



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

RENOVATIONS DISRUPT MUDD ACTIVITIES FOR MONTHS

During the summer, the Mudd building underwent a major renovation, but a casual observer might miss the results completely. The entire air handling system of the Mudd building was either replaced or significantly upgraded. As the ductwork is above the ceilings or behind walls, the appearance of the building hasn't changed much. The exhaust system was “brought up to code” by replacing all the exhaust ductwork and installing automatic fire dampers inside each duct at the fire walls.

More powerful exhaust fans now sit on the roof, shooting the exhausted air in a plume up to 50 feet above the roof line, preventing exhausted air from flowing back down the side of the building to enter again with the intake air. Each individual size hood is equipped with a sensor to adjust the amount of air exhausted from the hood depending on the height of the sash. The system responds within a few seconds of moving the sash. There has been a dramatic improvement in the overall performance of the hoods from what existed previously. The increased air flow is most noticeable in the second, third and fourth floor teaching laboratories (the labs with a “hood wall”).

The seven air handlers that supply fresh air to the building were replaced, and the cooling capacity of this system was dramatically increased. The ductwork for the system was cleaned for the first time in many years. The heat exchanger (to recover heat from the exhausted air) was also improved. When a hood is opened, the fresh air into the room is also adjusted. Thus when hoods are closed, the heating/cooling load is minimized; the overall heating and cooling costs for the building should be significantly lower with this variable air volume system.

How was this monumental task accomplished? As soon as classes ended last Spring semester, half of the Mudd building was prepared for closing. Several re-

search groups on the West and center West side of Mudd either packed up their equipment in boxes for summer storage (often in the front hallway, which remained open all summer), or moved it to temporary labs on the other side of the building. In a very few cases, some labs moved to another building. In most cases two research groups occupied space normally reserved for just one group. The vacated labs had to be completely empty, except for anything stored in the cabinets or drawers.

For seven weeks, that portion of the building was blocked off behind a construction wall, as over forty

workers labored to remove and replace the ductwork and associated equipment. Access was by appointment only, and required wearing a hard hat and safety glasses, and being escorted by an employee of H. T. Lyons, who was the general contractor. While the process was complicated, access was granted with some prior notice.

After seven weeks, a four day “move back” period was allowed for **everyone** to shift from the East side over to the

West side of Mudd. Labs were again shared, so space was tight all summer. Then the second side was blocked off by a construction wall, with limited access as described above. At some point during the summer, every office was also closed, most for at least six weeks. During the second week of August, the construction walls came down, and everyone started moving back into their original spaces.

While most researchers were able to continue their work, for others the summer was essentially lost. The major NMR lab and the department instrumentation facility were both closed all summer, although some of the smaller instruments were relocated to temporary space. As of October 8, both labs remain closed, as a special air conditioning system is currently being installed to supplement the building air for these two rooms. The better air conditioning in these specialized labs should serve the department well as the department continues to prepare for the future





Vertical variable-speed axial fans manufactured by the Strobic Corporation (<http://www.strobicair.com/index.htm>) which produce a vertical up-blast to disperse exhaust above the building, unlike the old horizontal fans which often failed to disperse exhaust properly and under unfavorable conditions allowed exhaust back into the building.

Construction photos courtesy H. T. Lyons, Inc. (<http://www.htlyons.com/>).



While everyone is back in their labs and offices, a large number of boxes remain packed. Many boxes are still in the halls, while most have made it back into the appropriate labs. To make things more complicated, several significant renovations were started also over the summer, including removal of two cold rooms on the sixth floor and installation of one completely new cold room, renovation of labs for a new faculty member, the special air conditioning on the second floor, and opening up the space occupied by one of the cold rooms.

—James E. Roberts



Exhaust chimneys on the Chandler Chemical Laboratory, completed in 1885, as seen in 2005.

ALUMNI NEWS

Sarah Abdulla (B.S. 2002, M.S. 2006) has been doing vaccines research at the Wistar Institute in Philadelphia for the past year and a half. She started medical school at the University of Pennsylvania in August.

