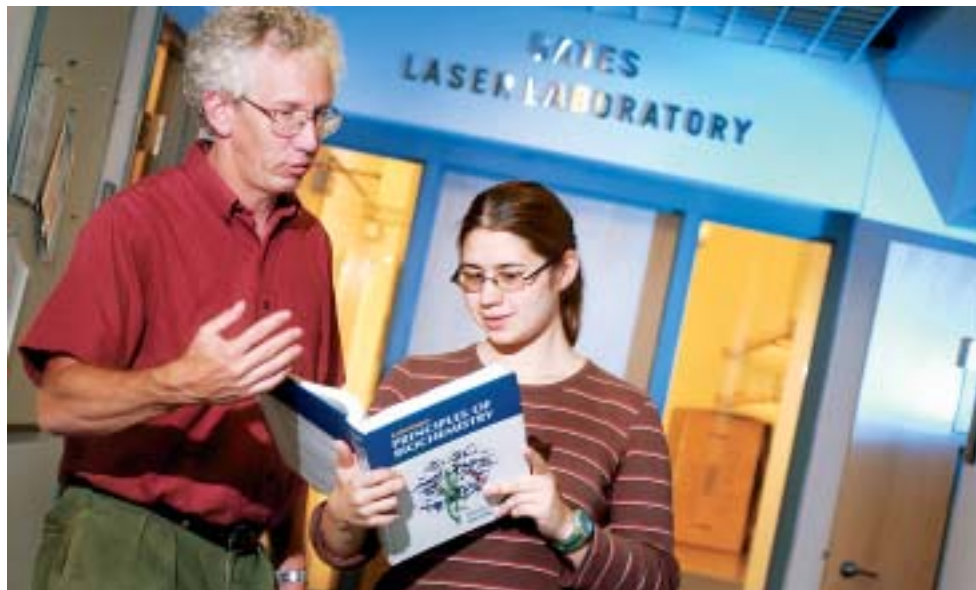




# Chemistry & Biochemistry

## Nikolova '06 Explores Ways to Enhance Crop Productivity



David Husic, Larkin Professor of Chemistry, and Evgenia Nikolova '06 are studying green algae.

As an EXCEL Scholar with David Husic, Larkin Professor and head of chemistry, Evgenia Nikolova '06 (above right), a biochemistry major, has been studying how an enzyme in unicellular green algae could help specific microscopic plants acquire carbon dioxide.

"This algae utilizes carbon dioxide from the air much more effectively than many terrestrial plants," Husic says. The results of the research could one day play a role in the fight against world hunger. The carbon dioxide uptake mechanism could possibly be implemented into higher plants giving them the same ability to acquire carbon dioxide in a more effective way.

Before crop productivity can be boosted by increasing the plants' ability to gather fuel from the air and generate carbohydrates through photosynthesis, the algae must be broken down to the molecular level so its properties are fully understood.

"Evgenia is working on a characterization of a form of the enzyme that exists on the outer surface of that single cell," Husic says. "We're interested in understanding the process by which it's converted into a functional form when synthesized. We're also interested in its structural properties and how it's related to

the functional proteins of the enzyme."

While Nikolova's experiments with the enzyme are small scale compared to the possible grandiose applications on how plants absorb carbon dioxide, she explains that even the smallest advances in the research have huge implications.

"We have found new discoveries in the characterization of the enzyme," Nikolova says. "They offer clues that guide our thinking in a certain way, a way that might direct our research."

Working alone in a lab has taught Nikolova independence in thought processes, self-discipline in patiently conducting experiments, and creativity in deciding how to proceed. "I can make decisions if an experiment goes in a certain direction and see what other directions to take based on the data acquired," she says.

A bonus has been discovering that she can work successfully in a position tied to her chosen career path, says Nikolova, who adds that working full-time this summer on a project related to her major was "invigorating."

A member of the American Chemical Society and International Students Association, Nikolova tutors in mathematics and chemistry, plays intramural ping pong, and is a library assistant. ■

## Hagopian '06 Wins Lehigh Valley ACS Organic Chemistry Award



Working as an EXCEL Scholar with Chip Nataro, assistant professor of chemistry, Laura Hagopian '06 (above left) has been creating new compounds in the search for ones that will function as a catalyst.

Some of the compounds were sent to a University of California-San Diego laboratory for testing. (A catalyst is a material that helps slow reactions go faster). They expect to coauthor a paper for submission to a scientific journal.

Hagopian's intensive research, academic achievement, and cocurricular activities were recognized when she was awarded both the Lehigh Valley American Chemical Society Award and their Best Essay Award last spring.

A Marquis Scholar and chemistry major, Hagopian has worked with Nataro on the research for over a year. In addition to creating the compounds, she characterized them by various instrumental techniques.

Hagopian is deciding between graduate school in chemistry or medical school and says either one will make excellent use of her research experience.

A DJ for WJRH and coordinator of volunteer programs Best Buddies and Big Brothers Big Sisters, Hagopian is a member of Chemistry Club and the volunteer floor in Keefe Hall. She is also a certified EMT. ■

## Mylon Joins Department



Katherine Buettner '07 is working with Steven Mylon, assistant professor of chemistry, on an EXCEL research project about trace metal chemistry in aquatic systems.

