Mudd In Your Eye

Newsletter of the Department of Chemistry, Lehigh University

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"Great importance is given to chemistry as an elementary branch of learning." — Lehigh Register 1866

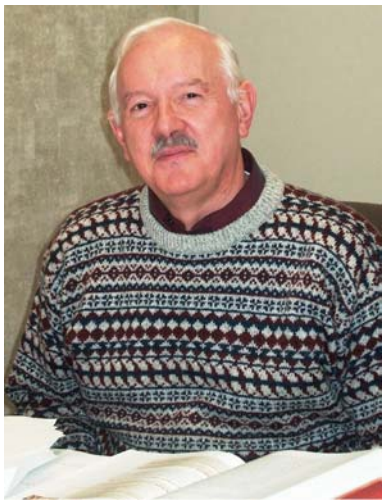
Professor Gary Simmons to retire in June

After 36 years at Lehigh, Professor Gary Simmons has decided to retire at the end of the current semester. Simmons came to Lehigh in 1970 after earning a Ph.D. at the University of Virginia in physical chemistry and spending six years at the Georgia Institute of Technology as a post-doctoral fellow and research scientist. His research in surface science led to his appointment as director of the Zettlemoyer Center for Surface Science for eight years, from 1985 to 1993. His work occurs in more than sixty publications and has been recognized with several awards, including the Howe Medal from the American Institute of Metals.

During his career at Lehigh, Simmons supervised the graduate dissertations of more than ten students and was a major particpant in the supervision of more than eight others as they conducted fundamental studies in the reactivity of metal, alloy, oxide and semiconductor surfaces and the application of these fundamentals to the understanding of catalysis, corrosion and coatings. They pioneered the use of Mössbauer spectroscopy for studying, *in situ*, the corrosion and passivation of cobalt surfaces while undergoing polarization.

Surface science studies in the interaction of oxygen, water vapor, and hydrogen sulfide with iron and iron alloys led to the identification of rate-controlling processes governing the rates of environment-enhanced sub-critical crack growth and corrosion fatigue in ferrous alloys. These methods were then successfully extended to include aluminum and titanium alloys.

Simmons and his students were among the first to apply the newly developed technique of analytical transmission electron microscopy for studying the dispersion of the constituents in heterogeneous catalysis. He also studied Ni-based superalloys which are used extensively in high temperature applications such as turbine blades in jet engines. Because these engines operate at up to 973K they are susceptible to increased crack growth by up to four orders of magnitude over the rates observed in an inert environment. By assessing the chemical reactions at the location of failure, Simmons was able to guide the development of alloys with minimal sensitivity to environmentally enhanced crack growth.



In his most recent work Simmons found that principal component analysis of angular resolved XPS (X-ray photoelectron spectroscopy) can be used to energy resolve photoelectron peaks. This analysis method is currently being applied to a number of surface chemistry studies and is showing promise of wide applicability.

While he did a number of rotations through the introductory chemistry courses, Simmons enjoyed teaching the physical chemistry course the most. In recent years he has updated and edited the laboratory manual and introduced new experiments, focusing on the computer interfacing of data collection. "One of the fun experiments," he says, "is determining the heat capacity of gases by measuring the speed of sound."

Fifteen years ago, Simmons teamed up with Kamil Klier to raise funds and install the Scienta x-ray photoelectron spectrometer (XPS) also known as ESCA (electron spectroscopy for chemical analysis). This instrument and its subsequent modifications still play an important role in surface studies at Lehigh. For further information see http://www.lehigh.edu/~inmicro/esca300.html.

Reflecting on his years at Lehigh, Simmons says that they were challenging and rewarding in both teaching and research. "I would do it all over again," he admits.

In retirement, Simmons intends to be a factor in the upbringing of his two grandsons, ages one and three, cut five strokes off his golf handicap, get more involved in digital photography, and spend time reading something other than chemistry textbooks and journals.

Chair's Message

This has been an exciting year for the department. We have added four outstanding faculty in the areas of nano/materials and surface chemistry. Tianbo Liu joined the faculty as an assistant professor in January 2005 and has gotten his research program off to a great start. Professor Bruce Koel moved from the Department of Chemistry at the University of Southern California and joined the faculty in September 2005 as a full professor. In January 2006 Dmitri Vezenov and Kai Landskron joined the faculty as assistant professors. They have significantly strengthened our research and teaching in materials chemistry and nanotechnology. We are currently searching for an assistant professor in biological chemistry and look forward to hiring faculty with research interests in biologically related chemistry in the next few years.

