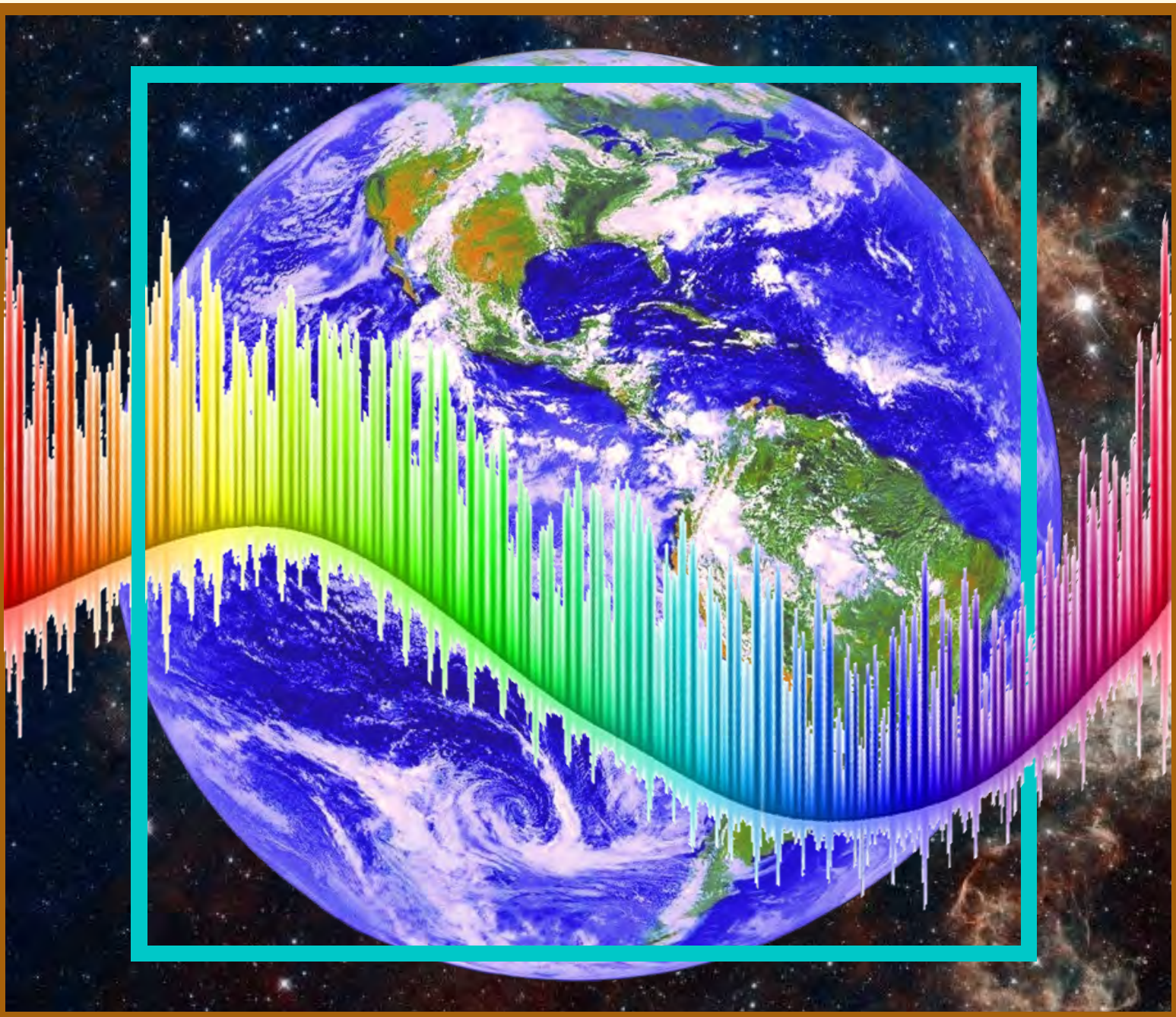
MUDD IN YOUR EYE

Fall 2018 Newsletter No. 48

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



LEHIGH UNIVERSITY | DEPARTMENT OF CHEMISTRY

STEPPING UP TO A HISTORICAL TRADITION OF EXCELLENCE

Ferguson set to helm Department of Chemistry through University's "Path to Prominence"

Appointed as chair of the Department of Chemistry in July, 2018, Professor Gregory S. Ferguson is only the 16th chair of the department in its 153-year history. A native of of Richmond, Virginia, Ferguson developed a love for chemistry in his high school chemistry classes with his teacher, David Ruscus. He recalls feeling lucky during his first year in college to be spared the angst of choosing a major felt by many of his fellow students. After Ferguson's first experience with research--in organometallic chemistry under David Thompson at the College of William and Mary--he was hooked! He completed his B.S. as a double-major in Chemistry and Philosophy in 1982 and went on to Cornell University to do doctoral research with Peter Wolczanski on the synthesis, characterization, and reactivity of early-late heterobimetallic compounds. Upon completion of his Ph.D. in Chemistry in 1988, Dr. Ferguson accepted an NIH Postdoctoral Fellowship at Harvard University, where he worked in the emerging field of physical-organic surface chemistry with George Whitesides.

Professor Ferguson's current research areas include surface and nanomaterials chemistry of metals, and semiconductors and polymers, with an occasional foray into solution-phase reactivity. He has produced scores of articles, one of the most recent of which was a confirmation of a phenomenon called "cathodic silence," published in the Journal of the Electrochemical Society (2017, 164, H635-H638). He has served on many committees both within and outside the Department, including the Graduate and Undergraduate Advisory Committees, the Chair's Advisory Committee, and a variety of faculty-search committees. As Chair of last year's Physical Chemistry Faculty Search Committee, he successfully guided the process of adding our newest faculty member, Dr. Lisa Fredin, who joined Lehigh on August 15, 2018.

From his arrival on the Lehigh campus in the January 1990, Ferguson has played a key role in the Department of Chemistry. As advisor to eleven doctoral, ten master's, and a multitude of undergraduate students, his academic tree has deep roots and broad reach. His research group has included graduate and undergraduate students focused on almost all of the sub-disciplines of Chemistry --inorganic, organic, polymer, physical, analytical—and he considers himself lucky to have served as their mentor. In this capacity, Ferguson has encouraged and facilitated numerous opportunities for students via NSFand DOD program grants, graduate research conferences, science academic societies, and ACS conferences and committees. His cross-affiliation as a Professor of Materials Science & Engineering also provides entrée to myriad additional learning opportunities.

Ferguson sees his role as Chair squarely focused on service—to help the Department be as successful as possible by facilitating the work of its faculty, staff, and students. He considers us fortunate to have a great community of colleagues, who put their heart into the core missions of sharing what is known and creating new knowledge where it is absent. One of his jobs as Chair will be to communicate that message outside the Department, to colleagues in other departments and colleges, to administrators, and to anyone else he can convince to allow him a moment or two of their time. Professor Ferguson welcomes your thoughts and ideas about the Department and looks forward to serving as Chair.