In August, Steven Mylon joined the department as an assistant professor.

He will teach courses in introductory, physical, and environmental chemistry.

Mylon was research associate, lecturer, and Camille and Henry Dreyfus Postdoctoral Fellow in Environmental Chemistry at Yale University. His research there was focused on trace metal binding to natural organic matter, trace metal bioavailability, metal sulfide speciation, aquatic chemistry of rare earth elements, and the development of physical methods for the analyses of colloidal aggregation and the characterization of natural organic complexes.

Mylon earned undergraduate degrees in both engineering and Soviet Eastern European studies at Tufts University. He has extensive experience in secondary school science education and taught physics and chemistry at Philips Academy in Massachusetts for several years prior to entering the Ph.D. program in physical chemistry at Dartmouth College. He completed his Ph.D. in 1998. His thesis involved the study of charge transfer incyanoanthracene/methyl-substituted benzene exciplexes. ■

## From the Department Head

Once again, the past year has been an active and productive one for our students and faculty. We have observed what we believe to be a consistent and sustainable trend towards more students choosing majors in chemistry and biochemistry. At the 2004 commencement, 14 students earned A.B. or B.S. degrees with majors in either chemistry or biochemistry, and we anticipate 18 graduates in 2005.

The accomplishments of our students after graduation may be the most important measure of our success. Last year's graduates included seven who entered Ph.D. programs (Berkeley, Duke, Illinois, North Carolina (2), Rochester, and Stanford), one who entered dental school (SUNY-Stony Brook), and others gaining employment in a variety of excellent companies and institutions (BASF, Benjamin Moore Paints, B. Braun, Church and Dwight, Romax, and Thomas Jefferson University). Clearly, our students' talents and education are well appreciated.

Nearly all of our students undertake independent research with faculty mentors, and we believe that these experiences have been important elements of their success. For example, of last year's 14 graduates, all but one carried out independent research with departmental faculty mentors, with seven earning honors in chemistry for their efforts. Our faculty continue to be dedicated to the mentoring of research students, and in seeking external funding to help support their research activities. In 2003 and 2004 (through November), 48 journal articles have arisen from the department of chemistry, 27 of which include student coauthors. These accomplishments demonstrate that we have continued to be effective in highlighting student research as one of the most prominent strengths of the educational experience that we provide to our students.

Dr. Joanne Follweiler formally retired in the summer, having served in many capacities since her initial employment at Lafayette in 1969, most recently as visiting assistant professor and general chemistry laboratory coordinator. Her devotion to the department and to the education of her students will be missed; and we thank her for her many years of dedicated teaching and service in the department. Dr. Gail Salter has been appointed to the full-time position of general chemistry laboratory coordinator, a position that she has held on a temporary basis for the past few years.

I would also like to acknowledge the contributions of our staff members who have devoted many years of service to the department. Yvonne Noonan has served as stockroom manager and hazardous materials technician since 1985, and she continues to ensure that our stockrooms and laboratories are equipped and prepared to meet all of our needs for our laboratory courses and research. Debbie Bastinelli has served as secretary to the departments of chemistry and physics since 1991, and effectively and cheerfully ensures the department runs smoothly. Robert Thomas has served as our instrumentation technician since 1989. We share his services with department of geology and environmental geosciences, and his responsibilities include instrumentation maintenance, troubleshooting, and repair. Dr. Michael Chejlava, instrumentation specialist since 2000, coordinates all of our instrumentation acquisitions, setup, and laboratory instrument implementation, and also teaches laboratories in analytical and non-majors introductory chemistry. We are very fortunate to benefit from employees with so much experience, and their support of the teaching and research activities in the department is critical to our operations.

I hope that you will enjoy learning of our departmental activities, and encourage each of you to contact us to share your ideas and knowledge about how we can even better achieve our goal of providing an outstanding education in chemistry and biochemistry.

Sincerely,

A handwritten signature in black ink that reads "H. David Husic".

H. David Husic

John D. and Frances H. Larkin Professor and Head of Chemistry

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Editor: Chip Nataro, *Assistant Professor*  
nataroc@lafayette.edu

H. David Husic, *Larkin Professor and Department Head*  
husich@lafayette.edu

Deborah L. Bastinelli, *Secretary*  
bastined@lafayette.edu

Department of Chemistry, 124 Hugel Science Center, Lafayette College, Easton, PA 18042 ■ (610) 330-5213, Fax (610) 330-5714  
www.lafayette.edu, check on "academics" and then "departments and majors"

## Three Honored for Distinguished Teaching and Research

At the annual trustee-faculty dinner May 21, three chemistry faculty members were honored.

H. David Husic, professor of chemistry, was named John D. Larkin Professor of Chemistry. In his eighth year as head of the department, he currently teaches three biochemistry courses and a First-Year Seminar. He continues to study various aspects of photosynthetic carbon metabolism in the unicellular green alga, *Chlamydomonas reinhardtii* and has involved more than 30 students in his research. The recipient of the Thomas Roy and Lura Forrest Jones Faculty Lecture Award in 1992, he holds a Ph.D. in biochemistry from Michigan State University.