We have also begun a number of renovations in the Seeley Mudd building. By the end of the spring semester, a substantial portion of the fifth floor of Seeley Mudd will have been renovated to provide state of the art research space to Professors Koel, Vezenov and Landskron. A new studio classroom located on the third floor of Seeley Mudd designed to merge the freshman chemistry laboratory and lecture has been completed. A new instrumental laboratory on the second floor designed to service departmental organic teaching and research needs is nearly complete. A key feature of this laboratory is the use of wireless technology to allow direct access to transfer and printing of data throughout the building. To support the new technology, a wireless system has been installed in the entire Seeley Mudd building providing full wireless capabilities to faculty, staff, and students. These renovations are just the beginning of major changes occurring in the department to meet its increasing needs and to provide modern facilities for teaching and research.

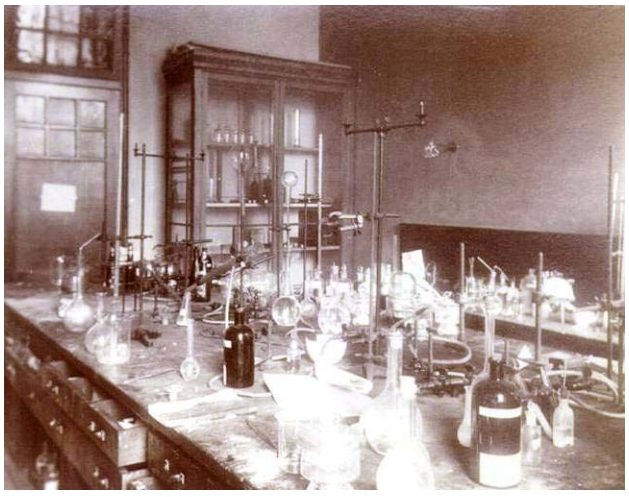
At the end of the spring 2006 semester, Professor Gary Simmons will be retiring after 36 years of service to the department and the university. Along with being a great colleague, Gary has been a leader in the areas of catalysis, coatings, and corrosion and during the past few years has spent a great deal of time developing a number of cutting-edge labs for the undergraduate physical chemistry labs. His dedication to high standards is appreciated by colleagues and students alike and his contributions to the department will be greatly missed. We wish him the best in the next phase of his career.

Finally, I would like to thank all of you for your letters containing updates and news. The renovations to the studio classroom and the organic instrumentation laboratory were funded in part by your contributions. Your continued support of the department is greatly appreciated. If you happen to be in the area and want to see some of the big changes occurring in the department, please stop by. I would be very happy to show you around and describe our plans for the future.

—Robert A. Flowers II

Instrumental Laboratory in Seeley Mudd before (above) and after (below) renovation.

What a difference a century makes! The picture below is a typical student laboratory circa 1900. Photo courtesy of the Lehigh University Special Collections.



Alumni News

Glenn Allen (M.S. 2002) has recently joined the Mascara Department of Coty Cosmetics (Morris Plains, NJ) as a research chemist.

KeriLyn Burrows (Ph.D. 1979) is Senior Scientist in the Product and Process Development Group of Ben Venue Laboratories in Bedford, Ohio. Keri reports that she does methods development, formulation development and optimized lyophilization of biological products. Faithful to her life-long love of animals, Keri is currently the "parent" of Clancy, a well-trained Grosser Munsterlander Vorstehhund.

Paritosh Desai (B.S. 1993) is co-owner of an electronic contract manufacturing business called Circuit Tech Assembly (see http://www.circuittechassembly.com/) which started in 2004. He races a Miata in the Sports Car Club of America, and is the father of a son Ayrton, born in 2005.

Aaron R. Ettleman (B.S. 1995, J.D. Temple University 1999), a patent attorney specializing in the chemical arts, is with the law firm Akin, Gump, Strauss, Hauer and Feld in their Philadelphia office (www.akingump.com). He came to AG after five years with Cognis Corporation, the U.S. subsidiary of Cognis Deutschland GmbH & Co., a spin-off from Henkel KGaA in Düsseldorf, most recently as their Chief IP Counsel for North America. Although not in a lab working hands-on, he finds working with many different scientists in various cutting edge technical areas extremely interesting. Besides, he admits, he likes to argue (even with government employees at the U.S. Patent Office).

