



# Mudd In Your Eye

Newsletter of the Department of Chemistry, Lehigh University

Number 34 • March 2008

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

## TEXTBOOK CO-AUTHORED BY NATALIE FOSTER TO BE PUBLISHED THIS MONTH

The second edition of *Chemistry: The Science in Context* will appear in time for the American Chemical Society meeting at New Orleans in early April, 2008. Associate Professor Natalie Foster joins the original authors Thomas R. Gilbert, Rein V. Kirss

and Geoffrey Davies of Northeastern University in this rewrite of a general chemistry textbook published by W. W. Norton & Company.

Foster joined the Northeastern group specifically to take the first edition into the second edition, but she admits that her involvement was mostly through serendipity. Commenting to Tom Gilbert at an ACS meeting about the first edition, Foster was asked if she had ever thought about writing a book. “One thing led to another” and she found herself joining the Northeastern group as a co-author.

Work began in earnest on the second edition approximately two years ago. Taking a first edition into a second edition is not as difficult a task as that facing the original authors, “smiting the ground and bringing forth a whole new book,” but “then you are on a production schedule” and that is “just unrelenting and it drives you constantly.” In spite of the hectic schedule, Foster readily states that she enjoyed it immensely.

Foster was originally assigned a few chapters from the first edition that had to be completely redone. As a result of that, she was asked to do a rewrite of all the chapters of the book which was done in consultation with a developmental editor and based on a number of reviews on the first edition. The other authors would then comment on the new draft, and after several exchanges the chapters would go out for review again. Because of production deadlines, Foster was charged with the rewrite of all but a few chapters. It was her task to incorporate comments from many diverse sources and mold it into the final product and she worked closely with the copy editor on the entire book. Additionally, it fell to Foster to deal with

the art editor in the selection of new illustrations and she credits her art course experience with Myron Barnstone for her effective communication with artists.

“Although all the authors were involved in the second draft,” Foster says, “I was involved in all of these different aspects, with the exception of the end-of-chapter problems, which I was very relieved about. I must admit I really don’t enjoy writing problems, and I especially don’t enjoy working the problems I write.”

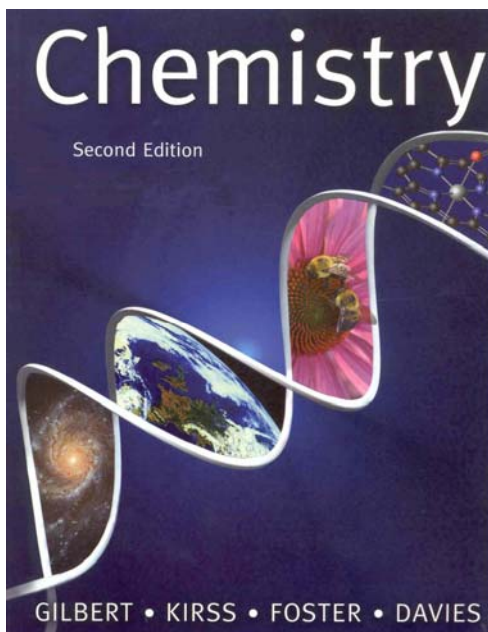
Not wanting this to be a clone of other textbooks, the authors chose to emphasize the subtitle, *Chemistry in Context* “in the first edition and that continues in the second. Foster emphasizes that this book is different than any other book on the market right now “because the contextual material is part of the fabric of the book. It’s not put in a box or added at the end of the chapter, but it is part of the story woven through the whole chapter.”

Responding to those who say that everybody has a contextual approach, Foster believes that everybody does not do that in textbooks. “The cover of this textbook,” she points out, “is very illustrative of

what the context is and how it works. That DNA strand goes from the universe to the earth to life forms to the molecule and that’s the context of the book—cosmology, the environment, biology, and the role of the molecule in all of these areas.” This gives the reader less of a feeling of jumping from topic to topic and more that there is a coherent thread being pulled through the whole book.

Foster credits the developmental editor with keeping the authors true to this premise while making sure that the book would be acceptable in the market place. At the same time, this editor helped with issues of clarity and issues of level. Foster says she can still see where he wrote on her manuscript, “You will lose every student in the house with this sentence,” a sobering comment which demands immediate attention.