Chip Nataro and Yvonne Gindt, assistant professors of chemistry, received the Delta Upsilon Distinguished Mentoring and Teaching Award. Established in 2000 by the alumni of the Lafayette chapter of the Delta Upsilon fraternity on the 115th anniversary of the fraternity's founding, the award recognizes members of the faculty for distinctive and extraordinary teaching

through mentoring, which may include advising, undergraduate research, independent study, or any of the many one-on-one mentoring activities that take place in a student-centered learning environment.

Nataro, who came to Lafayette in 1999, has involved numerous students in his research which is focused on organometallic chemistry, particularly thermochemical, electrochemical, and catalytic studies. With a Ph.D. in inorganic chemistry from Iowa State University, Nataro came to Lafayette from the University of Vermont, where he was postdoctoral fellow in chemistry for two years. Visiting assistant professor for two years, he became assistant professor in 2001.

In her research, Gindt studies the fundamental processes that occur with protein folding and oligomerization to active protein complexes. She also has involved several students in her research, which is funded through NIH. She received her Ph.D. from University of California-Berkeley and came to Lafayette in 2002. ■

## Miles Receives Grant for Cancer Research



In February, William Miles, associate professor of chemistry, received a grant from the American Chemical Society to continue his work with students to develop synthetic forms of Vitamin D that can help treat diseases such as cancer, osteoporosis, and psoriasis.

Research conducted with Katelyn Connell '04 (above), biochemistry major, laid the foundation for the grant proposal, says Miles, who presented their work at last summer's American Chemical Society national conference and coauthored an article with her that has been published in *Tetrahedron Letters*. Connell worked with Miles as an EXCEL Scholar.

"I am still amazed at what transpired in one of the most productive summers of my professional career," Miles says. "We were able to synthesize an important compound."

Vitamin D is widely known as an essential nutrient that regulates calcium in the blood, bones, and cells. What is less known, says Miles, is that many types of human cells are Vitamin D receptors. After Vitamin D is ingested, the body turns it into calcitriol, an active, potent compound that elevates calcium levels in the blood, which can lead to hypercalcemia, a potentially fatal condition. The medicinal field has enormous interest in the development of Vitamin D analogues with the benefits, but not risks, of calcitriol, says Miles.

Miles and Connell developed a synthetic approach and proved that it could produce a necessary component of a Vitamin D analogue.

Miles used this methodology for the synthesis of part of calcitriol, which he accomplished last summer with EXCEL Scholar Varun Mehta '06, mechanical engineering major. He also worked last summer with Gözde Ulaş '05, who is pursuing B.S. biochemistry and A.B. French degrees, to synthesize a pre-active form of calcitriol. ■

## A Chemical Perspective upon Departure

By Joanne Follweiler

Thirty-five years ago I joined the chemistry department at Lafayette.

The late 1960s and early '70s were an exciting time. Great changes were taking place in our society, and young people and colleges and universities were at the center of the maelstrom. During my interview, an administrator asked if I would incite students to "take over" an academic building on campus. I replied in the negative of course (I wanted the job). But my first year here, besides Saturday classes and an all-male student body, there was a student strike when President Nixon ordered troops into Cambodia.

During my second year, coeds came to stay. There were only a few female faculty members, so we welcomed some additional feminine presence on campus. I have been very happy to see the slow, steady increase in women in the sciences and engineering, until in recent years, men are in the minority in our major. What a switch from my student days as the only female chemistry major. I welcome the diverse perspective women bring to our discipline.

On the whole, changes over the years have been good. Our new building is such a delight. Cutting-edge research is now possible with

all the newest and projected future safety regulations built into the facility. The sky's the limit!

So many changes: slide rules to calculators, mimeographs to copiers, typewriters to computers, Bunsen burners to heaters, but some things have remained the same in all those years. The excitement, freshness, and curiosity of our students are a constant. I feel privileged to have known and shared important experiences with such interesting young people. I believe I have learned much from my students about chemistry (their questions have caused me to evaluate my concepts), teaching, and life in general, sometimes more than they have learned from me.

Also, the dedication and commitment of the faculty here at the College have never wavered. Colleagues have come and gone, but my coworkers have consistently cared deeply about their students and the quality of the new chemists that we add to the profession every year.

So as I officially retire (but still stay on to do some part-time teaching), I do so with hope and confidence for the future of chemistry at Lafayette College. ■

# Faculty Update

## **YVONNE GINDT,** assistant professor

She is continuing her research on understanding the kinetics and thermodynamics of protein oligomerization. Protein oligomerization, the association of protein subunits, plays an important role in the formation of active protein complexes, but the process is not well understood. Oligomerization of protein subunits into large insoluble complexes also appears to play a role in many degenerative diseases including type 2 diabetes and the neurodegenerative diseases. The research is currently funded by NIH. Six students collaborated on the research in the past year including EXCEL scholars Jessica Ryan '06, Taylor Robinson '06 (pictured left), Katie Thoren '06, and David Shellhamer '07 along with two thesis students, Katelyn Connell '04 and Michelle Ferguson '04 (coadvised with Chip Nataro). All of the EXCEL students will continue their projects into the next year.