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LEHIGH UNIVERSITY | DEPARTMENT OF CHEMISTRY

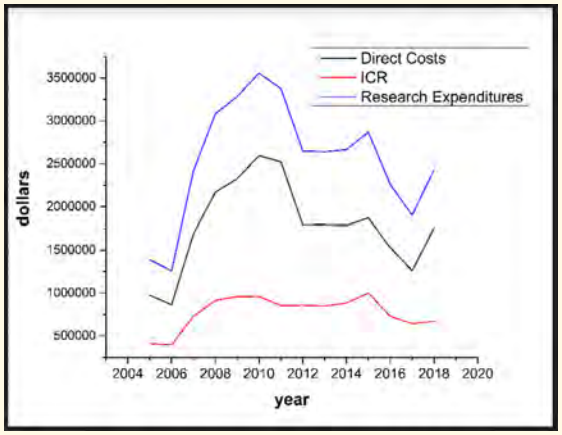
RISING TO A NEW LEVEL OF EXCELLENCE

Vicic returns to a passion for student education, research, and exploring global opportunities

Although often referred to as "stepping down" from a chairmanship, Dr. David Vicic is literally stepping up by returning to his 4th floor laboratory. The department thanks Dr. Vicic for the wonderful job he did in the past three years, in the same tradition as his predecessors. He accomplished much for the department, and he briefly summarized what have been for him the highlights of his term for this edition of the Mudd-In-Your-Eye newsletter:

I was privileged to serve as Chair for the past three years for such a dynamic department. These years have brought about much change, and I wanted to share some highlights of our activities. We filled vacant slots for one Director of Instrumentation and two coordinator positions. We also hired three new faculty members and welcomed one new industrial liaison member to the Department. Two of the three new faculty hires were women, which helped diversify our gender make-up. Marcos Pires and Damien Thévenin were promoted to the rank of Associate Professor, and Kai Landskron was promoted to the rank of Full Professor. Our faculty have risen to the challenge of a competitive funding climate by an increased total number of proposals submitted. The submissions in the past six calendar years are as follows: 29 submissions in 2012; 23 in 2013; 19 in 2014; 25 in 2015; 32 in 2016; and 34 in 2017.

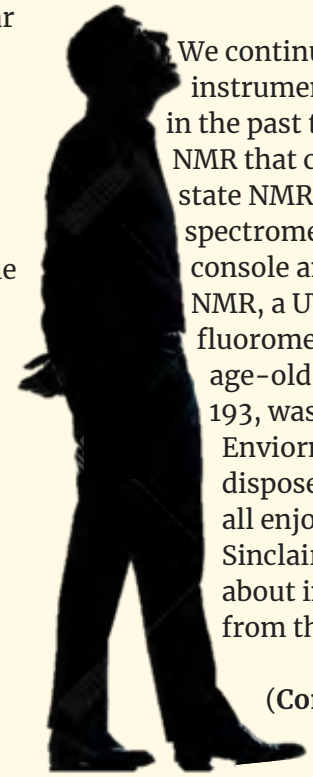
The upward trend in submissions has paid off, and an increase in funded research activities has been observed from 2017-2018. The chart shows up to the end of fiscal year 2018:



Highlights from the 2017-2018 fiscal year include a prestigious Beckman Young Investigator Award to Assistant Professor Xiaoji Xu and a prestigious NIH MIRA (R35) Award to Associate Professor Marcos Pires. In addition to the visibility our graduate program gains due to increased faculty success in publishing and landing competitive external grants, we continue to look for more and better ways to showcase the department.

Our external seminar program has brought in renowned speakers from across the globe, and our department has created a Twitter account to make our presence felt on social media.

The past three years also involved completing our submissions for Middle States accreditation, as well as our accreditation from the American Chemical Society. These exercises helped us understand how to keep our curricula current as well as rethink how to optimize our personnel and infrastructure.



We continue to work hard to keep our instrumentation modern. Major acquisitions in the past three years include a new 400 MHz NMR that can collect both solution and solid-state NMR spectra, a new MALDI mass spectrometer, an NSF MRI-funded new console and cryoprobe for our 500 MHz NMR, a UV-vis spectrometer, and a new fluorometer. An infrastructure liability, our age-old chemical storage room in MUDD 193, was addressed, and we worked with Enviornmental Health & Safety to safely dispose of these chemicals. Now we can all enjoy the new artistic seating in the Sinclair Courtyard without worrying about inhaling any noxious odors vented from the chemical storage room!

(Continued on Pg 19 - "Vicic Rising")

TRANSITIONING INTO A RENEWED FOCUS ON EXCELLENCE

Heindel moves into the ranks of the Emeriti after 52 years of dedicated and outstanding service

Imagine you're a student who wants to find out where the jobs are, or whom to contact at a company you're interested in working for. Or imagine you're a faculty member who needs to know the story behind some arcane tradition at Lehigh. Or imagine you're a fellow chemist seeking a network, but you don't know what society you should join to meet the people you should know. For five decades there has been one universal response to requests for such information in the Chemistry Department at Lehigh: "Ask Ned."

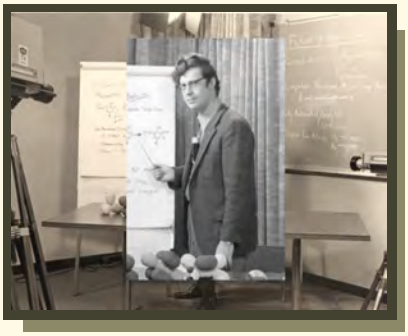
Little did anyone know on his first day in 1966 that Lehigh University had found a central and energetic member of its core faculty in a 29-year old Assistant Professor named Ned D. Heindel. A medicinal chemist, Ned has built an unquestionably successful and distinguished career in research, teaching, and in innovation in academe and the chemical community locally, nationally, and internationally. In building his own career, he has always unselfishly shared connections and offered guidance, help, and support to students, colleagues, and any who have crossed his path.

Born and raised in Red Lion in York County, Pennsylvania, Ned earned his B.S. in chemistry from Lebanon Valley College (1959) and a Master's degree (1961) and Ph.D. (1963) from William A. Mosher at the University of Delaware. He then continued his formal education as a Visiting NSF Fellow at Princeton University with Edward C. Taylor (1963-64). Upon completion of his Fellowship at Princeton, he was recruited to join the faculty at Marshall University in Huntington, West Virginia (1964-66), by Department Chairman John Wotiz, who was charged with building a research-oriented

doctoral program at the institution. While at Marshall, Ned also taught as an Assistant Professor at Ohio University in Athens, Ohio (1965). The beginnings of his career presaged the pattern of his academic life: Ned published scientific papers with Marshall students and colleagues in highly regarded chemistry journals and delved into the local history of West Virginia to publish articles like "The Scientific Avocation of a Political Man: Harman Blennerhasset" in the West Virginia History Quarterly. When a PhD program did not materialize at Marshall, Ned came to Lehigh University as an Assistant Professor in July, 1966. Promoted from Assistant to Associate to Full Professor of Chemistry by 1973, Ned was named the Howard S. Bunn Distinguished Professor of Organic Chemistry in 1976. With his focus on medicinal chemistry, Ned was also named the Director of the Center for Health Sciences in 1980 and served in this role until 1987. During these years, he also was a Visiting Professor of Radiation Oncology at Drexel University/Hahnemann Hospital (1971 -2006).

Ned's research focuses on diagnostic and therapeutic drug development and has included forays into the areas of cancer research, nuclear medicine, diagnostic radioactive pharmaceuticals, chemotherapeutics, tumor-associated monoclonal antibodies, and most recently acetyl cholinesterase inhibitors, vasopressin antagonists, and antivessication agents. His work has been funded by government agencies (both federal and state), foundations, and corporate sponsors. He has applied for 20 patents with 14 issued and several licensed to the pharmaceutical industry.