The beginning of each chapter has a section called “A Look Ahead,” which Foster maintains is not the typical list of what is coming, but rather sets the stage for what



## NEW ADVANCED LABORATORY COURSES

is to follow. The first chapter, as is the norm of introductory texts, talks about how one does science. Author Richard Powers is cited for his turn of the millennium article in the *New York Times* in which Powers said the biggest idea of the millennium was running an experiment. “No process has been more influential in shaping our modern world,” the authors conclude, “than running an experiment to establish the validity of an hypothesis.”

In the equilibrium chapter, “A Look Ahead” deals with glaucoma and the issue of the normal equilibrium pressure in the eyeball and what happens when something goes wrong and that pressure builds up to a new higher level and how you have to change the position of that equilibrium to maintain a healthy eye. To Foster, these chapter introductions are vigorous and vital openings to the material that follows.

Although the text seems lavishly illustrated, Foster maintains there are many texts richer in pictures. The author’s guiding principle, she says, is that “there are no gratuitous pictures.” Numbered illustrations are carefully tied to the text, and unnumbered pictures are chosen to illustrate a specific point.

Ancillary materials which are now a prerequisite for any self-respecting introductory text are not lacking here either. There is a Student Study Guide, Student Solutions Manual and an Instructor’s Resource Guide, to name a few. Students are introduced to COAST, an acronym used to describe a four-step method for solving problems — **C**ollect and **O**rganize, **A**nalyze, **S**olve and **T**hink. End-of-chapter problems are also tied to SmartWork, Norton’s online tutorial and homework program for general chemistry.



*Natalie Foster in Paris, New Years 2006. Photo courtesy K.Dyer.*

“Today,” Foster stresses, “people have different ways of learning material and you need to create an environment where as many people as possible can get a toe hold. She cites two kinds of students—those that think the technology does it for them and those who realize that the technology is just a tool and they still have to sit down and do the work.”

Beginning in the Fall semester 2007, three advanced chemistry classes required for the Bachelor of Science degree in chemistry were replaced with two new courses. The old courses are CHM 338 (Instrumental Analysis Lecture), CHM 339 (Instrumental Analysis Laboratory), and CHM 353 (Organic Analysis Laboratory). Each of these two credit classes was offered only during the Spring semester, so some third year undergraduates would spend four afternoons each week in the laboratory.

The new courses are Advanced Chemistry Laboratory I (CHM 334, offered in the Fall semester) and Advanced Chemistry Laboratory II (CHM 335, Spring semester). Each of these courses is three credits, making the replacement “credit neutral.”

There are several reasons this material was realigned. First, many students deferred one of the lab classes until their senior year, which meant some students did not have the strong background desired for individual research with a faculty member (typically carried out during the senior year). Second, many experiments in the instrumental analysis laboratory were rather artificial in nature. Third, the new alignment means that the majority of the instrumental methods utilized for analysis are now part of an experimental sequence that includes synthesis. This procedure is much closer to what practicing chemists actually do once they become employed. Finally, it is possible to add some inorganic chemistry experiments to the sequence without compromising either the organic or instrumental analysis aspects.

As an example of the integration of concepts, consider the following multi-step sequence of experiments. First the students synthesize ferrocene and perform a purification step by sublimation. They confirm rough purity by thin layer chromatography, determining final purity by an optical method (with comparison to authentic, pure samples). Each student’s ferrocene becomes the starting material for the synthesis of acetylferrocene. Quantitative gas chromatography is then performed to determine the percent yield. Further purification of the product may be required. Finally, both proton and carbon-13 NMR spectra are obtained on the acetylferrocene.

Students may elect either course as a “writing intensive” class to fulfill a graduation requirement in the College of Arts and Sciences. During each course, the students write a number of laboratory reports in the style of a manuscript to be submitted to an American Chemical Society journal. To meet the writing intensive requirement guidelines, two of these manuscripts must be revised and resubmitted.

If there are any questions concerning these classes, please feel free to contact me.

—James E. Roberts (jer1@lehigh.edu)

## ALUMNI NEWS

**Michelle DeCrosta** (B.A. 1979, M.S. 1981, Ph.D. 1986) has relocated from Pliva Pharmaceuticals to a position as Director of Analytical Research and Development at Discovery Laboratories in Doylestown, PA. Michelle's former employer, Plava, a Croatian generic drug manufacturer with limited operations in the United States, was recently acquired by Barr Pharmaceuticals.