The investment of time is starting to pay off with results. Connell presented her research on the disruption of hexameric protein structure at the national ACS meeting in fall, and Thoren and Ferguson presented work at the national ACS meeting in spring. Gindt also presented a summary at a Gordon Conference on Protein Folding in January.

In addition to the protein research, Gindt is also studying the DNA repair enzyme, DNA photolyase, in collaboration with Hans Schelvis at New York University. Meghan Ramsey '04 successfully characterized the electrochromic shift in the fluorescence spectrum of the enzyme that occurs with substrate binding for her honors thesis. She presented the results at the national ACS meeting in spring. Gindt is also collaborating with Tina Huang to measure the redox properties of the enzyme in the absence and presence of substrate.



## **KENNETH HAUG,** assistant professor

Haug and students working with him continue to use theoretical and computational chemistry to better understand the detailed mechanism by which metallic surfaces grow. This information is useful for control of the surface morphology and therefore for the chemical, electrical, and magnetic properties of high performance alloys which are of interest in microelectronic device engineering as well as in catalysis.

Experiments have shown that epitaxial (atom-by-atom) growth can give rise to rough or smooth surfaces depending on the growth conditions, indicating that a variety of competing mechanisms are involved. The research is designed to give a detailed atomic/molecular level understanding of such mechanisms that can then be compared with experimental results.

During fall 2003, Nate Lonergan '04, a chemical engineering graduate, worked as an EXCEL Scholar examining the growth patterns of Ni-Cu alloy surfaces formed during epitaxial growth. Myat Lin '04 (pictured right), a biochemistry graduate, carried out an honors thesis examining the growth patterns of Ni-Pt alloy surfaces formed during epitaxial growth. Lin presented his Ni-Cu work at the National Conference on Undergraduate Research in April, Haug presented the Ni-Cu and Ni-Pt work at the Physical Electronics Conference in June, and the results are currently being prepared for publication.



## **TINA HUANG,** assistant professor

Now in her second year at Lafayette, Huang's current research is a multidisciplinary effort that encompasses the field of surface chemistry, electrochemistry, biosensors, molecular electronics, and nanoscale surface science. She is interested in studying the surface interactions of alkanethiols and biomolecules (such as proteins, enzymes, and DNA) both at the micro- and nanoscale.

She has two ongoing research projects. The first deals with modifying gold surfaces with various types of thiolated compounds using the technique of self-assembled monolayers. The modified surfaces are then characterized using an electroanalytical technique such as cyclic voltammetry. This project is applicable in the areas of micro- and nanoelectronics.

William McNamara '06 has been working on the project as an EXCEL Scholar. He recently presented his results at a national American Chemical Society meeting. Another EXCEL Scholar, Matthew Coughlin '07 (pictured right), working on the second project, also uses electrochemistry. He uses polymers and enzymes to modify the gold surface and construct a sensor for glutamate measurement. Increased glutamate release is associated with serious neurological disorders such as epilepsy, stroke, Alzheimer's disease, and brain injuries. Therefore, the ability to detect glutamate can contribute to understanding the role of neurotransmitters in excitatory functions in the brain and may bring some new insights into the nature of illnesses such as epilepsy and stroke.

Huang hopes to expand her research with a recent major research instrumentation grant from the National Science Foundation. She is purchasing an electrochemical atomic force and scanning tunneling microscope to study the modified surfaces at the nanoscale. The microscope can image single atoms at the surface.



## **H. DAVID HUSIC, Larkin Professor and department head**

Over the past year, Husic has been engaged in the initiation of a consortium to enhance student research opportunities and multi-institutional research collaborations involving chemical and molecular studies and photosynthetic organisms. The Consortium for Research Opportunities in the Plant Sciences (CROPS) involves faculty members in chemistry and biology departments at Colgate University, Haverford College, Juniata College, Lehigh University, Marist College, and Moravian College.

Husic and co-principal investigator and spouse, Diane Husic (professor and chair of biology, Moravian College), have received a \$15,000 grant from Camille & Henry Dreyfus Foundation Special Grants Program in the Chemical Sciences, and a \$50,000 Undergraduate Research Center in Chemistry planning grant from National Science Foundation to support the CROPS initiative.

In the laboratory, Husic has continued aspects of his research involving the mechanism for inorganic carbon acquisition by unicellular algae and the study and characterization of the enzyme carbonic anhydrase, an important participant in this process. Evgenia Nikolova '06 (B.S. biochemistry major) has been involved in studying the processing of one form of the enzyme that is present outside of the outer membrane of the algal cell from inactive to active forms, as well as characterizing the relationship between the polypeptide chain subunit structure and the catalytic properties of the enzyme.