In addition to having advised more than 40 doctoral students, Ned is well known to the student body at Lehigh. He was a major contributor in establishing the Lehigh-Hahnemann Cooperative Medical Education Program (1992 - 2017) that enabled undergraduate students to earn a B.A. degree from Lehigh and an M.D. degree from Hahnemann (now Drexel University) after 7 years of study at both institutions. Ned learned about distance education when from 1966-1971 he was contracted to create video-taped courses for use in employee training at four Union Carbide Company R&D sites in West Virginia, Ohio, New Jersey, and Puerto Rico. Through his leadership and intense involvement in the Lehigh University Distance Education program, beginning in 1991 when the Chemistry Department offered the first M.S. degree via satellite, he extended the Lehigh experience to many industrially employed students who otherwise would not have been able to pursue advanced degrees.



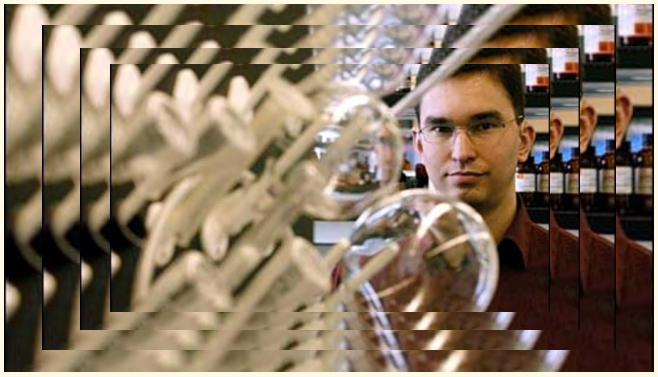
Heindel producing a chemistry lecture in Union Carbide's recording studio, South Charleston, West Virginia

Because of both his educational and research endeavors, Ned is well known in the halls of industry and government. He has served as a consultant to many major chemical and pharmaceutical research organizations, among them Azevan Pharmaceuticals, OraSure Diagnostics, Air Products and Chemicals, and Digestive Care, Inc., and was a member of the National Academy of Sciences Chemical Sciences Roundtable from 2001 to 2006. He was a trustee on the Board of Friends of the Royal Society of Chemistry-USA from 1997 to 2013 and served as its Chair from 2011 to 2013.

Enthusiastic about expansion of knowledge in the field of chemistry, he has shared his knowledge not only as a voluminous publisher of his own research findings (more than 260 papers), but also as a member and chairman of the editorial boards for publications such as the Journal of Pharmaceutical Science, Bioconjugate Chemistry, and Chemical & Engineering News. During his tenure in national offices in the American Chemical Society (ACS), he was a moving force on the Society's Publications Committee and closely involved in bringing several new publications into existence. In addition, he was an advisor as well as a contributor to the NOVA program "Forgotten Genius" (aired in 2007), the story of Dr. Percy Julian, a great American organic chemist who was the grandson of Alabama slaves.

Ned has provided distinguished leadership in many roles--as Councilor in the ACS (1969), as a Director in that Society (1985-1996), and as its national President, an office to which he was elected in 1994. In 2009, he was named an ACS Fellow. He has been honored with many awards, including the Lehigh University Robinson Award (1969), the Briody Award (1978), and the Hillman Faculty Award (2011). **(Cont'd on Page 18)**

LANDSKRON LAB ATTACKS POLLUTION AT MOLECULAR LEVEL



Working towards frameworks for removal of harmful bioaccumulations from air and aquatic environments and the provision of clean energy storage

The presence of some anionic species, such as nitrite, chloride, sulfide, fluoride, and cyanide in water supplies as well as greenhouse-gas emissions represent serious environmental problems with which we are becoming all too familiar. Researchers are working around the clock to investigate solutions to these issues. One of the most promising solutions involves technologies focused on "uptake" of these ions, and Dr. Kai Landskron has received a grant from the Department of Energy's Office of Basic Science to investigate just such possibilities. He recently took time to share some insights into the research efforts of his group:

The Landskron research group is concerned with solid state and materials chemistry of both inorganic and organic materials. Our work partly aims at the synthesis of new classes of materials—and we also apply materials in a novel way. Currently there are four major research areas:

1) Weakly coordinating anionic porous organic frameworks

This research aims at the synthesis of anionic, porous, organic materials with cations inside the pores that can only weakly coordinate to the pore walls of the framework. Such materials are expected to have high cation mobility and high cation electrophilicity which could be utilized for gas adsorption and catalysis applications.

2) Synthetic chemistry with porous materials at high pressure

This research aims at the synthesis of porous and nanostructured high-pressure phases synthesized via templating strategies at high pressure. Porosity and pressure are antagonists, as increased pressure tends to eliminate porosity. Our research aims to overcome this dilemma by developing synthetic protocols that allow utilization of pressure for the synthesis of novel porous materials.

3) Synthesis of high-pressure phases near ambient temperature and pressure

High-pressure phases have many intriguing properties such as superlative hardness, thermal conductivity, and superconductivity. However, the synthesis of these phases at pressures in the Gigapascal range is associated with severe scalability limitations that make the materials very costly. Our research aims to develop pathways to produce these materials using kinetic control at much lower pressure in a more scalable way.

4) Supercapacitive swing adsorption for gas separation applications

Supercapacitive swing adsorption is a new gas separation method that adsorbs and desorbs gases reversibly through capacitive charge and discharge of porous carbon materials. The approach is potentially more energy-efficient compared to other methods, in particular pressure and temperature swing adsorption, because a capacitor is an energy storage device that allows recovery of a large fraction of energy upon discharge.

Broadly, the Landskron group is aiming for the development of low-cost and easily available effective sorbents for decontamination.

Department of Chemistry's Marcos Pires Receives $1.94 Million MIRA Grant

Leading the charge to fight antibiotic resistance

Cell walls—the jacket-like structures that surround all known bacteria—may turn out to be bacteria's undoing, holding the key to developing new drugs that target it for destruction.

That perspective is shared by many in the medical and scientific communities, including Marcos Pires, a biochemist at Lehigh University. Pires is spearheading a novel approach to understanding bacterial cell wall changes in response to antibiotics that could be critical to new drug design—an urgent need in light of the growing threat of antibiotic resistance. His approach is so promising it has recently been recognized by the National Institutes of Health with a Maximizing Investigators' Research Award (MIRA).

Antibiotic resistance occurs when bacterial cells adapt to evade a drug designed to kill it. Making changes to the cell wall is one way bacteria accomplish this. Little is known, however, about just how these structures respond when under attack.

With the five-year $1.94 million MIRA grant, Pires's group will delve deeply into this process through a unique approach that essentially tricks bacteria into revealing where its cell wall is most vulnerable. Such knowledge could help scientists design next-generation antibiotics that circumvent drug-resistance mechanisms.

The centerpiece of the research is a process that Pires and his team conduct facilitating live bacteria's absorption of synthetic cell wall fragments constructed in the lab. These fragments are modified with reporter units, which then allow researchers to observe, in live bacteria, components of the cell wall machinery under various conditions.

"Bacterial cell walls are unique in their structure and function and are essential to bacterial cells—making them unique targets for the development of antibiotics," said Pires, assistant professor in the Department of Chemistry. "By 'tricking' bacteria into using some of our cell wall building blocks, we get an unprecedented perspective on how they change when challenged with antibiotics."

MIRA is a program of the National Institute of General Medical Science (NIGMS), a division of NIH that provides support for basic research that increases understanding of biological processes and lays the foundation for advances in disease diagnosis, treatment and prevention. According to NIGMS, the goal of MIRA is to increase the efficiency of NIGMS funding by providing investigators with greater stability and flexibility, thereby enhancing scientific productivity and the chances for important breakthroughs.

