hyung Kim, John Pople and Rick McCullough at the Reception for John Pople

Photographs courtesy
Kenneth Andreyo, Carnegie Mellon Photographic Services

1999 ALUMNI QUESTIONNAIRE

Please Complete and Return to
Department of Chemistry
Carnegie Mellon University
Mellon Institute
Box 166
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Pittsburgh, PA 15213-2683

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e-mail:
Make address available to Chem Alumni?
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(Name at CMU if different):

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(Please include your degree)

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PERSONAL HIGHLIGHTS & COMMENTS

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ALUMNI NEWSLETTER
DEPARTMENT OF CHEMISTRY
CARNEGIE MELLON UNIVERSITY

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