### **WILLIAM MILES,** associate professor

Building on the work of Katelyn Connell '04 (now a graduate student at UC-Berkeley) and Varun Mehta '06, several students made significant contributions to Miles' Vitamin D project. April Thrall '04, who has accepted a position at BASF, did a nice job of exploring the conditions for an asymmetric Friedel-Crafts reaction. This summer, Liz Dethoff '05 (pictured right), Hannah Tuson '06, and Gözde Ulaş '05 worked hard on the synthesis of the A-ring of calcitriol and Vitamin D. They also worked on the reactions of 2-methylene-2,3-dihydrofuran, a compound with excellent potential for the synthesis of 2-substituted furans.



Ulaş will be doing her honors thesis in the Miles' lab this year, along with Ryan Evans '05 and Stacey Cromer '05. A critical advance was made in an old project synthesizing squalamine, started by Brian Albrecht '99, who recently received his Ph.D. from Colorado State and is now working for Amgen. Chemical engineering major Edious Kwaipa '06 worked on this project and prepared a new catalyst for the critical step.

An article was published with coauthors Dan Ruddy '03 (a second-year graduate student at UC-Berkeley), Samira Tinorgah '03 (now working for Anheuser-Busch), and Becky Geisler '03. An experiment for the sophomore organic laboratory, "Synthesis of Methyl Diantilis, a Commercially Important Fragrance" (coauthored by Connell), was submitted to the *Journal of Chemical Education* and is currently being revised. The research grant proposal for the Vitamin D chemistry was submitted to ACS-PRF and approved, which will provide financial support for three more years.

### **CHIP NATARO,** assistant professor

Students working with Nataro continue to investigate the electrochemistry and reactivity of bidentate phosphines with metallocene backbones. These compounds continue to see extensive use in a variety of catalytic applications. He hopes that the work will provide further insight into why these compounds are effective in catalytic applications and how they can be improved.

Alison Campbell '04 and Michelle Ferguson '04 (coadvised with Yvonne Gindt) completed work for honors in chemistry. Kevin Barry '05, Laura Hagopian '06, and Sarah Kolb '07 worked as EXCEL scholars. Katie Bocage '04, Brett Swartz '04, and Annalese Maddox '07 also worked in the lab, and they were supported by a Petroleum Research Grant from the American Chemical Society.

Three papers with students as primary authors were published in 2004. In addition, a number of students presented their work at American Chemical Society meetings. Barry and Joyce Ong '04 presented posters and Campbell gave an oral presentation at the fall meeting in New York City. In spring, Bocage, Hagopian, Campbell, Swartz, and Ferguson presented posters in Anaheim. Nataro also presented a summary at a Gordon Conference on Organometallic Chemistry in July.

An essential part of the research has been collaborating with other chemists. Crystal structures have been determined by Arnie Rheingold, University of California-San Diego. A specialized technique, spectroelectrochemistry, was performed by Mike Shaw of Southern Illinois University-Edwardsville. John Hartwig of Yale University provided some compounds to study electrochemically. With the help of these scientists, work in Nataro's lab has been quite successful.

### **CHARLES NUTAITIS,** associate professor

The research of Nutaitis is in the area of organic synthesis, focusing on the development of new synthetic methodologies as well as total synthesis. The synthetic methodology research employs sodium borohydride in combination with carboxylic acids to accomplish transformations not possible with the use of sodium borohydride alone.

Brett Swartz '04, currently pursuing a Ph.D. in chemistry at University of Rochester, applied this methodology to the reduction of 1,3-azole based secondary alcohols; a manuscript is currently being prepared for publication. The total synthesis portion of his research is primarily in the area of aromatic heterocyclic chemistry as well as natural products. Emphasis is on the synthesis of new heterocyclic ring systems and natural products total synthesis.

Megan Brennan '02, currently pursuing a Ph.D. in organic chemistry at Stanford University, developed a synthesis of three new pyrido[2,7]naphthyridines; an article has been accepted for publication in the journal *Organic Preparations and Procedures International*. Currently, Kim Smith '05 is continuing this work as an honors project by extending the methodology to include all eight isomers of aminoquinoline as the starting material. The final products will all represent previously unreported heterocyclic ring systems.

Finally, a project focusing on the total synthesis of angoluvarin, a natural product isolated in 1987 that has never been synthesized, is one step away from completion (one very difficult step).

### **JOSEPH SHERMA,** Larkin Professor Emeritus of Chemistry

Sherma continues an active research program working with students on analytical method development and interdisciplinary research in analytical chemistry and invertebrate biology. He and his students develop and validate new and improved quantitative high performance thin layer chromatography (HPTLC) methods for analysis of pharmaceuticals, food and beverage ingredients and additives, cosmetics, dietary supplements, and pesticides in environmental samples.



The second area involves collaboration with Bernard Fried, Kreider Professor Emeritus of Biology. Their work includes studies on the chemical content (neutral lipids, phospholipids, pigments, sugars, amino acids, vitamins, and metal ions) of parasitic flatworms and medically important snails, pheromones released by parasites and snails, and the chemical composition of various snail food items.