The stakes for drug design breakthroughs to treat drug-resistant bacteria are high. Every year in the United States, more than two million people are afflicted with resistant bacterial infections. An estimated 23,000 American lives—and 700,000 lives worldwide—are lost yearly as a result of bacterial infections resistant to current antibiotic treatments. These numbers are only expected to grow.

Bacterial cell walls are the target of some of the most powerful antibiotics discovered to date. Cell wall-targeting antibiotics include some commonly prescribed treatments such as penicillin and amoxicillin. Drugs that target bacteria's cell walls are also among the safest as human cells do not have cell walls and are thus unaffected by the treatment.

According to Pires, individual components of the bacterial cell wall machinery are key to bacteria's adaptation response and, therefore, to drug-resistance. One of his team's goals is to identify the cell wall components that bacteria need to successfully adapt and evade the drugs designed to destroy it.

For more information , please visit **https://chemistry.cas2.lehigh.edu/news**

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FACULTY NEWS

Mark Chen

This year the Chen Lab welcomed Imran Muhammad, a Fulbright Scholar, as a new graduate student to the group. Caleb Wehrmann, who has pioneered much of the chemistry in our group and held the Roy R. Hornor graduate fellowship this past year, was awarded the twelve-month Buch Fellowship for 2018-2019.

The group just submitted a manuscript and provisional patent application entailing our work on a new general and concise synthetic strategy for accessing open-shell, π-conjugated molecules. These types of molecules possess non-bonding electron densities that cause them to display optoelectronic properties that are near ideal for many materials applications. However, their use as a molecular material is still limited due to lengthy and difficult synthetic sequences. Our new strategy enables us to synthesize a known open-shell molecule (Ph2-s-IDPL) in nearly half the steps of previous reports, and even generate a new π-radical cation that exhibits apparent magnetic bistability. Significantly, our new π-radical cation represents the first example of an open-shell, π-conjugated molecule capable of achieving carbon-centered, intermolecular covalent-bonding interactions in two-dimensions. This high level of solid-state order holds powerful implications for use of these molecules in electronic applications, which our lab is currently investigating. Prof. Chen presented this work at the Crystal Engineering Gordon Research Conference in June 2018.

Greg Ferguson

Dr. Ferguson and his group of graduate and undergraduate students had a productive year, with active research projects in the areas of: gold/gold oxide electrochemistry; byproduct-free synthesis of amine groups on silicon/silicon dioxide; computational studies of the hydrogen-bonding to fluorinated anions; and the relationship between the motion of liquid droplets on a surface and the adhesion of those droplets to the surface. In addition, the group has begun exploratory studies on fiber-optic sensing and new methods for producing porous-metal thin films.

During 2017-18, the Ferguson group published three papers, one on each of the first three projects listed above, and has submitted an additional manuscript on the first project. The gold/gold oxide paper describes the use of quartz-crystal microgravimetry to confirm the group's discovery of "cathodic silence" –the loss of electrical communication between a metal electrode and its oxide coating. The additional manuscript goes further, to examine the role of system parameters in governing the formation and open-circuit decomposition of thin films of gold oxide on gold. This work was included in the Ph.D. dissertation of Rachel Giron, who graduated in fall 2017 and took a postdoctoral position at the University of California, Los Angeles. Congratulations to Rachel! The paper on the surface chemistry of silicon wafers is intriguing because it offers a route to amine functionality, which can be used in subsequent coupling reactions, that does not produce by-products. This characteristic shares a conceptual connection to the field of additive manufacturing (e.g., 3-D printing) that enjoys tremendous current interest among our colleagues in Engineering. The computational paper focuses on a possible explanation for the surprising difference between tetrafluoroborate (BF_4–) and hexafluorophosphate (PF_6–) anions in their ability to inhibit a hydrolysis reaction in non-aqueous solvent.

Robert Flowers

Dr. Flowers gave two invited lectures in Germany at the University of Bonn International Graduate School of Chemistry entitled: "Follow the Thread: The Role of Proton-Coupled Electron-Transfer in Substrate Reduction by Sm(II)-Water Complexes," and "Unraveling the Mechanism of Single-Electron

Robert Flowers (Cont'd)

Reduction and Oxidation in Synthetic Reactions". He also presented the Inaugural Murphy Alumni Science Lecture at East Stroudsburg University entitled: "Rare Earth Metals: Societal Importance and Applications in the Synthesis of Biologically Important Molecules," and gave an invited lecture at the Philadelphia Inorganic Colloquium held at the University of Pennsylvania entitled: "Unraveling the Mechanism of Substrate Reduction by Sm(II)-Proton Donor Complexes and the Development of Catalytic Reactions of Sm(II) Reagents."

His group published the following papers during the past academic year:

-Fianu, G. D.; Schipper, K. C.; Flowers, R. A. II "Catalytic Carbonyl Hydrosilylations via a Titanocene Borohydride-PMHS Reagent System" *Catal. Sci. Technol.*, **2017**, 7,3469-3473. Journal cover feature (shown left, above) and designated a Hot Paper by the journal editors.

-Richrath, R. B.; Olyschlager, T.; Hildebrandt, S.; Enny, D. G.; Fianu, G. D.; Flowers, R. A. II; Gansauer, A. "Cp2TiX Complexes for Sustainable Catalysis in Single Electron Steps" *Chem. Eur. J.*, **2018**, *24*, 6371-6379. Journal cover feature (shown left, below) and designated a Hot Paper by the journal editors

-Chiuck, T.V.; Anderson, W.R.; Flowers, R.A., II "The Reversibility of Ketone Reduction by SmI2-Water" *Organometallics*, **2017**, *36*, 4579-4583. Invited for a special issue on actinide and lanthanide chemistry and featured in a special virtual issue entitled "Expanding the Boundaries of Organometallic Chemistry."

-Maity, S.; Flowers, R. A. II; "Aza vs. Oxophilicity of SmI2: A Break of a Paradigm" *Hoz, S. Chem. Eur. J.* **2017**, *23*, 17070-17077.

-Chciuk, T. V.; Maity, S.; Flowers, R. A. II "Kinetic Solvent Effects in the Reduction of Alkyl Halides by {Sm[N(SiMe3)2]2(THF)2}" *J. Organomet. Chem.*, **2018**, *857*, 52-57.

Jebrell Glover

Dr. Glover recently served as the primary investigator on an effort to improve the signal-to-noise of the existing 500 MHz NMR spectrometer (housed in the Seeley Mudd Building) with the addition of a "cold-probe" that uses liquid helium to cool the system's electronics and a new user console that will make the NMR even more powerful. These improved capabilities will enable the NMR to provide vastly superior results. As Glover relates, "The NMR spectrometer allows you to get information on every single atom; for protein work, this added sensitivity is very very important and represents the latest platform." Glover specializes in the structure of membrane proteins, specifically caveolin, found on the surface of cells and involved in making special pits, called caveolae, in the cellular membrane. This effort was made possible through the National Science Foundation's annual Major Research Instrumentation (MRI) program by a $470K grant. The instrument will be available to students and researchers, thereby ensuring the impact of the NSF's investment is as significant as possible.

Kai Landskron

Over the course of the last year, the Landskron group published the following papers:

-Landskron, K. "Capacitance for Carbon Capture" *Angew. Chem., Int. Ed.*, **2018**, *57*, 3548-3550.

- Liu, Y.; Landskron, K. "Anionic Porous Organic Frameworks as Advanced Functional Adsorbents for CO_2 and Organic Micropollutants in Water" *J. Mater. Chem. A*, **2017**, *5*, 23523-23529.