Gary Calabrese (B.S. 1979, Ph.D. MIT) served as chair of the program committee for 2007 Innovation Day held at the Chemical Heritage Foundation in Philadelphia on 11 September to honor recent industrial achievements in chemistry. Calabrese is Vice President and Chief Technology Officer at Rohm and Haas. He formerly served in various chemistry and management positions at Shipley (a Rohm and Haas subsidiary), at Polaroid Corporation and at Allied-Signal.

Guy T. Carter (B.S. 1971, Ph.D. Wisconsin) is assistant vice president of chemical technologies in discovery which is part of chemical and screening sciences at Wyeth Research in Pearl River NY. He has responsibility for the natural products discovery function at Wyeth (which is his true passion), as well as other functions including structural and analytical chemistry and pharmaceutical profiling. Carter was one of several people quoted in an article on analytical chemistry careers in *Chemical & Engineering News*, January 22, 2007, p. 62.

Aaron R. Ettelman (B.S. 1995, J.D., 1999 Temple University) has joined the law firm of Connolly Bove Lodge & Hutz LLP in Wilmington, Delaware. Aaron continues to practice intellectual property law, focusing on chemical patent matters. Over the last ten years or so since graduating from Lehigh and being admitted to practice at the Patent Office, Aaron's practice has included working at a firm in Philadelphia for a variety of chemical companies, and before that, in-house patent representation of German specialty chemical company Cognis GmbH.

Byron S. Johnson (M.S. 2007) is in the analytical services group of GlaxoSmithKline in Research Triangle Park NC. He writes, "I congratulate all of you associated with the Distance Education program. The academic rigor and the integrity with which the program is administered have made it a recognized and valued partnership for my company, GlaxoSmithKline. I wish you all the best in your future endeavors and hope to remain involved in supporting the Lehigh University Distance Education program."

Christine Martey-Ochola (Ph.D. 2001) is an assistant professor of chemistry at Villanova University. For more information about Christine, see her web site at <http://www93.homepage.villanova.edu/christine.martey.ochola/>.

Cozette McAvoy (M.S. 2007) has relocated from a position with a private patent firm, Synnestvedt and Lechner to a corporate patent law position with Novartis Pharma-

ceuticals in East Hanover, NJ. McAvoy is one of a cohort of patent attorneys taking distance ed courses in drug chemistry at Lehigh. She has lectured at Lehigh on "Technology Transfer and the Bayh-Dole Act" in the department's distance ed course on Pharmaceutical Business practices.

Gerald Miller (Ph.D. 1980) reports that he has relocated from Long Island to Baltimore to work as a software engineer for Castle Communications. Castle is an internet publishing company which provides customized services to clients. Jerry is developing a rapid and secure online billing system.

David J. Nuechterlein (B.S. 1970, MBA Harvard) is Executive Vice President and co-founder for the MFL Group in Beachwood, Ohio. MFL is an Executive Consulting and Coaching firm. Prior to co-founding MFL, Nuechterlein worked with two startup operations, one an Internet based service provider and the other a company exploiting a novel powder metal technology. He was the President of ENPAC, Inc. a plastic molding subsidiary of Essef Corp. as well heading Corporate Planning and Development for GenCorp, Inc. a diversified, technology-based company. He served as Director Product Planning and Marketing with Technicare, a Johnson & Johnson subsidiary, where he was heavily involved in the commercialization of Magnetic Resonance Imaging. He also spent six years as a management consultant with McKinsey & Co., both in the U.S. and the U.K, where he served both industrial and consumer clients in the areas of strategy and operations effectiveness.

Matthew Szap, (Ph.D. 1998) and his wife Cathy Trimor Szap (B.S. 1995) brought their second daughter, Eva Cristianne Szap, into the world on 28 June 2007. Szap, who works as a Scientific Content Developer for GE Healthcare in Piscataway (NJ), reports, "Mommy is recovering fine, Daddy is still having contractions and big sister Mia is helping as much as possible."