Students whose research Sherma has supervised recently include Caitlin Sullivan '05 and Ryan Evans '05. Sullivan developed and validated new methods for assay of analgesic tablets for caffeine and acetaminophen, and dietary supplement tablets and capsules for glucosamine. Evans studied the effects of diet and larval trematode parasitism on carotenoid pigment concentrations in planorbid snails.

Sherma and Fried's interdisciplinary research has been supported for the past four years through the Dreyfus Foundation Senior Scientist Mentor Initiative Program. The grant renewal received this year funded the summer 2004 research of Sharon Bandstra '06 (above) to study the effect of *Echinostoma trivolvis* parasitism on the lipid content of *Helisoma trivolvis* snails as well as determination of lipids in *Biomphalaria glabrata* snails infected with either *Schistosoma mansoni* or *Echinostoma caproni*, and of Danielle Martin '06 to analyze neutral lipids, phospholipids, and pigments in the medicinal leech *Hirudo medicinalis*. ■

## Seven Students Present at ACS Meeting

In May, seven students presented research conducted with faculty at the national meeting of the American Chemical Society, Anaheim, Calif.

"For an undergraduate institution, this is a large number of students to be presenting," says Chip Nataro, assistant professor of chemistry. "And they presented in the main sessions, not the special undergraduate ones. It was a wonderful opportunity for them to go out and discuss their work with the greater scientific community."

Fourteen presentations of Lafayette student research have been given at the last two national meetings of the American Chemical Society. Students returned from Anaheim with new ideas that they want to explore in their research says Nataro. "I received numerous compliments about how well the students presented their work and the quality of their work. They were asked numerous times what year of graduate school they were in."

The students were biochemistry majors Alison Campbell '04 and Michelle Ferguson '04; chemistry majors Katie Bocage '04, Laura Hagopian '06, and Katie Thoren '06; neuroscience major Meghan Ramsey '04; and Brett Swartz, who earned a geology degree from Lafayette in 1996 and a second degree in chemistry in May 2004.

Bocage, Campbell, Hagopian, and Swartz presented their inorganic chemistry research with Nataro; Ramsey and Thoren presented physical chemistry research conducted with Yvonne Gindt, assistant professor of chemistry. Ferguson presented findings from research guided by both professors.

Nataro received a Petroleum Research Fund grant administered by the American Chemical Society to conduct research with students to aid the chemical community in understanding when certain compounds will be ideal catalysts without having to actually test many different compounds. Gindt received a \$100,000 grant from the National Institutes of Health to continue her research with students on protein folding and aggregation, which has applications to a number of terminal diseases. Both have mentored students who have published their research through coauthored articles in scientific journals and presentations at academic conferences, including national and regional meetings of American Chemical Society and Intercollegiate Student Chemists' Convention. ■

## Recent Faculty Publications

Joseph Sherma and Caitlin Sullivan '05, "Comparative Evaluation of TLC and HPTLC Plates Containing Standard and Enhanced UV Indicators for Efficiency, Resolution, Detection, and Densitometric Quantification Using Fluorescence Quenching," *Journal of Liquid Chromatography & Related Technologies* (2004) 27, 1993.

and Ryan T. Evans '05, Bernard Fried (Kreider Professor Emeritus of Biology), "Effects of Diet and Larval Trematode Parasitism in Lutein and Beta-Carotene Concentrations in Planorbid Snails as Determined by Quantitative Reversed Phase Thin-Layer Chromatography," *Comparative Biochemistry and Physiology* (2004) 137, 179-186.

William Miles and Daniel A. Ruddy '03, Samira Tinorgah '03, Rebecca L. Geisler '03, "Acylation Dimerization of Tetrahydrofuran Catalyzed by Rare-Earth Triflates," *Synthetic Communications* (2004), 34, 1871.

Charles Nutaitis and Megan Brennan '02, "Preparation of Triazaphenanthrenes," *Organic Preparations and Procedures International* (2004) 36, 367.

Ken Haug and Gretel Raibeck '03, "Kinetic Monte Carlo Study of Competing Hydrogen Pathways into Connected (100), (110), and (111) Ni Surfaces," *Journal of Physical Chemistry* (2003) 107, 11433.

Yvonne Gindt and Sofia M. Kapetanaki, Meghan Ramsey '04, Johannes P. M. Schelvis, "Substrate Electric Dipole Moment Exerts a pH-Dependent Effect on Electron Transfer in *Escherichia coli* Photolyase," *Journal of the American Chemical Society* (2004) 126, 6214.

Chip Nataro and Amanda C. Ohs '03, Arnold L. Rheingold, Michael J. Shaw, "Electrochemistry of Group VI Metal Carbonyl Compounds Containing 1,1'-Bis(diphenylphosphino)ferrocene," *Organometallics* (2004) 23, 4655.