Marcos Pires

The Pires laboratory developed two strategies to monitor the evolution of drug resistance in bacteria. Their work was also selected and highlighted by *C&EN* magazine in June 2017. Moreover, they showed that the pathogenic Staphylococcus aureus bacteria remodels their surface inside their live host organisms. Finally, they described the first method to decorate the surface of Gram-negative pathogens for synthetic immunotherapy.

Dr. Pires presented invited talks at Baylor University and the University of Pittsburgh. Additionally he presented his work at the Frontiers at the Chemistry-Biology Interface Symposium at the University of Pennsylvania. A number of students graduated from his laboratory: Mary Sabulski successfully defended her Ph.D.; Alexis Apostolos received her Master's degree; and Julia Nelson received her Bachelor's degree, received the Alpha A Diefenderfer award, and is co-author on a publication that is currently under revision in *Nature Communications.*

His research group had the following publications:

-Pidgeon, S.E.; Pires, M.M. "Cell Wall Remodeling by a Synthetic Analog Reveals Metabolic Adaptation in Vancomycin Resistant Enterococci" *ACS Chem. Biol.*, **2017**, *12*, 1913-1918. *highlighted by Chemical & Engineering News*

-Pidgeon, S.E.; Pires, M.M. "Vancomycin-dependent Response in Live Drug-Resistant Bacteria via Metabolic Labeling" *Angew. Chem., Int. Ed.*, **2017**, *56*, 8839-8843. *highlighted by Chemical & Engineering News*

-Pidgeon, S.E.; Pires, M.M. "Cell Wall Remodeling of Staphylococcus Aureus in Live Caenorhabditis Elegans." *Bioconj. Chem.*, **2017**, *28*, 2310-2315.

-Sabulski, M.J.; Pidgeon, S.E.; Pires, M.M. "Immuno-Targeting of Staphylococcus Aureus via Surface Remodeling Complexes" *Chem. Sci.*, **2017**, *8*, 6804-6809. *chosen as the inside cover*

-Feigman, M.S.; Kim, S.; Pidgeon, S.E.; Yu, Y.; Ongwae, G.M.; Patel, D.S.; Regen, S.L.; Im, W.; Pires, M.M. "Synthetic Immunotherapeutics Against Gram-negative Pathogens" *Cell Chem. Biol.*, **2018,** *18*, 30190-30199.

-Pidgeon S.E.; Nelson, J.; Shaku, M.; Pavelka, M.; Kana, B.; Pires M.M. "L,D-transpeptidase Specific Probe Reveals Spatial Organization of Peptidoglycan Crosslinking" *Nature Communications*, **2018**, *Under revision*.

Steve Regen

Professor Regen and his group published the following papers:

-Mukai, M.; Regen, S.L. "Lipid Raft Formation Driven By Push and Pull Forces" *Bull. Chem. Soc. Jrn.* **2017**, *90*, 1082-1087.

-Feigman, M. S.; Kim, S.; Pidgeon, S.E.; Yu, Y.; Ongwae, G. M.; Patel, D. S.; Regen, S.L.; Im, W.; Pires, M. M. "Synthetic Immunotherapeutics Against Gram-negative Pathogens" *Cell Chem. Biol.* **2018**, *18*, 30190-30199.

-Lin, C.; Jordan, L R..; Stedronsky, E. R.; Wittenberg, N. J.; Regen, S. L. " A Plug and Socket Approach For Tightening Polyelectrolyte Multilayers", *ChemComm*, **2018**, *54*, 9769-9772.

Jim Roberts

Dr. Roberts has developed a new course for Fall 2018. Created as CHM 351: Professional Development Seminar, it will include topics such as lab safety, ethics, resume preparation, interviewing skills, preparing and presenting a poster, and giving a professional seminar talk.

David Vicic

Professor Vicic is currently serving as the Chair of the ACS Division of Fluorine Chemistry, which has over 500 members internationally. This academic year he gave invited talks at ETH Zurich, Ohio State U, UNC Chapel Hill, and Tokyo Institute of Technology. He also gave invited lectures at the 22nd International Symposium on Fluorine Chemistry (ISFC) in Oxford, UK and at a Symposium on Nickel and Related Chemistry in Shanghai, China. He is also a member of the USA delegation of the International Steering Committee for the ISFC, which has a goal of bringing the meeting to the USA. David also gave a contributed talk at the spring ACS Meeting in New Orleans.

The Vicic group published the following papers:

-Kosobokov, M. D.; Sandleben, A.; Vogt, N.; Klein, A.; Vicic, D. A. "Nitrogen-Nitrogen Bond Formation via a Substrate Bound Anion at a Mononuclear Nickel Platform" *Organometallics*, **2018**, *37*, 521-525.

-Budnikova, Y.; Vicic, D. A.; Klein, A. "Exploring Mechanisms in Ni Terpyridine Catalyzed C-C Cross-Coupling Reactions - A Review" *Inorganics*, **2018**, *6*, 18.

-Kaplan, P. T.; Lloyd, J. A.; Chin, M. T.; Vicic, D. A. "Comparative Profiling of Well-Defined Copper Catalysts and Precatalysts for the Trifluoromethylation of Aryl Iodides" *Beilstein J. Org. Chem.*, **2017**, *13*, 2297-2303.

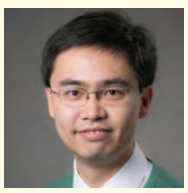
Nate Wittenberg

Nate Wittenberg was awarded the Lehigh Class of '68 Faculty Fellowship to support research activities. He was awarded a Lehigh Collaborative Research Opportunity (CORE) grant with Prof. Angela Brown (Lehigh University, Dept. of Chemical and Biomolecular Engineering) for work on "Nanoarrays for High-Throughput Analysis of Individual Outer Membrane Vesicles." He was also awarded a Lehigh Faculty Innovation Grant, entitled, "Creating Artificial Caveolae: A Robust Platform to Decipher the Membrane Curvature Preferences of Caveolin-1 Protein," for collaborative research with Prof. Jebrell Glover.

Nate was invited to speak at DeSales University, University of Scranton, St. Francis University, and Bucknell University. He also presented the latest findings from his group at the Gordon Conference on Biointerface Science in Barga, Italy, PittCon 2018 in Orlando, FL, and the Eastern Analytical Symposium in Princeton, NJ. He published the following paper in collaboration with researchers at EPFL in Switzerland and the University of Minnesota:

-Rodrigo, D.; Tittl, A; Ait-Bouziad, N.; John-Herpin, A.; Limaj, O.; Kelly, C.; Yoo, D.; Wittenberg, N.J.; Oh, S-H; Lashuel, H.A.; Altug, H. "Resolving Molecule-Specific Information in Dynamic Lipid Membrane Processes with Multi-Resonant Infrared Metasurfaces" *Nature Communications* **2018**, *9*, 2160.

-Lin, C.; Jordan, L R..; Stedronsky, E. R.; Wittenberg, N. J.; Regen, S. L. " A Plug and Socket Approach For Tightening Polyelectrolyte Multilayers", *ChemComm*, **2018**, 54, 9769-9772.



Xiaoji Xu

Dr. Xu's group has published two recent research articles:
-Wang, H.; Wang, L.; Jakob, D. S. , and Xu, X.G. "Tomographic and Multimodal Scattering-Type Scanning Near-field Optical Microscopy with Peak Force Tapping Mode" *Nature Communications*, **2018**, *9*, 2005.