Michael Sumner (B.A. 1962) admits he has not been a chemist since 1967, but enjoys skimming the chemistry department's newsletter, particularly looking for alumni news from the Class of 1962. After graduation he worked at Goodyear Tire & Rubber Company as a Compound Development Chemist until 1967. He says, "It was an ideal first job. I improved tire manufacturing through changes in the chemical composition of the tire or rubberized material used in the manufacturing process. In 1967, I left Goodyear to pursue an MBA degree. Once I received the degree, my career has been related to medical care. I have been an Assistant Hospital Administrator, a Project Director on health care issues for a consulting firm, an independent consultant, and now a Director and Associate Actuary for a health insurer. Although I practiced chemistry for only five years, I believe a scientific background has been very helpful.

FACULTY NEWS

David T. Moore

joined the department in August, 2007 as assistant professor of chemistry. Born in Alexandria, VA, he moved with his family to St. Thomas in the Virgin Islands when he was five and received his early education there. After a B.A. in chemistry from Williams College, Moore received his Ph.D. in physical chemistry with Roger E. Miller at the University of North Carolina in Chapel Hill. His thesis was a study of the high-resolution vibrational spectroscopy and quantum solvation of ultracold molecular clusters inside liquid helium nanodroplets.



Moore did a post-doc with Gerard Meijer at the FELIX free-electron laser facility at the FOM Institute in Nieuwegein, the Netherlands. Here he helped design and build a Fourier Transform Ion Cyclotron Resonance Mass Spectrometer and interfaced it with the FELIX beamline to perform infrared spectroscopy experiments on gas-phase molecular ions and ionic clusters.

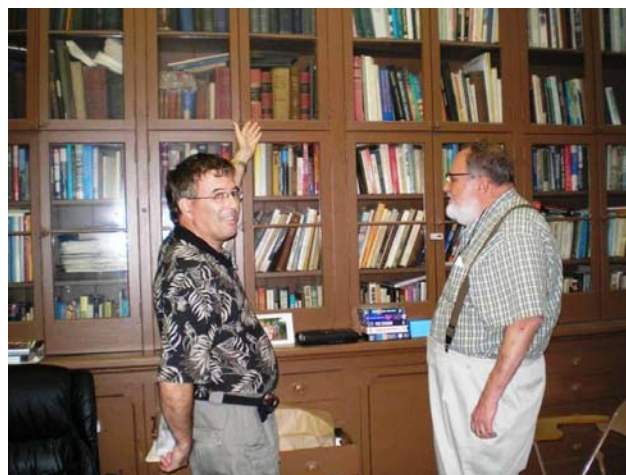
Moore then moved on to a second post-doc with Dan Neumark at the University of California Berkeley, investigating the photofragment translational spectroscopy of transient radicals generated by in-beam photolysis. While in Neumark's group, he continued his collaborations with the FELIX facility, working on the gas-phase spectroscopy of sulfate-water clusters.

At Lehigh, Moore's work is focused on using vibrational spectroscopy to elucidate mechanisms of catalytic reactions on nanoparticles. His group is developing a technique he calls "freeze-frame" spectroscopy, where a cryogenic matrix is used to kinetically trap nanoparticle-reactant complexes in their pre-reactive geometry. These species are then probed with infrared spectroscopy to determine their structures. "The resulting information about the geometrical changes of the reactant molecules," Moore says, "will then provide insight into the nature of the catalytic mechanism, which can be compared to predictions from theory."

Bruce Koel has been named interim vice provost for research effective July 1, 2007, for a period of one to two years. As chief research officer for the university, Koel has been given the mandate to facilitate research opportunities for faculty and students in all four colleges and to develop, expand and enhance the research capability, culture and environment at the university. His primary responsibilities will include working with deans to develop and implement new interdisciplinary research initiatives, providing oversight for externally funded research, and fostering and supporting the university's active research

portfolio. According to University President Alice P. Gast, Koel's "experience and ideas for enhancing Lehigh's research environment will be a tremendous asset to the whole community."

Thomas Mifflin Ullmann, Jr., grandson of Professor **Harry M. Ullmann** (1868–1948) visited Lehigh in July in search of genealogical details on his grandfather. Thanks to records in the faculty archives, Thomas—an advertisement manager for a Heathrow, Florida, newspaper—found that Harry, fresh from a Johns Hopkins Ph.D., taught chemistry at Lehigh from 1894 to 1938 and served as department chair from 1914 to 1938. Here Thomas (left) visits his grandfather's former office in Chandler-Ullmann Hall, almost unchanged since he left it 70 years ago, and talks with its present occupant, David Amidon of the Department of Urban Studies.