**Ron Eva** (M.S. 1978) went to work at Rohm and Haas in Bristol and after six years in process development went to Houston for four years working in a plant for which he developed part of the process and supported the design. After several jobs in the plant including process chemist, engineer, environmental manager and finally the assistant unit manager, BASF purchased the product that was being made there and made him an offer to manage the production as a toll operation. Since then he has relocated with BASF to New Jersey and then to North Carolina where he has been for 18 years.

**Donna Fitzpatrick** (M.S. 1983, Ph.D. 1986) reports that she much enjoys teaching advanced chemistry at South Fork High School in central Florida. Donna is the advisor to the National Honor Society chapter at South Fork and has mentored her students through beach clean-ups, work on Habitat for Humanity sites, and service at a local arts festival. To refresh her skills in biology, Donna took a week-long teachers' workshop on biotechnology at the University of Florida. For National Chemistry Week, Donna's advanced students took a hands-on-science activity to three elementary schools in the system.

**Michael J. Isaacs** (B.S. 2002, M.S. 2003) moved to Charlottesville, Virginia to start his career with Merck & Co., Inc. in their manufacturing facility in the Shenandoah Valley. He first worked as an engineer in a factory that produced a sterile IV antibiotic. Only having a background in science, he admits that he "had to learn a lot of the engineering stuff on the fly. But in hindsight that may have been the best way to learn it." In January of 2007 Isaacs "turned to the dark side" and accepted a position in the business side of manufacturing operations. He runs the day-to-day activities of a formulation and packaging facility, taking the bulk active drug product and any necessary excipients and putting them in their final dosage form of either a tablet or a capsule. Recently the department in which he works was involved in the U.S. launch of a first-in-class HIV medication called ISENTRESS™. Isaacs married Lauren Bell (Lehigh 2003) in Packer Chapel on October 7, 2006 and they return to campus at least once a year.

**Vamsi Kancherla** (B.S. 2006) is currently a second year medical student at the University of Pennsylvania School of Medicine. He worked at Memorial Sloan Kettering Cancer Center during the summer of 2007. Kancherla was

an Eckard Scholar at Lehigh and graduated in three years with a degree in biochemistry and a minor in applied mathematics.

**Russ Massey** (B.A. 1967) made and sold hamburgers for a few months after graduation, then joined the technical staff of Princeton University's biochemistry department, starting as a lab chemist assisting in the isolation and characterization of transfer RNAs (tRNA). When the instruments became computerized he moved in that direction, supporting efforts to do x-ray crystallographic structures of tRNA and various proteins. Ten years later he parleyed a consulting job writing the English-language manual for a piece of computerized equipment into a job as a technical writer. Massey says he "worked under a good mentor who built on the writing skills I gained at Lehigh" and stayed there long enough to produce five manuals and prove his software skills. He moved to Fisher & Porter (now ABB) as a software engineer for process control systems. After five years he switched to Honeywell, as part of the first wave of people hired explicitly to do software. Twenty-five years and a number of (mostly) successful products later, Massey is a principal engineer in the process control group. He has worked on many parts of TDC-3000, Process Manager, PlantScape, and most recently C300 Controller and Series C I/O. He has two patents (controller redundancy and hierarchical network time synchronization), four division technical awards, and in 2007 a corporate team award for Excellence in Innovation.

**Assadullah Nassry** (M.S. 1972) was one of the few graduate students who attended part-time before the department's distance education program. He was then a Lafayette College graduate working for General Aniline and Film in Easton. Nassry is now with Shell Global Solutions as a Senior Research Chemist in the Driveline Fluids and Lubricants Division at Shell in Houston, Texas.