-Wagner, M.; Jakob, D.S.; Horne, S.; Mittel, H.; Osechinskiy, S.; Phillips, C.; Walker, G. C.; Su, C. and Xu, X.G. "Ultrabroadband Nanospectroscopy with a Laser-driven Plasma Source" *ACS Photonics*, **2018**, 5, 1467-1475.

Dr. Xu was selected as a Beckman Young Investigator in 2018 by the Arnold and Mabel Beckman Foundation Board of Directors with a 4-year grant of $600K to support his research, "Super-Resolution Infrared Microscopy in the Aqueous Phase."

Liz Young

Professor Young welcomed two students, Craig Pointer and Shea Martin, into the lab and was excited for them to begin their work in earnest during the summer. The Young Lab also welcomed freshly minted Ph.D., Dr. Amanda Oldacre from the University of Buffalo as a postdoctoral researcher. Additionally, three undergraduates worked with the Young Lab over the summer. Follow the Young Lab on **Twitter@YoungLabLehigh** for updates on their work and outreach.

The newly formed team are studying how molecular structure influences the properties of molecules, specifically molecules that absorb visible light and use that energy to carry out interesting reactions. The group will carry on and begin research projects that touch on several areas including designing models systems for photo-induced proton-coupled electron transfer reactions, characterizing the photo-physics of molecules and materials for solar cells, and developing effective photosensitizers for photodynamic therapy for cancer treatment.

Profssor Young recently published the following work with her collaborator from the University of Massachusetts Amherst, and has several more manuscripts under review at this time.

-Khomein, P.; Swaminathan, S.; Young, E.R.; Thayumanavan, S. "Fluorescence Enhancement Through Incorporation of Chromophores in Polymeric Nanoparticles." *J. Inorg. Organomet. Polym.* **2017**, https://doi.org/10.1007/s10904-017-0670-1.

Budding chemists getting an early start on future careers!

During the spring semester, Professor Young organized a series of visits to the Lehigh University Daycare to engage the students in STEM activities and experiments. The students learned about density, chromatography, and light! More visits are scheduled for the Fall!

In the picture, Dr. Young is demonstrating fluorescence of tonic water and highlighter dyes to the preschool class.

WELCOME NEW FACULTY

Dr. Lisa Fredin

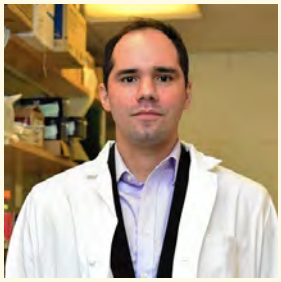
Lisa Fredin earned her B.S. in chemistry, biochemistry, and applied mathematics with a minor in computer science from the University of Texas at Austin. After taking advantage of undergraduate research opportunities in fields from microbiology to synthetic inorganic chemistry, she went to Northwestern University, where she completed a joint computational-experimental Ph.D. in the groups of Mark A. Ratner and Tobin J. Marks, synthesizing molecules, measuring material properties, and modeling devices of hybrid organic-inorganic dielectrics. Choosing to focus on theoretical chemistry, she accepted a postdoctoral associateship at Lund University in Sweden with Petter Persson, modelling the photochemistry of transition-metal complexes for light-harvesting. She chose to come back to the states after two years as a National Research Council Research Associate to develop new computational tools that reduce the cost of screening materials for energy storage and generation applications at the National Institute of Standards and Technology in Gaithersburg, MD. Dr. Fredin's research portfolio, initiated in 2015 at NIST, draws on her background combining experiment and theory to develop computational and theoretical models of fundamental electronic properties to design materials with targeted properties. At Lehigh, the Fredin group will develop models for a broad range of surface science applications, bridging physical chemistry, materials science, nanoscience, and computation; as well as probing the boundaries of the particle and wave approximations of electrons in materials.

PROMOTIONS & TENURE

Kai Landskron

Kai Landskron has been promoted to the rank of Professor effective September 1, 2018. Landskron, an inorganic chemist, came to Lehigh in January, 2006 from the University of Toronto where he was serving as a postdoctoral fellow under Professor Geoffrey Ozin. Since coming to Lehigh, his work has focused on nanoporous inorganic, organic-inorganic hybrid, and organic solid state materials. The research encompasses the synthesis, and the characterization of new nanoporous materials, as well as the application of nanoporous materials in novel ways. One major research focus is on the high-pressure chemistry of periodic mesoporous materials. A second major research focus is on the development of new nanoporous materials and methods for gas adsorption and separation. He and his coworkers have developed a new gas separation technology that separates gases by capacitive charge and discharge of supercapacitors. This technology holds promise to make gas separation much more energy-efficient and environmentally friendly.

Landskron earned his bachelor's degree from the University of Bayreuth,Germany and his doctorate from Ludwig Maximilians University of Munich. He currently serves as the Lehigh Valley American Chemical Society coordinator.



Marcos Pires

Marcos Pires has been promoted to the rank of Associate Professor and granted tenure effective September 1, 2018. Pires' work focuses on biochemistry and bio-organic chemsitry. Arriving at Lehigh in Fall 2011 from his postdoctoral appointment working under Dr. Bill DeGrado at the University of Pennsylvania, Pires bgan additional research on protein oligomerization, biomaterials, and multidrug resistance experiments. His research has included the development of polyvalent inhibitors to reverse ABC transporter-mediated drug resistance, stimuli-responsive collagen peptides as biomaterials, and the study of *de novo* designed diiron proteins. Pires earned his bachelor's degree from Ithaca College and his doctorate from Purdue University.

Damien Thévenin

Damien Thévenin has been promoted to the rank of Associate Professor and granted tenure effective September 1, 2018. While obtaining his Ph.D. at the University of Delaware under the supervision of Dr. Clifford Robinson and Dr. Brian Bahnson, he studied the folding and oligomerization of G-protein coupled receptors. He then went on to postdoctoral studies at Yale University under Dr. Donald Engelman where he focused, among other things, on a novel transport system (pHLIP) that can selectively target tumors and inflammation sites *in vivo*. He came to Lehigh University in the fall of 2011 and has continued his research into membrane protein biophysics and drug-delivery processes.

Thevenin earned his bachelor's degree in Structural Biochemistry from the Universite Paul Sabatier, Toulouse, France. Before beginning graduate studies, he accepted an internships at Life Technologies, Inc. in Maryland where he worked on the development of technology for the collection and storage of nucleic acids (FTA paper) and at Toray, Inc. in Japan, helping to investigate the anti-tumor action of a naturally occurring molecule that induces cell apoptosis.