Kimberly (Freedman) Kellow (B.S. 1999, M.S. 2001) has completed professional perfumer training at the headquarters of her employing company, Firmenich, in Switzerland. She has been assigned to the company's site in the UK and is presently living in London. Kim's career objective since her undergraduate days at Lehigh was to become a perfumer and her Lehigh M.S. project on controlled release of essences from polymers was financed by Bush, Boak, and Allen, a British perfume company.

Dave Pursell (M.S. and M.A., 1987; Ph.D. University of Pennsylvania, 2000), an Army Lieutenant Colonel currently on the chemistry faculty at the United States Military Academy at West Point, retires from the Army in the spring of 2006 and assumes duties as Executive Director of the University of Pennsylvania Department of Chemistry. He has served in operational and staff assignments in the United States and overseas for 25 years.

Jodi Renner (B.S. 2000) is a first-year medical student at the University of Minnesota in Minneapolis, having recently moved from San Diego, where she worked as a medical assistant in an emergency/urgent care clinic. She says she will miss the San Diego climate but finds Minneapolis to be a great city (so far).

In Memoriam

Michael Santarelli (M.S. 1995) passed away on October 4, 2005 from complications of cancer surgery and ventricular meningitis. He was an analytical chemist at Adhesives Research, Inc. in Glen Rock PA. He is survived by his wife Amy and two sons, Alex and Zachary.

John J. Scassellati (D.A. 1991) has been appointed Division Chair of Technologies, Culinary Arts, Mathematics, and Sciences at Westmoreland County Community College, Youngwood, PA, effective February 13, 2006.

♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦

Voices of the Past: Chemistry Softball Teams (1956–1960)

John F. Mahoney (B.S. 1955, M.S. 1958, Ph.D. 1960)

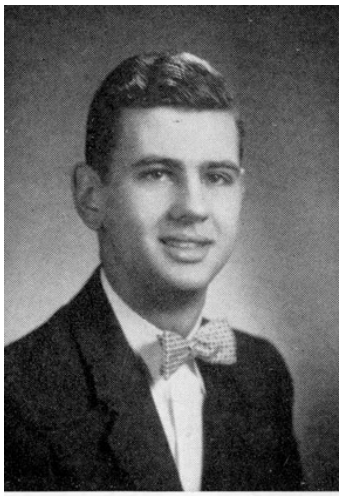
This is a memoir and as such I understand that it need not be completely accurate. What follows comes from my memory which may be clouded by the passage of half a century. I am sure that I have left out some relevant people, I have probably misspelled some names, and some dates may be off by a year. The years in question (1956 – 1960) are important to me since during this period my professional career was shaped. Participation in softball may have preserved my sanity during this stressful time. How I wish those years could be revisited.

I received a B.S. in chemical engineering from Lehigh in June 1955. During my four undergraduate years I enjoyed playing intramural softball for my living group which was Dravo CII. I started graduate work in the fall of 1955, and when spring rolled around I was pleased to find that the chemistry department was planning to enter a team in the city fast-pitch softball league. In those years the departments of chemistry and chemical engineering were close since they were both housed in the Chandler Chemistry Laboratory. I was allowed to join the team.

Early in 1956 a chemistry graduate student named Sam Cozzens received a donation from Dr. Albert [Charles] Zettlemoyer [Professor of Chemistry 1941 – 1980], for the purchase of a box of softballs. In return, the team was named **Al's Aces.** [Zettlemoyer was sometimes known as ACE Zettlemoyer because of his initials – Ed.]. Sam Cozzens [M.S. 1956] acted as manager and did some pitching, as did Bob Petfield [M.S. 1957, Ph.D. 1959] and Ed Gregorek [B.S. 1954, Ph.D. 1967]. Other players over these years were John Surash [M.S. 1952, Ph.D. 1960], Herb Hodus, John Skewis [Ph.D. 1957], Al Richardson [M.S. 1958, Ph.D. 1958] and Dieter Eck [Ph.D. 1962].

An undergraduate named Mike did some catching. I played the outfield and third base. Dieter Eck was the most talented of the bunch, but alas he died very young. At one pointy Cozzens benched Mike the catcher. Mike complained bitterly and pointed out that he was batting .350. Cozzens agreed, but added that his fielding average was about the same.

In 1957 Dr. Zettlemoyer chose not to support the team financially and as a result the team's name was changed to **The Alchemists**. Other teams in the league pronounced our name as Al-Chemists. I don't remember much of the 1957 season since I spent most of the summer in a hospital recovering from complications of an appendectomy. I believe that this was the year that George Schmauch [M.S. 1954, Ph.D. 1959] joined the team after a stint in the army.