**Guillermo Palacio** (M.S. 1972, Ph.D. 1978) reports that he has retired from full-time to part time-teaching. He is also consulting on natural products chemistry in his native Colombia. He founded a small company which developed two products to remove the latex from the banana tree. Guillermo took time away from his teaching and industrial chemistry to spend December vacationing in Argentina and Chile

**Jack R. Reid** (M.S. 1972, Ph.D. 1973), Director of Chemistry Research for P. Lorillard Research Center (Greensboro, NC) has eight toxicologists reporting directly to him and is learning more biology/pharmacology than he ever thought he would. He acknowledges that understanding the chemistry has been a real boon when addressing topics like radical specific reactive oxygen assays and the like. At age 60 he has risen to fourth de-

gree black belt in Karate and has been teaching weekly classes to students ranging in age from 7 to 52. Some of the more interesting challenges he has faced in recent years have been teaching a student in a wheel-chair and working with a visually impaired gentleman. Jack also co-teaches Self Defense for Women at the local YWCA.

**Joel Ressler** (B.S. 1971, Ph.D. 1978) recently visited the department. Joel is Associate Professor of Chemistry at West Chester University and announced that as the Department's NMR jock he was enjoying playing with a newly acquired Bruker 400 MHz NMR. Joel served as an Adjunct Professor at Lehigh in the teaching of summer school chemistry for 15 years. Friends and former students can contact Joel at [jjressner@wcupa.edu](mailto:jjressner@wcupa.edu).

**Robert Roache** has just completed his M.S. requirements through the distance education program. Formerly at GlaxoSmithKline, he has started a new job and new career as a research scientist in the clinical discovery bio-imaging laboratory at Bristol-Myers Squibb in Princeton. This position consists of being the animal model expert and vet science liaison for the imaging studies being conducted. He writes that he is planning to gain expertise in all the imaging modalities, and has even started to think about possible advanced studies and certifications in the bio-imaging field.

**Lou Ann (Miller) Tom** (Ph.D. 2005) is currently teaching analytical chemistry at Susquehanna University in Selinsgrove, PA as a tenure-track assistant professor. Her e-mail address is [toml@susqu.edu](mailto:toml@susqu.edu).

**Miguel Turizo** (M.S. 1974, Ph.D. 1983) reports that although he retired from the chemistry faculty of the Universidad de Antioquia, Medellin, Colombia, he still teaches part time and has taken up jogging to fight his cholesterol problem. Miguel looks forward to frequent visits to and from his children (two sons and a daughter) who are now working professionals in New Jersey, Tennessee, and Florida.

**Paul C. Unangst** (B.S. 1965, Ph.D. Carnegie Mellon University) took early retirement from Pfizer Pharmaceuticals prior to the closure of his Ann Arbor (Michigan) lab. Paul and his wife Fredda have been visiting children and family in Philadelphia, Pittsburgh, Chicago, and Bethlehem and tried Amtrak for part of their journeys. When not on the road Paul uses his wood-working skills to create toys for his grandson, Reid.

**Jeremy G. Webber** (M.S. 2004) has joined CIMA Labs, a Division of Cephalon, in the twin cities (Minneapolis/St Paul) as Project Manager. Webber was formerly a Senior Scientist at MGI Pharma. He is now working on his MBA from St. Thomas University.

## CHAIR'S MESSAGE

The year 2007 was quite a momentous one for the Department of Chemistry. During the past summer, we had a major upgrade to our HVAC system. The work was quite disruptive requiring one half of the building to be unoccupied at a time. A great deal of the faculty, staff, and students had to temporarily relocate to other buildings during the work. Although there are a number of small items remaining to be completed, we were able to get our undergraduate labs back in action during the first week of classes in the Fall 2007 semester. Everyone in the Department worked well together to pull this off and the efforts of Art Bates, Jeanne Berk, and Keith Schray helped to keep everyone organized and focused. We are very pleased with the upgrade and now have the capacity to double the number of hoods in the building.

The Department has continued to rebuild at a rapid pace and to date six new faculty have joined the chemistry family during the past three years. Most recently, David Moore joined the faculty as an assistant professor and teaches in our analytical and physical chemistry division courses. This past summer, Bruce Koel was appointed interim Vice Provost for Research. In his new role, Bruce has been charged with enhancing the research culture and environment at the University. In spite of the time commitment Bruce has made to the University, he has managed to remain very active in department service and his efforts are greatly appreciated. In the fall, 2007 semester, Professor Keith Schray assumed the role as associate chair in the department. He takes over from Dan Zeroka who retired last summer after 40 years of dedicated service to the University.