Undergraduate Student Awards - 2018

American Chemical Society Award
Presented to the outstanding senior majoring in chemistry: **George Carpenter**

American Chemical Society Inorganic Chemistry Award
Presented to the outstanding senior majoring in inorganic chemistry: **George Carpenter**

American Chemical Society Organic Chemistry Award
Presented to the outstanding senior majoring in organic chemistry: **Mason Chin**

American Institute of Chemist's Award
For an outstanding senior majoring in chemistry or biochemistry: **Alexandra Mease**

Alpha A. Diefenderfer Analytical Award
Presented to the highest-ranking junior in analytical chemistry, sponsored by the ACS Division of Analytical Chemistry: **Dominick Falcon**

Biochemistry Award
Given to the highest-ranking junior or senior biochemistry major: **Brooke Lichak**

Harry M. Ullmann Chemistry Prize
Awarded to the highest-ranking senior in chemistry: **Yukai Yang**

Hypercube Scholar Award
Given to a senior chemistry major who has shown outstanding promise in theoretical chemistry and molecular modeling: **Yukai Yang**

William H. Chandler Senior Prize
Established in 1920 by Mrs. Chandler and presented to the highest-ranking senior in chemistry or biochemistry: **Tiffany Sahadeo**

William H. Chandler Junior Prize
Presented to the highest-ranking Junior in the Chemistry department: **Dominick Falcon**

William H.Chandler Sophomore Prize
Presented to the highest-ranking sophomore in the Chemistry Department: **Destiny West**

Graduate Student Fellowships - 2018-2019

Chemistry Student Fellowship: **Janessa Gerhart**

Fulbright-Pakistan Scholar (2017-19): **Muhammad Imran**

Presidential Fellowship: **Scott Shreiber**

Hornor Fellowship: **Haomin Wang**

Buch Fellowship: **Caleb Wehrmann**

CLASS OF 2018

Ph.D. Graduates

Fall 2017

Godfred Fianu – "Titanocene(III) Complexes: Promising Reagents for the Design of Sustainable Catalytic Processes" (August 1, 2017)

Rachel Giron – "In Situ Studies of the Open-Circuit Decomposition of Gold Oxide" (September 15, 2017)

Sarah Plucinsky – "The Biophysical Characterization of Caveolin-1" (November 14, 2017)
(Recipient of the Stout Dissertation Award which recognizes significant scholarly achievement in a dissertation project.)

Yiqun Liu – "From Anoinic Porous Organic Frameworks with Phosphate Functional Groups to a Mesoporous Aluminosilica Material with Crystalline Pore Walls" (November 30, 2017)

Spring 2018

Siqi Yu – "Synthesis of Novel Aminophenolate Complexes of Nickel and Accessing Nickel(II), (III), (IV) Complexes Bearing a Readily Attached [C_4F_8] Ligand" (March 30, 2018)

Chang Wang – "Lipid Raft Formation Driven by Push and Pull Forces" (April 13, 2018)

Cen Lin – "Hyperthin Polymeric Membranes for Gas Separation" (April 13, 2018)

Summer 2018

Elizabeth Bloch - "Receptor Proteing-Tyrosine Phosphatases: Dimerization, Allosteric Modulation and Receptor Kinase Interaction" (June 19, 2018)

Spring 2018

Master's Graduates

Alexis Apostolos - Chemistry

Caroline Bartulovich - Chemistry

Kenneth Hand - Chemistry

Hongjing Ma - Biochemistry

Amanda Rennig - Chemistry

Laura Rae Taylor - Chemistry

Darian Waugh - Chemistry

Bachelor's Graduates

BA Chemistry: Kimberly Crosta, Yara Hanna, Madison Uram

BS Biochemistry: Obinna Bethrand-Okechukwu, Mason Chin, Rafael Fernandez, Yeana Kim, David LaGatta, Charlie Lu, Simon Luu, Darcy Marmolejos, Alexandra Mease, Anthony Muzika, Julianne Nolte, Victoria Ricles, Tiffany Sahadeo, Taryn Samet, Lauren Schlegel, Abigail Shreero, Rachel Timberman

BS Chemistry: Jonathan Bayne, George Carpenter, William Featherstone, Anna Li, Nicholas Watanabe

On May 21, 2018, Sarah Plucinsky received her doctoral hood at the Spring Commencement hooding ceremony from her doctoral mentor, Dr. K. Jebrell Glover (right) and her father, Dr. Mark Plucinsky (left).

Mark, a senior research scientist with Absorption Systems, is himself a Lehigh doctoral graduate in Biochemistry (Ph.D. '86). Sarah is now doing a Postdoctoral Fellowship under Dr. Emmanuel Skordalakes of the Wistar Institute Cancer Center in Philadelphia. Congratulations, Sarah, and all the family members who supported her through her Lehigh University academic career!

DISTINGUISHED TEACHING ASSISTANT AWARD

The recipients of the Inaugural 2017-2018 Teaching Assistant Award were named at an afternoon reception on Friday, May 25, 2018. Janessa Gerhart and William (Bil) Leon were presented with a plaque that will hang in the Seeley-Mudd building and will carry their names along with future awardees of this prestigious honor.

The award recognizes "those individuals who, through their dedication to academic rigor and student success, have distinguished themselves as outstanding teaching assistants." Congratulations to Janessa and Bil!

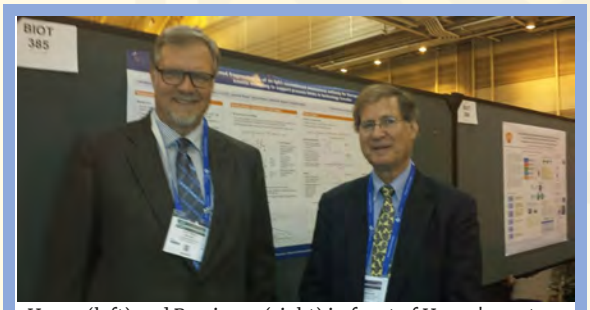
Dr. Nate Wittenberg (left) presents the award to Janessa Gerhart (center) and Bil Leon (right) at the May 25 reception

WELCOME NEW GRADUATE STUDENTS

NAME	HOME STATE/COUNTRY	MATRICULATING FROM
Emily Ankrom	Pennsylvania	Waynesburg University
Alexis Apostolos	New Jersey	Lehigh University
Miles Lizak	New Jersey	Moravian College
Paulina Morocho	Pennsylvania	Alvernia University
Ugochinyere Obioha	Nigeria	University of Ibadan
Scott Shreiber	Pennsylvania	Lock Haven University

Alumni News

'79 George Barringer (PhD)
and
'04 Matthew Henry (PhD) both made poster presentations side-by-side in the Biotech section at the Spring 2018 ACS Meeting in New Orleans. Matt, a senior scientist at GlaxoSmithKline (GSK), was presenting his work on "A Copper Catalyzed Fragmentation of an IgG1 Recombinant Monoclonal Antibody for Therapeutic Use: Using Kinetic Modeling to Support Process Limits in Technology Transfer." George, senior technologist for Stratophase, a British manufacturer of instrumentation for process monitoring, presented his work on "Rapid Optimization of Mammalian Cell Bioreactor Processes using RangerTM Adaptive Process Control Technology." Neither George nor Matt knew that his adjacent poster-neighbor was also a Lehigh grad until a passing professor noted the mini-reunion and introduced them. They quickly discovered they shared mutual chemical interests in the analytical monitoring of manufacturing scale bio-reactions.



Henry (left) and Barringer (right) in front of Henry's poster from GlaxoSmithKline - New Orleans, LA Convention Center

'83 Marcian E. Van Dort (PhD) recently published in the April 2018 issue of *Journal of Ocular Pharmacology and Therapeutics* his research entitled "Ocular Toxicity Profile of ST-162 and ST-168 as Novel Bifunctional MEK/PI3K Inhibitors." Marcian, who is an Associate Professor in the University of Michigan's College of Medicine, was joined by five of his co-researchers in the authorship of the article.

'84 Peter Seoane (PhD) was recently named Manager of Business Development for SoBran BioScience, Greensboro, NC. SoBran is a preclinical pharmaceutical contract laboratory providing services in bioscience, engineering, supply chain management, and security. Pete was formerly Vice-President for R&D for Eagle Vision Pharmaceuticals.

'85 John Spaltro (PhD) has joined Amicus Therapeutics (Cranbury, NJ) as Director of Global Regulatory Affairs. John, a Lehigh PhD in Biochemistry, has served in a variety of regulatory affairs assignments including Bracco Diasnostics and Covance CMO.