JOHN MAHONEY
Dravo House
Chemical Engineering
Staten Island, N. Y.

(From the 1955 Epitome)

The 1958 and 1959 seasons were years of change since about half of the team came from the physics department. Most of us welcomed the infusion of talent, but Sam Cozzens did not. During these years he quit the team and played for the local VFW. The physics department players of note were Robert Jahn, Ned Woisard [M.S. 1952, Ph.D. 1959], Fred Grosse [M.S. 1957, Ph.D. 1966], Alba Kraft, and Bob Hensel [M.S. 1959, Ph.D. 1968]. Fred Grosse managed, and Bob Petfield came into his own as a star pitcher. Bob died a few years ago and has joined his former mentor, Eddy Amstutz.

In 1960 I was in the army from January until the first of July. I came back to Bethlehem to finish my thesis. I played one final game as a ringer. By this time the physics contingent had quit and Sam Cozzens was back managing and pitching. He put me on first base—a position I had never played before. I played very well, but after the game the shortstop said it was the only instance that he was aware of where the first baseman was a midget.

The league that we played in had some push-over teams such as The Mailmen, but also some very tough teams like Banko's Beverages, Hassay's Tavern, and Roosevelt Democratic Club. We had good years and bad years, but we usually won more than we lost. The better teams would outweigh us by twenty pounds per man. We had a reputation of being spoilers—when Bob Petfield was having a good day we could beat any team in the league.

One year there were twenty-one teams in the league. Since we only played twenty games, this prompted me to state that surely there was one team we had neglected to play. Ned Woisard explained to me that this was the result of a scheduling problem and that the team we had not played always seemed to be playing someone else. Isn't higher education wonderful?

I can recall only two professors who played for us. R. G. Jahn from physics played for two years before leaving for CalTech and then to Princeton where he became dean of engineering. He is now doing research into mind/machine interactions. Dave Hercules from chemistry went on to a brilliant career and is now at Vanderbilt. Although he did not play, the organic analytical chemist Velmer Fish was a frequent spectator.

The last summer of 1960 I was too busy with the final details of my thesis to play more softball. I recall that after devoting hours to duplicating the pages of my thesis that at about 3 a.m. I went to the old freshman chemistry lab to make use of the large table top area as a place to collate the thesis.

Except for an occasional picnic softball game my playing days have sadly ended. I went on to a professorship at West Virginia University and then to my current position as professor emeritus at the University of Florida. I left chemical engineering decades ago.

I have contacted a few of my former teammates by telephone and email. Some have vivid and fond memories of the team. One guy does not remember me or the team. We have gone our separate ways. There have been marriages and divorces, births and deaths, successes and failures, good health and sickness, and for most on to retirement. Through it all I enjoy recalling my private field of dreams, and the victories and defeats that we celebrated at the Roosevelt Bar. Until the team reunites at the all-star game in the sky it is "Good night, Mrs. Calabash."

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David Hercules writes from Vanderbilt University:

I can also confirm a couple of things that John mentions. The story about the name change is true. I clearly remember that Banko's and the Democratic Club were consistently good teams. The comment about Bob Petfield's pitching ability is accurate and well deserved. I also remember the "celebrations" at the Roosevelt Bar.

My own role with the team was relatively minor. I pitched and played first base in the Allentown Church League, but was not good enough at pitching that I could do that in the Bethlehem City League. I played mostly with the departmental team in the spring/summer of 1958. I played some at first base and was used as a pinch hitter. I spent the next two summers working at the DuPont Experimental Station and I played regularly in the Experimental Station League. It was good to hear from someone at Lehigh and to recall those early days of my academic career.

Faculty News

Gregory S. Ferguson was a session organizer and chair at the 28th annual meeting of the Adhesion Society. His most recent publication is "Novel Room-Temperature First-Level Packaging Process for Microscale Devices," W.-Y. Zhang, J.P. Labukas , S. Tatic-Lucic, L. Larson, T. Bannuru, R.P. Vinci, and G.S. Ferguson, *Sensors and Actuators A (Physical)* **2005**, *123–124*, 646–465.

Natalie Foster has replaced Geoffrey Davies as the third author for the forthcoming second edition of T. R. Gilbert, R. V. Kriss, and G. Davies, *Chemistry: The Science in Context*, W. W. Norton, New York, 2004.