In other faculty news, Natalie Foster along with coauthors Thomas Gilbert, Rein Kirss, and Geoffrey Davies from Northeastern University are putting the finishing touches on a general chemistry text entitled: "Chemistry, The Science in Context." Natalie has been working very hard on this text during the past few years and we are delighted that her hard work is paying off. The book will be released this spring and will be on display at the national ACS meeting in New Orleans this April.

While the highlights above are intended to give a snapshot of faculty news, there have been many other achievements as well. As you can see in the faculty publications section of this issue, the faculty is continuing our tradition of excellence in research and publishing in top-tier journals in chemistry.

In closing, I would like to thank all of you for your letters containing updates and news. 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 for a visit.

—Robert A. Flowers, II

## FACULTY NEWS

**G. Doyle Daves** (Department Chair 1981–1988 and 2003–2004) now retired in Las Vegas, New Mexico, is helping out in fund raising in the Development Office of New Mexico Highlands University, where he was once a chemistry major. Doyle and Pam vacationed in Thailand and soaked up local foods, culture, and transportation.



**Gregory S. Ferguson's** recent publications include "A Novel Method for Extra-Accurate Patterning and Positioning of Biological Cells," *Proceedings of SPIE-The International Society for Optical Engineering* **2007**, 6592 (Bioengineered and Bioinspired Systems III), 65920Y/1–65920Y/8 (with G. Jing, J. P. Labukas, A. Iqbal, S. F. Perry, and S. Tatic-Lucic) and "Does Water Swell the Ordered Domains in Polyelectrolyte/Clay Multilayers?" *Clays and Clay Minerals* **2007**, 55, 160–164 (with J. H. Rouse).

**Robert A. Flowers II** has been named to the editorial board of *Research Letters in Organic Chemistry*. His recent publications include "An Efficient and General Approach to beta-Functionalized Ketones," *Org. Lett.* **2007**, 9, 1323–1326 (with J. Jiao, L. X. Nguyen and D. R. Patterson); "Mechanistic Studies of Ce(IV)-mediated Oxidation of 1,3-Dicarbonyls: Solvent-Dependent Behavior of Radical Cation Intermediates," *J. Org. Chem.* **2007**, 72, 5486–5492 (with J. Jiao, Y. Zhang, J. J. Devery, L. Xu and J. Deng); "Solvation Controlled Luminescence of Sm(II) Complexes," *Angew. Chem.* **2007**, 46, 1145–1148), and "Mechanistic Role of Proton Donor Coordination in Reactions of Samarium Diiodide," *Angew. Chem.* **2007**, 46, 8160–8163 (with J. A. Teprovich, Jr., M. N. Balili, and T. Pintauer). These last two papers were cited as VIP papers by *Angew. Chem.* He also gave invited lectures at Wake Forest University, Indian Institute of Technology, Madras, India and the National Institute of Interdisciplinary Science and Technology, Trivandrum, India.

**Natalie Foster** presented three papers at the American Chemical Society meeting in Boston. Her recent publications include *Chemistry: The Science in Context* (see page 1) and "Predicting Human Drug Pharmacokinetics from *In vitro* Permeability Using an Absorption-Disposition," *J. Pharm. Sci.* **2007** 96, 1–10 (with K. Fizlar and B. Hill).

**Jebrell Glover's** recent publications include "Direct biochemical evidence for the utilization of UDP-bacillosamine by PglC, an essential glycosyl-1-phosphate transferase in the *Campylobacter jejuni* N-linked glycosylation pathway," *Biochemistry* **2006**, 45 5343–5350 (with E. Weerapana, M. M. Chen, and B. Imperiali) and "From peptide to protein: comparative analysis of the substrate specificity of N-linked glycosylation in *C. jejuni*," *Biochemistry* **2007**, 46, 5579–5585.