Steven E. Mylon and K.L. Chen, M. Elimelech, "Influence of Natural Organic Matter and Ionic Composition on the Kinetics and Structure of Hematite Colloid Aggregation: Implications to Iron Depletion in Estuaries," *Langmuir* (2004) 20, 9000. ■



## Summer Research

Faculty and students who worked together on summer research projects included: (front row, L-R) Bill McNamara '06, Matt Coughlin '07, Professor Yvonne Gindt, Sarah Kolb '07, and Liz Dethoff '05; (second row, L-R) Sharon Bandstra '06, Dr. Gail Salter (back), Katie Thoren '06, David Shellhamer '07, Annalese Maddox '07, and Meredith White '06; (third row, L-R) Professor David Husic, Danielle Martin '06, Jamie Jarusiewicz '06, Sarah Kahn '06, Hannah Tuson '06, Kevin Barry '05, and Professor Joseph Sherma; (back row) Professor Chip Nataro. Not pictured: Professors Bill Miles and Tina Huang, Evgenia Nikolova '06, and Taylor Robinson '06.

# News from Alumni

Several alumni sent updates in response to our first newsletter. We'd like to hear from you!

**John R. Caldwell, M.D. '40**

2259 Avon Lane, Birmingham, Mich. 48009-1510

**Postgraduate education:** Temple University Medical School, 1943

**Employment:** Physician, Henry Ford Hospital, Detroit, Mich.

**Special memories:** Dr. Krusen in organic chemistry demonstrating experiments and getting it right in quant analysis chemistry, German, whew!

**Bradford P. Whitcomb, M.D. '90**

455 Maymont Drive, Ballwin, Mo. 63011

**Postgraduate education:** M.D.

**Employment:** U.S. Army obstetrician; gynecologist/gynecologic oncologist

**Special memories:** I enjoyed my experience in basic science research with Dr. Sherma analyzing lipids in *B. glabrata*, and other analytical HPTLC projects.

**Seth Kaufer '02**

322 Reynolds Street, Kingston, Pa. 18704

**Postgraduate education:** Started PCOM fall 2003.

**Special memories:** Doing thesis work and research with Dr. Sherma, ACS, defending my thesis, beating bio in softball.

**E. Scudder Mackey '42**

7 Riverwoods Drive D109; Exeter, N.H. 03833

**Employment:** Retired research chemist—GAF-ANSCO Div.

**Special memories:** Dr. Hart had a special container in the men's room to collect urine. I believe he had a special project with Hercules.

He was my adviser and my first job was with Hercules.

**Bruce H. Bechtold '58**

P.O. Box 245, Bozman, Md. 21612

**Postgraduate education:** Management, Wharton, and University of Utah

**Employment:** Hercules, Inc. (37 yrs.), now retired

**Special memories:** At the top of the list would be Dr. Marklein and Dr. Hunt (department head). Both were outstanding teachers and belong in Lafayette's "Hall of Fame" (I believe they have been so recognized). Some of their great characteristics: genius, clarity, humor, sincerity, and tremendous drive. Except for freshman-level general chemistry, no classes had more than 10 or 12 students, which proved invaluable especially in the more difficult (for me) subjects such as advanced physical chemistry.

**Earl Kanter, M.D. '43**

15 South Brunswick Ave., Margate City, N.J. 08402

**Postgraduate education:** MD, Jefferson Medical College, 1951

**Employment:** Private practice

**Special memories:** Dr. Robert Crosen, freshman chemistry lecturer, later dean of the faculty, a very fine gentleman; Dr. Bingham taught one of the senior B.S. chemistry seminars; Miss Kobe aided us in keeping equipment in order, very great lady; Dr. Bernard Marklein, a true gentleman and one of the finest teachers.

J. Hunt Wilson was department head; I was flattered when he asked me to tutor his son in chemistry. Dr. Hart, with whom I still correspond, taught advanced chemistry (organic) and the inimitable Dr. Delong introduced us to organic chemistry. Dr. VanArtsdalen was my mentor. I had the honor and privilege to be on Dr. Marklein's quiz instructor staff when I returned from the service. Lou Tischler, also a chemistry major, was my best friend and later taught chemistry.

One day Dr. Hook assigned me to make a fractionating tower; the two liquids to be separated had very close boiling points and were flammable. Through an error in assembling a safety valve, the thing blew and black flames erupted in the lab of the second floor of Gayley Hall. I stood there trying to blow out that massive flame. Miss Kobe and others used fire extinguishers or I could have had the distinction as the senior who destroyed Gayley Hall before the wreckers took it down. I would like to honor Willis Hunt who, as premedical student adviser, was very helpful in getting many students into medical school. I loved chemistry but the lure of a career in medicine displaced it. Practicing medicine for 50 years was a great experience but my days at Lafayette remain forever clear in my memory.

Another time, Dr. Crosen demonstrated how we could reduce  $\text{AgNO}_3$  to silver and layer it on the inside of an Erlenmeyer flask. I was taking mine to Memorial Gym and some of my classmates decided to play "toss it around." The flask dropped on the granite steps; I believe the stain is still there on the far right.

**Eric Goll '97**

131 Hudson Ave., Apt. 3C, Red Bank, N.J. 07701

**Postgraduate education:** MS chemistry, Pennsylvania State University

**Employment:** instructor of chemistry, Brookdale Community College, Lincroft, N.J.

**Special memories:** I enjoyed the fact that all of the instructors were so friendly and knew each of the majors by name. I also liked the barbecues/basketball games at one of the nearby parks.