Robert A. Flowers gave invited lectures at the University of Kentucky, Duquesne University, and the University of Toledo ("Mechanistic Studies of Sm(II)-Based Reductants") and at the Gordon research Conference ("Mechanistic Role of Proton Donors in SmI_2-Mediated Reactions"). His recent publications include "Reduction of β-hydroxyketones by SmI_2/H_2O/Amine" (with T. A. Davis, P. Chopade, and G. Hilmersson), *Org. Lett.* **2005**, *7*, 119–122; "Photoinduced Electron Transfer Reactions by SmI_2 in THF: Luminescence Quenching Studies and Mechanistic Investigations" (with E. Prasad and B.W. Knettle) *Chem. Eur. J.* **2005**, *11*, 3105–3112; "Exploring $SmBr_2$, SmI_2, and YbI_2 Mediated Reactions assisted by Microwave Irradiation" (with A. Dahlén, E. Prasad, and G. Hilmersson), *Chem. Eur. J.*, **2005**, *11*, 3279–3284; "Chelation-Controlled Diastereoselective Reduction of α-Fluoroketones" (with P.K. Mohanta, T. A. Davis, and J. R. Gooch), *J. Am. Chem. Soc.* **2005,** *127*, 11896–11897; "Cyclic Aromatic Oligoamides as Highly Selective Receptors for the Guanidinium Ion" (with A. R. Sanford, L.H. Yuan, W. Feng, K. Yamato, and B. Gong), *Chem. Comm*. **2005**, 4720–4722; and "The Role of Water in SmI_2-Mediated Reductions of Alkyl Halides" (with E. Prasad), *J. Am. Chem. Soc.* **2005**, *127*, 18093–18099.

Ned Heindel chaired a workshop at the National Academy of Sciences on the pricing of "open access" to chemistry journals. He and two colleagues edited the proceedings of the meeting into book form—N. D. Heindel, Tina Masciangioli, and Eva von Schaper, eds., "Are Chemistry Journals Too Expensive and Inaccessible ?," National Academies Press, Washington, DC, (2005).

Kamil Klier was an invited lecturer at the International Zeolite School in Prague, FEZA, August 19–22, 2005. While speaking about "Spectroscopic Studies of Zeolites and Mesoporous Materials," Klier also paid tribute to his Prague Professors, the late Otto Wichterle, the first inventor of soft contact lenses, Arnost Reiser, later a leader of the Imaging Technology program at Brooklyn Polytechnic, now retired, and the late Nobel Prize winner for Electrochemistry Jaroslav Heyrovsky, to whom he served as an undergraduate Teaching Assistant in the Polarography Laboratory that was decorated with Michael Faraday's adages "Progress is Made by Trial and Failure" and "Work, Finish, Publish" on little posters hanging on central heating heat exchangers. At the subsequent Federation of European Zeolite Association Conference August 23–26, Klier presented two papers co-authored by Lehigh undergraduates Sean Hasan, on "SBA-Catalyzed Synthesis of Ethers from Alcohols" and Jeremy Smith, on "Ion-Exchange, Core-Level Shifts, and Bond Strengths in Mesoporous Solid Acids," both with long-time coworker Research Scientist Rick Herman. These papers were published in the monograph series *Studies in Surface Science and Catalysis* 158 (Elsevier, 2005).

Bruce E. Koel gave invited lectures at the 2005 American Vacuum Society International Symposium in Boston and the Southern California Symposium on Surface Science at the University of California ("Site-Directed Chemistry at Pt-Sn Alloy Surfaces") and the Electrochemical Society meeting in Quebec City ("Surface Reactions and Intermediates on Pt and Pt-Sn Alloys for Development of Direct Ethanol Fuel Cells"). His recent publications include "Fabrication of Polystyrene Latex Nanostructures by Nanomanipulation and Thermal Processing," (with E. Harel, S. E. Meltzer, A. A. G. Requicha, and M. E. Thompson), *Nano Lett.*, **2005**, *5*, 2624–2629); TPD and FT-IRAS investigation of ethylene oxide (EtO) adsorption on a Au(211) stepped surface (with J. Kim), *Langmuir*, **2005**, *21*, 3886–3891; "Hydrogenation of 1,3-butadiene on two ordered Sn/Pt(111) surface alloys" (with H. Zhao), *J. Catal.*, **2005**, *234*, 24–32; "Reactivity of Ethyl Groups on a Sn/Pt(111) Surface Alloy" (with H. Zhao), *Catal. Lett.,* **2005**, *99*, 27–32; and "Influence of coadsorbed hydrogen on ethylene adsorption and reaction on a $(\sqrt{3}\times3)R30^{o}$-Sn/Pt(111) surface alloy," (with H. Zhao), L*angmuir*, **2005**, *21*, 971–975.