**Ned D. Heindel** is on the editorial advisory board of *Chemical and Engineering News* and *Bioconjugate Chemistry*. In addition to making two local section speaker's tours for the American Chemical Society, he spoke on the "Role of Antioxidant Enzymes in Regulating Wound Healing" at a NATO conference on the Defense Against the Effects of Chemical Toxic Hazards in Edinburgh, UK, and "Sulfur Mustard Intervention" at the First Annual CounterACT/Counter Terrorism Conference in Washington, DC. His recent publications include "Azetidinones as vasopressin V1a antagonists," *Bioorganic and Medicinal Chemistry* **2007**, 15, 2054–2080 (with C. D. Guillon, G. A. Koppel, M. J. Brownstein, M. O. Chaney, C. F. Ferris, Shi-Fang Lu, K. M. Fabio, M. J. Miller, D. C. Hundert, R. D. G. Cooper, S. W. Kaldor, J. J. Skelton, B. A. Dressman, M. P. Clay, M. I. Steinberg, R. F. Bruns, and N. G. Simon) and "Preparation of Peptidyl Beta-lactamyl Vasopressin V1a Antagonists," U.S. Patent 7,268,125 (with R. F. Bruns, Jr., C. D. Guillon, G. A. Koppel, S. Lu, M. J. Miller and N. G. Simon).

**Kamil Klier** is co-executive editor of *Catalysis Reviews: Science and Engineering*.

**Bruce Koel** received the George A. Olah Award in Hydrocarbon or Petroleum Chemistry at the American Chemical Society meeting in Chicago where he presented his award address: "Site-directed hydrocarbon chemistry and catalysis at Pt-Sn alloy surfaces." He also presented papers at the AVS 54th International Symposium & Exhibition, 212th Meeting of The Electrochemical Society, 67th Annual Meeting of the Physical Electronics Conference, and the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences, Catalysis Program Contractors' Meeting as well as invited lectures at Brown University, ExxonMobil Strategic Research, Air Products, Università degli Studi di Napoli Federico II, University of Florida, Georgetown University, Lebanon Valley College, Carnegie-Mellon University, and Yale University. His recent publications include "Investigation of the Thermal

Stability of 2-D Patterns of Au Nanoparticles,” *J. Nanosci. and Nanotechnol.* **2007**, *7*, 2863–2869 (with T.-Y. Shih, A. A. G. Requicha, and M. E. Thompson) and “Oxidation of Au on vicinal W(110): Role of step edges and facets,” *Phys. Rev. B* **2007**, *75*, 205417-1-8 (with A. Varykhalov, O. Rader, V. K. Adamchuk, W. Gudat, and A. M. Shikin).

**Kai Landskron**’s paper “The stuffed framework of  $\text{SrP}_2\text{N}_4$ : Challenges to synthesis and crystal structure determination,” appeared in *Chemistry - A European Journal* **2007**, *13*, 6841–6852 (with F. W. Karau, L. Seyfarth, O. Oeckler, J. Senker and W. Schnick).

**Tianbo Liu** presented seven papers at the American Chemical Society meeting in Chicago and two at the American Physical Society meeting in Denver, as well as invited lectures at the University of Missouri – Kansas City and the Partner Institute of Computational Biology, Shanghai. His paper on “A Complete Macroion – Blackberry Assembly – Macroion Transition with Continuously Adjustable Assembly Sizes in  $\{\text{Mo}132\}$  Water/Acetone Systems,” *J. Am. Chem. Soc.* **2007**, *129*, 6453–6460 (with M. L. Kistler, A. Bhatt, G. Liu and D. Casa) was selected as one of the outstanding papers in 2007 by Argonne National Laboratories. Other recent publications include “Charge Regulation as a Stabilization Mechanism for Shell-like Structures,” *Phys. Rev. Lett.* **2007**, *99*, 066104 (with A. A. Verhoeff, M. L. Kistler, A. Bhatt, J. Pigga, J. Groenewold, M. Klokkenburg, S. Veen, S. Roy and W. K. Kegel); “Self-Patterning of Hydrophobic Materials into Highly Ordered Honeycomb Nanostructures at Water/Air Interface,” *Angew. Chem. Int. Ed.* **2007**, *46*, 3342–3345 (with D. Fan, X. Jia, P. Tang and J. Hao); “Nanometer-Sized Molybdenum-Iron Oxide Capsule-Surface Modifications: External and Internal,” *Small* **2007**, *3*, 986–992 (with A. Müller, H. Bögge, F. L. Sousa, M. Schmidtman, D. G. Kurth, D. Volkmer, J. van Slageren, M. Dressel and M. L. Kistler); “Hydrophilic Inorganic Macro-ions in Solution – Unprecedented Self-Assembly Emerging from Historical Blue Waters,” *J. Chem. Edu.* **2007**, *84*, 526–532 (with E. Diemann and A. Müller); and “Structure of the Haemophilus influenzae HMW1B translocator protein: Evidence for a twin-pore,” *Bacteriology* **2007**, *189*, 7497–7502 (with H. Li, S. Grass, T. Wang and Joseph W. St. Geme III).