Harry Maas Ullmann in his office in Chandler-Ullmann Hall. circa 1941.

Daniel Zeroka has retired after forty years of service to the department and the university. Zeroka earned his Ph.D. at the University of Pennsylvania with Hendrik F. Hameka in theoretical physical chemistry and his research has been in applied quantum chemistry and the elucidation of the interaction of radiation with matter. In addition to teaching courses in physical chemistry and freshman chemistry at Lehigh, Zeroka was associate chair of the department (1989–1992, 2004–2007), faculty graduate coordinator (1989–1992), advisor to chemistry majors for a number of years, and director of the Arts-Engineering program since 1995.

NEW ALUMNI – CLASS OF 2007

PH.D. CHEMISTRY

Michael Anthony Gentile – *Dissertation*: Molecular Mechanism of Anabolic Action of the Non-aromatizable Androgen, 5 α -Dihydrotestosterone.

Jingliang Jiao – *Dissertation*: Synthetic Applications and Mechanistic Studies of Ce(IV) Mediated Reactions.

Matthew Alan Ray – *Dissertation*: Bottom-Up Surface Self-Assembly of Polymer Colloids to Form Patterned Arrays.

Kerry Anne Sullivan Riffel – *Dissertation*: Development and Application of Analytical Techniques for the Optimization of Novel PET Tracers Used in Drug Discovery and Development.

PH.D. BIOCHEMISTRY

Daniela Kanyi – *Dissertation*: Cytoskeletal Associations of SAPK/MAPK Members, and a Role for PKG and Phosphatase(s) in Heparin Modulation of Inflammation-Induced Signal Transduction, in Endothelial Cells.

PH.D. PHARMACEUTICAL CHEMISTRY

Kyle Alan Flizar – *Dissertation*: *In Vitro* Techniques for Predicting Pharmacokinetic Profiles.

PH.D. POLYMER SCIENCE AND ENGINEERING

Hyungsoo Kim – *Dissertation*: Metal Encapsulation of Latex Particles.

Li Zhang – *Dissertation*: Thermally-responsive Core-shell Particles.

Xiaohan Zhang – *Dissertation*: Adhesion Loss at Epoxy/Glass Interfaces Under Hygrothermal Conditions.

M.S. CHEMISTRY

Gregory Linus Adams, James H. Adams, Kimberly Nicole Algayer, Lawrence Chen, Jason S. Forsell, Lorraine A. Hill, Byron Scott Johnson, Stephanie Sabatino Kelly, Vu Van Ma, Cozette Marie McAvoy, Felisha Monét Mitchell, Beth Adams Norton, James Laurin Scharadin, Eric Dwight Seymour, Kami Colleen Smith, Denise L. Thomas, Anh-Dao Vo.

M.S. PHARMACEUTICAL CHEMISTRY

Carrie Lynne Anderson, Nuriye Aylin (Eileen) Berkay, Cecilia Irene Diefenderfer, Debra Ann Duffey, Jestyn Randall Geist, Nicole Ginanni, Paul Robert Ivany, Llurellyn Orlando Malcolm, Amy Lynne Musselman, Dorothy Grace Reynolds, Mark John Rosenbach, Mark Daniel Schaefer, Elizabeth Caisse Tinney, Nicole Louise Trainor.

M. S. AND M. ENG., POLYMER SCIENCE AND ENGINEERING

Robert Fix, Christine Gardner, Mary Kathleen Thomas, Morris C. Wills, Xiaohan Zhang.

B.S. CHEMISTRY

Katrina Cokleski, Sarah Jean Horvat, Christina L. Schindler.

B.S. BIOCHEMISTRY

Anna Christina Childson, Joshua Eric Gorsky, Celia Marie Hoelke, Lauren Claire Kaczka, Christopher Michael McGinn, Laura Ann Petrini, Douglas Shamy Pfeil, Evan Daniel Rossignol, Sarah Elizabeth Seiler, Anthony Ta.