'89 George Marchesini (MS) has been named Director of Regulatory Affairs for the Oncology Unit at Novartis Pharmaceuticals.


The exact moment when Harold realized that adding fingernail clippings and eye of newt to his experients was a very bad idea.

LEHIGH CHEMISTRY

Don't let this happen to you . . .

Stay in touch with your friends, colleagues, and fellow alums for support, camraderie and perhaps an idea or two when you need another perspective. Lehigh Chemistry alums can be found all across the globe as they use their degrees in a plethora of fields. Give us an update at mwr217@lehigh.edu. We love to hear your stories--both personal and professional.

HEINDEL TRANSITIONING (Cont'd from Pg. 5)

From the ACS he received the Lehigh Valley ACS Service Award (1994), the Mosher Award for Contributions to Chemistry (1996) and the Henry Hill Award for Achievements in Medicinal Chemistry (1997); the Ben Franklin Partnership Award for Corporate Assistance (2002), and the Brady Cancer Achievement Award (1989). Ned is listed in Who's Who in America. He received the Distinguished Alumnus Award from Lebanon Valley College (1983) and Honorary Doctorates in 1985 (Lebanon Valley College) and 1993 (Albright College).

A true Renaissance man, Heindel has written and edited books not only on chemistry but also on historical accounts of life in the Lehigh Valley and homeopathic medicine. His books include "The Chemistry of Radiopharmaceuticals" (1978, Abacus Press); "Iron, Armor, and Adolescents: The History of Redington and the Carter Junior Republic" (1982, Northampton County Historical and Genealogical Society, NCHGS); "The 1863 Diary of Beates Swift," (2004, NCHGS); "Are Chemical Journals Too Expensive and Inaccessible" (Editor, 2005, National Research Council); "Trolley Memories of a Raubsville Resident," (Editor, 2007, NCHGS); "Hexenkopf: History, Healing and Hexerei" (2009, Williams Township Historical Society); and "The Nineteenth-Century German Horse Doctor: A Pennsylvanian Dutchman's Practical Guide to Treating Horses," (co-author with R. D. Rapp, 2011, Coffeetown Press). A work in progress details the life of James Munroe "Money" Munyon, an early manufacturer of homeopathic pharmaceuticals and patent medicines prior to the Food and Drug Act. With his Pennsylvania Dutch background, he and his wife Linda (an Emeritus Dean of Moravian College) are also frequent contributors to the Pennsylvania Folklife magazine and are the founders of the Williams Township Historical Society, which publishes a quarterly paper for its members.

His interest in all-subjects historical resulted in him twice being elected Chair of the American Chemical Society's History of Chemistry Division. In that role as well as that of Past President of the Society, he chaired the task force that launched the Center for the History of Chemistry in Philadelphia in 1982, which became the Chemical Heritage Foundation (1992), and has now grown into the Science History Institute (2018), on whose Board he serves as a Trustee. He was a leader within the ACS in advising the Smithsonian Museum of American History on their exhibit "Science in American Life" (1994-2011).

With his transition to Professor Emeritus, Ned may no longer be focused on teaching and his commitment to Distance Education, but he is enthusiastic to continue his research at Lehigh as one of the most experienced postdoctoral researchers at the university. He is still an active consultant and maintains a research program with colleagues at Rutgers University funded by NIH Project COUNTERACT on mitigating the effects of exposure to blistering agents as chemical weapons.

A consummate "idea man," Ned has always held that doing the right thing is important, regardless of the regulatory red tape that might need to be cut or circumvented. He will probably never retire in the standard sense of the word as most of us know it. Ned will likely continue to present papers ranging widely in content from "Folk Medicine of the Pennsylvania Dutch" to " A Trip on the Pennsylvania Canals: The Voyage of the Molly Polly Chunker" to "Synthesis and biological evaluation of a series of indomethacin analogs able to mitigate inflammation caused by SM-induced injury."

He will doubtless continue to help everyone develop their careers, not only by teaching them chemistry, but also by leading by example as a person of diligence, creativity, and perseverance. And he will most definitely continue to be a mentor, a source of information and inspiration, and a valued colleague, teacher, and friend.

WELCOME NEW STAFF

Kerry Livermore has joined the Chemistry Department as the new Undergraduate and Graduate Coordinator. Kerry has been at Lehigh since December, 2012, and was previously the Coordinator for the Computer Engineering Program. She is originally from upstate New York but moved to the Lehigh Valley in 2005 from New Hampshire. In her free time she enjoys spending time with friends and family, traveling, reading, volunteering, and attending her kids' sports and music events.

SUMMER RESEARCH OPPORTUNITIES

Thanks to the generosity of a donor who wishes to remain anonymous, three undergraduate students were given the opportunity to participate in summer research in the labs of Drs. Glover, Landskron, and Vicic. Morgan Sutton, a chemistry major from Lock Haven University, joined the Glover Lab this past summer and performed fluorescence anisotropy studies on Caveolin-1, a protein that is implicated in various disease states such as Alzheimer's and heart disease. Lehigh University biochemistry major Allison Toth joined the Landskron lab assisting with the separation of CO_2 from CO_2/N_2. Ashini Patel, a senior pharmaceutical chemistry major, conducted research in the Vicic Lab and worked towards synthesizing ruthenium complexes bearing newly designed anionic terpyridine ligands. This donor's gift helped lay the foundation for three young students' futures. Much appreciation!

Your donations can fund student research and travel, expanding the Lehigh University reputation across the nation and around the globe. Donations also represent an important part of our continuing efforts to create a "state-of-the-art" environment for teaching and research at Lehigh. Your gifts can be made to the Chemistry Department through traditional paths administered through Lehigh's Advancement Office: (800) 523-0565 or please contact Department Chair Greg Ferguson (gf03@lehigh.edu) if you are interested in funding specific projects.

VICIC RISING (Continued from Page 3)

New furniture was also added to the MUDD lobby as well as to the main department office. The renovations have attracted considerably more traffic to our lobby.

In 2018, we held the first Department retreat in over a decade. This was a really successful event, and we outlined many areas of possible improvement for the next administration. I think it will be really helpful for us moving forward. We also had an external evaluation of our graduate program. The committee's visit went smoothly, and some insightful and recommended action items were presented to us. Other new developments will surely impact our department in the years to come. The creation of a new College of Integrated Health at Lehigh will be transformative, as will the creation of multiple university-wide interdisciplinary institutes.

There are many exciting things on the horizon for the Chemistry Department. If you have a chance, please stop by and hear more about all the on-going activities in person!

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http://www.lehigh.edu/~inchem

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kjl212@lehigh.edu

The Chemistry Department has created an internet link so that monetary donations can be made securely and hassle-free online at:

http://MyLehigh.Lehigh.Edu/ChemistryGifts

August 29
John Tovar
Johns Hopkins University

September 5
Michael Roper
Florida State University

September 12
Greg Tew
University of Massachusetts

September 19
Paul Adams
University of Arkansas

September 26
Song Lin
Cornell University

October 10
Bogdan Dragnea
Indiana State University

Fall 2018

Chemistry Seminar Series

October 17
Ken Carter
University of Massachusetts

October 24
Yftah Tal-Gan
University of Nevada-Reno

October 31
Bo Zhang
University of Washington

November 14
Jillian Dempsey
University of North Carolina

November 28
Nathan Wittenberg
Lehigh University

4:10 p.m.
Neville Auditorium #3

Detailed information on titles and abstracts can be found at https://chemistry.cas2.lehigh.edu/seminars