**David T. Moore**’s recent publications include “Characterization of cyclic and linear  $\text{C}_3\text{H}^-$  and  $\text{C}_3\text{H}$  via anion photoelectron spectroscopy,” *J. Chem. Phys.* **2008** *128*, 034301/1–034301/13 (with S. M. Sheehan, B. F. Parsons, J. Zhou, E. Garand, T. A. Yen and Daniel M. Neumark); “Infrared Spectroscopy of Discrete Uranyl Anion Complexes,” *Journal of Physical Chemistry* **2008**, *112*, 508–521 (with G. S. Groenewold, A. K. Gianotto, M. E. McIlwain, M. J. Van Stipdonk, M. Kullman, N. Polfer,

J. Oomens, I. Infante, L. Visscher, B. Siboulet and W. A. de Jong); “IR spectroscopic characterization of intermediates in a gas-phase ionic reaction: The decarbonylation of  $\text{Co}^+(\text{acetophenone})$ ,” *International Journal of Mass Spectrometry* **2007**, *265*, 182–186 (with R. C. Dunbar and J. Oomens); and “Mid-infrared vibrational spectra of discrete acetone-ligated cerium hydroxide cations,” *Physical Chemistry Chemical Physics* **2007**, *9*, 596–606 (with G. S. Groenewold, A. K. Gianotto and K. C. Cossel, et. al.).

**Steven L. Regen** gave invited lectures at Florida Atlantic University and the University of Washington. His recent publications include “Self-Cleaning Resins,” *J. Am. Chem. Soc.* **2007**, *129*, 5756–5759 (with V. Janout, B. S. Myers and R. A. Register); “Detecting Cross-Talk Between Two Halves of a Phospholipid Bilayer,” *Langmuir* **2007**, *23*, 8709–8712 (with J. Zhang, B. Jing and V. Janout); “Insight Into the Permeation Barrier of Glued Langmuir-Blodgett Bilayers,” *J. Am. Chem. Soc.* **2007**, *129*, 8663–8667 (with D. H. McCullough III, R. Grygorash and J. T. Hsu); “Fluorocarbon Crowning: Langmuir-Blodgett Deposition Versus Self Assembly at Molecularly Rough Surfaces,” *Langmuir* **2007**, *23*, 9606–9610 (with D. H. McCullough III and R. Grygorash) and “Molecular umbrellas: a novel class of candidate topical microbicides to prevent human immunodeficiency virus and herpes simplex virus infections,” *Journal of Virology* **2007**, *81*, 7636–7646 (with R. P. Madan, P. M. M. Mesquita, N. Cheshenko, B. Jing, V. Shende, E. Guzman, T. Heald, M. J. Keller, R. J. Shattock and B. C. Herold).

**Dmitri Vezenov** contributed two articles to the “Handbook of Molecular Force Spectroscopy,” Springer, 2007: “Chemical Force Microscopy: Nanoscale Probing of Fundamental Chemical Interactions (with A. Noy and C. M. Lieber) and “Chemical Force Microscopy: Force Spectroscopy and Imaging of Complex Interactions in Molecular Assemblies (with A. Noy and C. M. Lieber).



Warren Walter Ewing (1889–1965), B.S. Parsons College, 1912, Ph.D. University of Chicago, 1920. Taught at Mission H.S. in Fatehgarh, India 1912–1916 before joining Lehigh Chemistry Dept. in 1920.

## SPOTLIGHT ON ALUMNI: EMILY S. WINN-DEEN

Born and raised in Princeton, New Jersey, Emily Winn-Deen found Princeton to be a “wonderfully rich community to complement the school system.” She chose Lehigh for her undergraduate work because she was looking for a smaller college with a strong science program. “In retrospect,” she says, “Lehigh looks a lot like Princeton, just a little farther from home.”

As a member of the first class of women at Lehigh, Winn-Deen admits it “was interesting to be the only female in all my science classes. Some professors felt I had to really prove to them that letting women into Lehigh was not a huge mistake, while others treated me just like any other student.”