STUDENT HONORS - 2007

Sarah J. Horvat — American Chemical Society Award presented to the outstanding senior major in chemistry.

Lauren C. Kaczka — American Institute of Chemists Award presented to an outstanding senior majoring in chemistry, chemical engineering or biochemistry.

Sarah E. Seiler — Merck Index Award presented to an outstanding senior chemistry major who has been active in student affairs.

Christopher M. McGinn — Harry M. Ullman Chemistry Prize presented to the highest-ranking senior in chemistry.

Douglas S. Pfeil — William H. Chandler Senior Chemistry Prize, established in 1920 by Mrs. Chandler, presented to a high ranking senior in the chemistry department. The Chandler Prize is also awarded to a high ranking chemistry major in the sophomore and junior classes.

Larry L. Zhang — Alpha A. Diefenderfer Award presented to the highest-ranking junior in analytical chemistry, sponsored by the American Chemical Society Division of Analytical Chemistry.

Jessica A. Latona — sanofi-aventis Award in Organic Chemistry, presented to the student with the highest grade average for the sophomore organic chemistry course.

Sarah J. Horvat — sanofi-aventis Award in Organic Chemistry Research, selected by a faculty committee and based on the quality of senior research in synthetic organic chemistry.

Megan B. Conrad — Hybercube, Inc. Scholar Award presented to a senior chemistry major who has shown outstanding promise in theoretical chemistry and molecular modeling.

Trevor Daly — Lehigh University Fellowship

Joseph Labukas — The Newton W. (B.S. 1901) and Constance N. Buch Graduate Student Fellowship, established in 1972 by the estate of Constance N. Buch for graduate students pursuing an advanced degree in chemistry.

Joseph Teprovich — The William L. Heim Graduate Student Fellowship, established in 1935 for the promotion of research in the chemistry department.

Melissa Kistler — The Chemistry Department Graduate Student Fellowship, established in 1927 as the first research scholarship in the department of chemistry.

IN MEMORIAM

James Molnar (Ph.D. 1955) passed away August 8, 2007 at the age of 63 from complications of diabetes mellitus, a disease he had suffered with for most of his life. Born in Hellertown, Molnar earned a B.A. from Moravian College in 1965. His Ph.D. thesis at Lehigh under Ned Heindel was on "The Photooxidation of Some 2-Methylbenzophenones." Molnar spent his entire career at the FBI Crime Laboratory in Washington, DC and later in Quantico, VA. Early in his FBI career he developed an interest in neutron activation analysis of paint chips and he taught a course on field analytical methods for drugs of abuse to new FBI agents in training. Molnar was a member for 48 years of the American association of Variable Star Observers, ranking sixth on their all-time list of individuals using telescopic visual observations to measure variable star brightness. During his lifetime he made 26,000 measurements on more than 200 individual stars.



Graduating graduate students, their spouses, chemistry faculty, and the distance education administration team were guests of the Department at a pre-commencement dinner on 20 May 2007. Shown above (L to R) are Front Row: Ned Heindel, Beth Norton, Rosie Makosky, Stephanie Kelly, Peg Portz; Middle Row: Jill Sharkey, Natalie Foster, Debra Duffey, Denise Thomas, Jason Forsell, Kim Algayer, Li Zhang; Back Row: Keith Schray, Jim Roberts, Mark Rosenbach, Eric Seymour, Byron Johnson, Greg Adams, Paul Ivany, Mark Schaeffer.



MYSTERY STUDENT IDENTIFIED ?

George Hartman (B.S. 1943, M.S. 1948) suggests that the mystery student appearing on page 8 of *Mudd in Your Eye* (No. 32, March 2007) was Albert C. Zettlemoyer (B.S. 1936, M.S. 1938). Hartman, who was a lab assistant for Zettlemoyer, worked with Earl Serfass for his M.S. and spent 43 years at The Electric Storage Battery Company (Exide) and twelve years as a consultant on batteries and environmental affairs. Professor **James E. Sturm** independently made the same suggestion.