Kai Landskron gave an invited lecture at the Gordon Conference zeolitic materials division. His recent publications include: "Periodic Mesoporous Organosilicas – Self-assembly from Bridged Cyclic Silsesquioxanes" (with G. A. Ozin), *Angew. Chem. Int. Ed.* **2005**, *44*, 2107–2109; "Spin-coated Periodic Mesoporous Organosilica Thin Films: Towards a New Generation of Low-k Materials" (with B. D. Hatton, W. Whitnall, D. D. Perovic, and G. A. Ozin,), *Adv. Funct. Mater.* **2005**, *15*, 823–829; "Silica-silicon Nanocomposite" (with Y. Cohen, N. Tetreault, S. Fourier, and G. A. Ozin), *Adv. Funct. Mater.* **2005**, *15*, 593–602; and "Past, Present and Future of Periodic Mesoporous Organosilicas" (with B. D. Hatton, W. Whitnall, D. Perovic, and G. A. Ozin), *Acc. Chem. Res.* **2005**, *38*, 305–312.

Tianbo Liu has received a National Science Foundation Career Award for 2006 –2011. He has also been recognized as a Distinguished Overseas Young Scientist by the National Science Foundation of China. (Each year eight

awards are given in the fields of chemistry, chemical engineering and environmental science.) He presented invited lectures at Shandong University, China; Tsinghua University, China; Georgetown University; and the PacifiChem meeting in Waikiki, Hawaii. His recent publications include "Strong Attraction among the Fully Hydrophilic $\{Mo_{72}Fe_{30}\}$Macroanions (with Guang Liu), *J. Am. Chem. Soc*. **2005**, *127*, 6942–6943; "An Onion Phase in Salt-free Zero-Charged Catanionic Surfactant Solutions" (with Aixin Song, Shuli Dong, Xiangfeng Jia, Jingcheng Hao, and Weimin Liu), *Angew. Chem. Int. Ed*., **2005**, *44*, 4018–4021; "Thermodynamic Properties of the Unique Self-Assembly of $\{Mo_{72}Fe_{30}\}$ Inorganic Macroions in Salt-Free and Salt-Containing Aqueous Solutions" (with Guang Liu), *Langmuir*, **2005**, *21*, 2713–2720; "The Ionic Effect on Supramolecular Aggregates in Polyoxomolybdate Solution" (With Guang Liu and Matthew Cons) *J. mol. Liq.*, **2005**, *118*, 27–29; "Mediator-Template Assembly of Nanoparticles" (with Mathew M. Maye, I-Im S. Lim, Jin Luo, Daniel Rabinovich, and Chuan-Jian Zhong), *J. Am. Chem. Soc*., **2005**, *127*, 1519–1529; and "Structural Stability of Giant Polyoxomolybdate Moleculaes as Probed by EXAFS" (with Anatoly I. Frankel and Shira C. Frankel), *Physica Scripta* **2005**, *T115*, 721–723.

Sam Niedbala was a workshop speaker at the Annual Meeting of the Society of Forensic Toxicology ("Oral Fluids, Research and Applications for Drugs of Abuse Testing"). He also gave invited lectures at a Center for Disease Control sponsored meeting on The Integration of Rapid HIV Testing in Dental Care; An Exploration of Issues, Strategies and Opportunities ("Rapid Testing Technologies for On Site HIV Detection"), the University of Michigan ("The Success and Failure of Technologies, Product and Companies Commercializing Oral Based Diagnostics"), and Taylor University ("Using Science to Meet Unmet Business Opportunities").