Although she majored in chemistry, receiving her B.S. in 1974, Winn-Deen also sang in the Glee Club and Women’s Chorus and did a little acting with Mustard and Cheese. During the summers she worked as an intern in the Princeton chemistry department for Charles Rosenblum, retired head of R&D at Merck.

Her advisor at Lehigh was Ned Heindel, whom she credits as being a great mentor who helped get students involved in the student affiliate group of the American Chemical Society and “encouraged each of his students to do their best.”

More importantly, Winn-Deen adds, “Lehigh gave me a very strong foundation in chemistry which I have built upon in graduate studies and beyond. The chemistry curriculum was designed to give us good hands-on skills, and forced us to become good at experimental design and critical thinking.”

Since she wanted to focus on human biochemistry in her graduate studies, Winn-Deen looked for a university with a medical school and settled on Boston University, partly under the influence of Charles Rosenblum and partly because she wanted to live in Boston, a feeling fostered by her father who was an MIT alumnus and often took her to Boston for visits.

Supported by an NIH pre-doctoral fellowship, Winn-Deen received her Ph.D. from BU in 1978, working with Richard Laursen on the structure and function of human plasminogen. She then joined the Ames Division of Miles Laboratories where she developed eight diagnostic test strips for serum metabolites and enzymes used in the Ames Seralyzer. This emphasis on diagnostics would set the stage for the rest of her career.

Moving to Behring Diagnostics in 1980, Winn-Deen was manager of clinical chemistry R&D and then manager of chemistry/immunology R&D. With a product line that included clinical chemistry, infectious disease enzyme immunoassay and urinalysis reagents, she was responsible for all aspects of product development from concept and feasibility to clinical trials.



*Photo courtesy Cepheid*

After two years at SDI Diagnostics as director of reagent R&D, Winn-Deen joined Bayer Diagnostics in 1988 as a senior biotechnology development specialist, where she designed and developed a completely new electrophoresis product line of four pre-cast gel products for molecular biology research and DNA diagnostics.

From 1989 to 1996 Winn-Deen was at the Applied Biosystems Division of Appellera, where she coordinated the development of a new reagent system for mutation analysis based on PCR and ligation detection. At Oncor, Inc. from 1996 to 1998, Winn-Deen led the cancer diagnostics R&D team from initial concept through the hand-off to manufacturing. She then returned to Appellera in 1998 as the director of the Celera Genomics Division, leading the integration of the human DNA sequence variation information being generated by their human genome sequencing program.

In 2002 Winn-Deen was senior director of the genomics business at Roche Molecular Systems, creating the business strategy for Roche’s human genetic disease program and leading a team of business development professionals to formulate business plans in eight disease areas.

Winn-Deen joined Cepheid in 2004 as vice president of strategic planning and business development and in 2008 was named vice president of genetics and oncology R&D. In this position she oversees the micro-RNA marker discovery and validation process and supervises the development of diagnostic assays for human genome and oncology targets. She was elected a fellow of the National Academy of Clinical Biochemistry in 2000 and received Appellera’s Inventor Award in 2001.

**Department of Chemistry  
Lehigh University  
6 East Packer Ave.  
Bethlehem PA 18015-3172**

<http://www.lehigh.edu/~inche>

Department Chair  
Robert A. Flowers, II  
610-758-4048  
rof2@lehigh.edu

Undergraduate and Graduate  
Academic Coordinator  
JoAnn DeSalvatore  
610-758-3471  
jmd207@lehigh.edu

Academic Coordinator  
Jane Derbenwick  
610-758-3470  
rd0b@lehigh.edu

Newsletter Editor  
James J. Bohning  
610-758-3582  
jjba@lehigh.edu

## ***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.**

You can email the newsletter editor at [jjba@lehigh.edu](mailto:jjba@lehigh.edu) or any member of the chemistry department. Their contact information is on the department web site at [www.lehigh.edu/~inche/faculty\\_and\\_research.htm](http://www.lehigh.edu/~inche/faculty_and_research.htm).

More importantly, we want to have your correct contact information, especially your email address. If you would prefer to receive the electronic version of this newsletter in the future, please let us know.

This newsletter can be viewed in color on the department web site at <http://www.lehigh.edu/~inche/>.