1936 Epitome



MUDD ON THE WEB

The current format of the chemistry department newsletter called *Mudd in Your Eye* began with Number 27 in July 2004. Newsletter Number 1 was issued in the summer of 1984. Most of the previous issues are now available on the web and can be found on the chemistry department news page at <http://cas.lehigh.edu/casweb/content/default.aspx?pageid=504>.

SPOTLIGHT ON ALUMNI: GEORGE E. BARRINGER, JR.

After graduating from a small high school in New Jersey, George Barringer selected Boston University over Lehigh for his undergraduate education because “he was attracted to the broad course offerings of a large school in a major U.S. academic center.” But he also found at BU that large research universities have little time for undergraduates, and his overall experience at BU suffered for that.

Thus Barringer put Lehigh at the top of his list when he was considering graduate school. “My interview at Lehigh sealed the deal,” Barringer says, “when I spent an impromptu hour with chemistry department chairman Fred Fowkes, talking about chemistry and life in general. I immediately figured that if the chairman could spend that much time with a prospective student, then Lehigh was the right place for me.”

There were four Lehigh faculty who Barringer remembers with admiration and respect—Fred Fowkes, Bill Ohnesorge, Bob Rodgers and Ned Heindel. Barringer’s interest in organic chemistry took him first to Ned Heindel, who became his advisor and mentor. During that first year, Heindel’s “finest advice,” which Barringer remembers to this day, was to change his area of interest. “I was just not cut out for name reactions or synthesis,” he admits.

It was Barringer’s selection by Fred Fowkes to participate in a number of industrial research contracts that led to some valuable experience. His work on the desulfurization of crude oil, sponsored by General Electric, led on to his dissertation topic. “Over the course of these projects,” Barringer says, “I learned a great deal from Fowkes on the practical application of chemistry in industry—when to estimate, when to be quantitative, and how to budget resources.”

After Heindel, Bill Ohnesorge became Barringer’s formal dissertation advisor and was responsible for the completion of his education in classical analytical chemistry. Bob Rodgers, who had just arrived at Lehigh, became an informal dissertation advisor as Barringer became more involved with Rodgers’ specialty in instrumentation and instrumentation design. *Studies in electrochemistry : I. Microprocessor controlled electrochemistry : II. Thiamine electrochemical oxidation reactions*, was accepted for Barringer’s Ph.D. in 1979.

Following a post-doctoral year at the University of Pennsylvania Medical School studying mitochondrial metabolism and pathways by light scattering, Barringer started at the Hoechst Plastics Division in Leominster, Massachusetts as a staff chemist in inorganic analysis. Barringer credits the Lehigh faculty, their accessibility and willingness to help, as well as the industrial focus of



Photo courtesy Carol Stanton, Groton Biosystems

the department, for his future direction in industrial chemistry.

In his second year, Barringer was promoted to manager of the analytical division with responsibility for all facets of the company’s product lines. His group supported the entire U.S. R&D and production operations at four sites in the United States.

During this time Barringer developed a simple online photometer to measure a plastics additive, and this rekindled his interest in instrument development. Since Hoechst was not interested in commercializing this technology, they willingly gave Barringer the rights to it, resulting in the founding of Groton Technology, Inc. in 1984.

Starting as an HPLC component manufacturer of photodiode array detectors, Groton gradually acquired companies and technologies, at one point forming a software company to provide scientific data management tools to pharmaceutical companies.

In 2003 Groton Biosystems was formed to provide enabling technologies to the emerging biotechnology marketplace. Barringer says that early market research showed that while pharmaceutical and biotechnology businesses were advanced in biology, they were lagging in even the most basic industrial analytical laboratory capabilities. “We saw the unmet need and organized the new company to provide online analytical instrumentation to monitor molecular species in biotechnology fermentors and reactors” (<http://www.grotonbiosystems.com/>).

“For the past ten years,” Barringer states proudly, “I have had the good fortune to participate actively at Lehigh. I have coordinated, moderated, or directly taught chemistry courses via the Lehigh office of distance education. My current course offering focuses on analytical protein analysis” (<http://www.distance.lehigh.edu/>).”

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WE WANT TO HEAR FROM YOU

Do you know who this student is?

Don't become a mystery person like he is. Please let us know the new developments in your professional and/or personal life.

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