**Patrick C. McKillion, M.D. '83**

5 Hawthorn Court, Danville, Pa. 17821

**Postgraduate education:** UMDNJ—NJ Medical School

**Employment:** Internist, Geisinger Medical Center

**Special memories:** Liver rounds on the roof; teaching assistant for general chemistry lab.

**Richard Coleman '71**

Address: 120 Kline Street, Weatherly, Pa. 18255

**Special memories:** As a not-so-recent graduate, I am glad the department has chosen to keep us aware of who is doing what in the department, even old graduates like me. Dr. Sherma is the only professor remaining from when I was an undergraduate. His insistence that we be precise in our work and knowledgeable about our class studies was what cemented my interest in my degree. He was one of the fairest graders in those days. He didn't cheat anyone out of an honestly earned grade.

**Donald A. Upson '68**

Education: Ph.D., organic chemistry, University of Arizona

**Carmen J. Marsit '00**

Address: G-4 Biological Sciences in Public Health, Harvard School of Public Health, 665 Huntington Avenue, Building I, Room 609, Boston, Mass. 02115

**Timothy Jenkins '99**

Address: 5251 Broad Branch Road N.W., Washington, D.C. 20015

**Postgraduate education:** Ph.D., currently in a postdoctoral position with Carnegie Institution of Washington

Department of Chemistry  
124 Hugel Science Center  
Lafayette College  
Easton, PA 18042



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## Alumni/Alumnae Information Update

Let us know what you have been doing since leaving Lafayette. Share special memories of faculty, students, or courses from your days as a chemistry major.

Name: \_\_\_\_\_

\_\_\_\_\_

Class: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Email address: \_\_\_\_\_

Postgraduate education: \_\_\_\_\_

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Employment: \_\_\_\_\_

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Family: \_\_\_\_\_

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Special memories of the chemistry department: \_\_\_\_\_

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Return to:  
Department of Chemistry,  
124 Hugel Science Center,  
Lafayette College, Easton, PA 18042 or  
email replies to [bastined@lafayette.edu](mailto:bastined@lafayette.edu)

## 2004 Graduates

**Matthew D. Battiste**  
*A.B. Biochemistry*  
Magna Cum Laude  
Phi Lambda Upsilon  
Class of 1913 Trophy

**Katherine M. Bocage**  
*B.S. Chemistry*

**Alison N. Campbell**  
*B.S. Biochemistry*  
Summa Cum Laude  
Honors in Chemistry  
Goldwater Scholarship  
Sigma Xi  
Phi Lambda Upsilon  
American Chemical Society  
Undergraduate Award in  
Analytical Chemistry  
American Institute of  
Chemists Award

**Katelyn B. Connell**  
*B.S. Biochemistry*  
Summa Cum Laude  
Honors in Chemistry  
Phi Lambda Upsilon  
American Chemical  
Society Prize  
Eugene P. Chase Phi Beta  
Kappa Prize  
William Forris Hart '27  
Chemistry Prize

**Michelle A. Ferguson**  
*B.S. Biochemistry*  
Cum Laude  
Honors in Chemistry  
Sigma Xi

**Brian J. Hess**  
*B.S. Chemistry*

**Myat T. Lin**  
*B.S. Biochemistry*  
Summa Cum Laude  
Honors in Chemistry  
Phi Beta Kappa  
Phi Lambda Upsilon  
Benjamin F. Barge  
Mathematical Prize  
Chemical Rubber Company  
Freshman Achievement  
Award  
Merck Index Award

**Joyce H. L. Ong**  
*B.S. Biochemistry*  
Summa Cum Laude  
Honors in Chemistry  
Phi Beta Kappa  
Sigma Xi  
Phi Lambda Upsilon  
American Chemical Society  
Division of Polymer  
Chemistry Award  
Chemical Rubber Company  
Freshman Achievement  
Award

**Elizabeth L. Ponder**  
*B.S. Biochemistry/A.B.  
Interdisciplinary (Cultural  
Biomedicine)*  
Summa Cum Laude  
Honors in Chemistry  
Goldwater Scholarship  
Sigma Xi  
Phi Lambda Upsilon  
Eugene P. Chase Phi Beta  
Kappa Prize  
J. Hunt Wilson '05 Prize in  
Analytical Chemistry

**Vincent J. Ross**  
*A.B. Chemistry*

**Jessica L. Schneck**  
*B.S. Biochemistry*  
Honors in Biology  
Sigma Xi

**Jacob W. Sechrist**  
*B.S. Biochemistry*

**Brett D. Swartz**  
*B.S. Chemistry*

**April J. Thrall**  
*B.S. Chemistry*

## THE LAFAYETTE Experience

- Student-focused teaching and mentoring by an exceptionally qualified faculty, committed to each student's success.
- A challenging, broad-based academic curriculum that offers strong programs in the liberal arts, sciences, and engineering.
- A small college environment with large college resources.
- A friendly residential community offering an exciting social life with a broad spectrum of extracurricular activities.