Steven L. Regen was an invited speaker at the Shanghai Institute of Organic Chemistry, the Institute of Chemistry at the Chinese Academy of Sciences in Bejing, Peking University, Iowa State University, McGill University, University of Montreal, and the University of the Sciences. His recent publications include: "A Needle and Thread Approach Towards Bilayer Transport: Permeation of a Molecular Umbrella-Oligonucleotide Conjugate Across a Phospholipid Membrane" (with V. Janout) *J. Am. Chem. Soc.*, **2005***, 127*, 22–23; "Molecular Umbrella-Assisted Transport of an Oligionucleotide Across Cholesterol-Rich Phospholipid Bilayers" (with V. Janout and B. Jing), *J. Am. Chem. Soc.*, **2005**, *127*, 15862–15870; "Poly(choloyl)-Based Amphiphiles as Pore-forming Agents: Transport-Active Monomers by Design" (with W. H. Chen and X. B. Shao), *J. Am. Chem. Soc.*, **2005**, *127*, 12727–12735; "Transbilayer Complementarity of Phospholipids. Proof of Principle" (with J. Zhang and B. Jing), *Langmuir*, **2005**, *21*, 8983–8986; "A Chemical Sensor for the Liquid-Ordered Phase" (with H. Cao, J. Zhang and B. Jing), *J. Am. Chem. Soc.*, **2005**, *127*, 8813–8816; "Thermally-Gated Liposomes" (with W. H. Chen), *J. Am. Chem. Soc.* **2005**, *127*, 6538–6539; Glued Langmuir-Blodgett Bilayers Having Unusually High He/CO_2 Permeation Selectivities" (with J. Li and V. Janout), *Langmuir*, **2005**, *21*, 1676–1678; and "Transbilayer Complementarity of Phospholipids in Cholesterol-Rich Membranes" (with J. Zhang, B. Jing and N. Totutake), *Biochemistry*, **2005**, *44*, 3598.

Keith J. Schray received the Outstanding Professor Award from Gamma Phi Beta Sorority.

Dmitri V. Vezenov received a LabAutomation academic grant for 2005. His recent publications include: "Approaching Zero: Using Fractured Crystals in Metrology for Replica Molding" (with Q. Xu, B. T. Mayers, M. Lahav, and G. M. Whitesides), *J. Am. Chem. Soc.*, **2005**, *127*, 854–855; Integrated Fluorescent Light Source for Optofluidic Applications" (with B. T. Mayers, D. B. Wolfe, and G. M. Whitesides) *Apl. Phys. Lett.*, **2005**, *86*, 041104/1–041104/3; "Arrays and Cascades of Fluorescent Liquid-Liquid Waveguides: Broadband Light Sources for Spectroscopy in Microchannels" (with B. T. Mayers, V. Vulev, and G. M. Whitesides) *Anal. Chem.*, **2005**, *77*, 1310–1316; "A Low-threshold, High-efficiency Microfluidic Waveguide Laser" (with B. T. Mayers, R. Conroy, P. Snee, Y. Chan, M. G. Bawendi, and G. M. Whitesides), *J. Am. Chem. Soc.*, **2005**, *127*, 8952–8953; "Chemical Force Microscopy: Probing Chemical Origin of Interfacial Forces and Adhesion" (with A. Noy and P. Ashby), Invited review for special issue of *J. Adhesion Sci. Technology*, **2005**, *19*, 313–364; "Diffusion-Controlled Optical Elements for Optofluidics" (with D. B. Wolfe, B. T. Mayers, G. M. Whitesides, R. Conroy and M. G. Prentiss), *Appl. Phys. Lett.*, **2005**, *87*, 181105/1–181105/3; and "Optical Waveguiding in Suspensions of Dielectric Particles" (with R. Conroy, B. T. Mayers, D. B. Wolfe, M. G. Prentiss, and G. M. Whitesides), *Applied Optics*, **2005**, *44*, 7853–7857.

Alpha Albert Diefenderfer,
Professor of Chemistry, 1902–1946

Spotlight on Alumni: Kurt L. Ehresman, Esq.

In 1984, Kurt Ehresman came to Lehigh from Camp Hill, Pennsylvania with his future fully mapped out—he would major in biochemistry, join the wresting team, and attend medical school after graduation. As the son of an Air Force officer and former Nebraska farmer, Kurt was used to making firm plans and sticking to them. Looking back, Kurt says he is thankful that his experience at Lehigh opened his eyes to an important fact—plans change. He did get to wrestle, but as a perennial intramural champion, rather than a varsity team member.

Biochemistry was then a major with the College of Engineering, and Kurt found the non-chemistry courses to be challenging. He decided to give up his dream of Lehigh wrestling to maintain a GPA suitable for admission to medical school. His academic efforts succeeded, but by graduation in 1988, other career opportunities had arisen. Under the guidance of Ned Heindel, Ehresman had studied the organic synthesis of an anti-ovarian cancer drug candidate for Centocor and that sparked his interest in the pharmaceutical industry. Medical school was out—and law school was never even considered.

Upon graduation, Kurt joined ICI Americas (now AstraZeneca), a pharmaceutical company in Delaware. Kurt was selected for ICI's development program, which provides broad exposure and an accelerated track to management. He first served as a process development engineer, developing and optimizing manufacturing processes of clinical and commercial pharmaceuticals. Thereafter, he became a quality assurance supervisor, resolving quality issues involving ingredients and finished goods. He next served as a planner and scheduler, maintaining a high-volume computerized production schedule.

In 1991 Kurt became a supervisor for clinical investigational materials section (IMS), responsible for design, manufacture, packaging, labeling and delivery of clinical study drugs. IMS sparked Kurt's interest in law, due to the FDA regulations, such as Good Manufacturing Practices and Good Clinical Practices, that govern human drug studies.

Kurt self-studied for the LSAT, and became enrolled in evening law school at Delaware's only law school. He worked by day and studied by night to push his career and education forward towards an as-yet uncertain ultimate goal. He credits Lehigh for having taught him that good results require very hard work.

In 1994, Ehresman became a specialist in drug regulatory affairs for Zeneca, advising personnel and departments on regulatory law, policies, and developments. He helped to obtain FDA approval of new drugs such as SEROQUEL® brand anti-psychotic and MERREM® brand antibiotic, as well as several anti-cancer drugs.

In 1995, Kurt obtained his Juris Doctor *cum laude* from Widener School of Law, as the only biochemist in the class.

Kurt hoped to become an in-house attorney for Zeneca, but another unexpected opportunity had arisen—Kurt had met Colleen Devine, a lovely ICU nurse from Allentown who was just enrolling at Widener—but at the Harrisburg, Pennsylvania campus. "I was from Harrisburg, and my folks were still there, so back I went," he says. Kurt joined the law firm of Saul, Ewing, LLP in the business regulatory law department. Saul Ewing later created an IP division, and Kurt was recruited to become a patent attorney because of his chemical degree from Lehigh.

Kurt left Saul Ewing in 2001 to become the fourth patent attorney at his current Harrisburg firm, McNees, Wallace & Nurick LLC. McNees now has nine patent lawyers, as well as trademark and licensing IP attorneys in Harrisburg, Lancaster, and Columbus. Kurt's current clients include established pharmaceutical, consumer products, and engineering firms, as well as emerging science-based companies.

Kurt has continued to be active at Lehigh, both as an alumnus and as an IP attorney. Kurt assists the General Counsel's Office with trademarks, and works on patent matters with Glenn Doell, Lehigh's Director of Technology Transfer. In addition, his firm represents the Life Sciences Greenhouse of Central Pennsylvania, represented on the Lehigh campus by John Taylor. It is Kurt's hope that his involvement will help Lehigh to continue its history of developing commercially viable inventions that benefit both Lehigh and the community as a whole.

He also hopes that his two young children, Daniel (3) and Olivia (1) will attend Lehigh, to which he adds, "Go (Little) Mountain Hawks!"

Kurt welcomes the opportunity to reconnect with other Lehigh alumni. He can be reached by email at kehresman@mwn.com, and by telephone at 717-237-5458.

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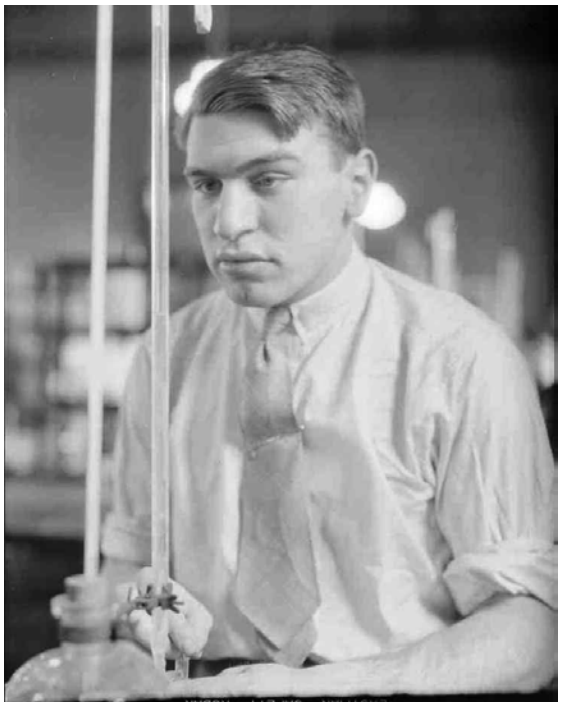

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