As we draw near the completion of nearly a century of chemical engineering at Lafayette, the Department continues to build on its strong tradition and reputation of excellence. In March, we celebrated the commissioning of the new twin-column distillation plant featuring digital controls at the inaugural Lafayette ChBE Spring Symposium “Engineering re-Connections: framing future networks.” Co-hosted by the Department and the Lafayette AIChE chapter, the event brought together more than 150 students, faculty, and alumni with representatives from eleven different companies including ExxonMobil, Pinnacle Foods, Air Products and Chemicals, AstraZeneca, BASF, Dow, and O’Brien & Gere.

Capstone design continues to be a highlight of the student experience in ChBE through the diversity of projects offered. This year two projects will feature industry/academy partnerships: conductive plastic process development in cooperation with Zzyzx Polymers and full-density digital part materialization through additive manufacturing with the ExOne Company. Zzyzx Polymers uses an innovative process known as Continuous Mechanochemical Compatibilization (CMC) to make plastics that cannot be produced via conventional processing techniques, resulting in materials that have superior properties. In this project, the student team will characterize a novel conductive plastic using injection, blow, and rotational molding and measure key physical properties including electrical conductivity. Through this opportunity, students will gain a first-hand perspective of the challenges and rewards associated with innovation and entrepreneurship in a start-up enterprise.

Experiential learning and hands-on education are the hallmarks of the Lafayette experience. The Department is excited to collaborate with the broader College community during a new phase of strategic growth through partnership with the IDEAL (Innovation, Design, Entrepreneurship, and Leadership) Center. The mission of IDEAL is to provide a platform for engaging external partnerships and facilitating experiential learning for Lafayette students. The high impact products that result from these collaborations will simultaneously showcase the integration of the liberal arts and engineering at the College. Programs exploring creative collaborations across traditional boundaries for the current year are in the final stages of development, and include a symposium and workshop in cybersecurity for state and local government agencies, an institute in additive manufacturing, and a program exploring the use of nanotechnology for cultural conservation. As the new Robert Adenbaum ’49 Co-Directors of the IDEAL Center for Innovation, Professor Diane Cohl Ahl (Arthur J. ’55 and Barbara S. Rothkopf Professor of Art History) and I encourage applications for new projects and will actively seek partners in the Lafayette community and beyond.

As of September 2014, the Department enrolls 142 undergraduates across all class years; the fourth largest program at Lafayette, and we are pleased to report a 100% placement rate for all graduates within six months of degree completion. Two faculty in the Department also reached key milestones. This past spring, Professor Polly R. Piergiovanni was promoted to Full Professor, and Professor Javad Tavakoli will enter retirement in December. Please join me in thanking Professors Piergiovanni and Tavakoli for their many contributions in making the Department what it is today. We are grateful for the broad partnership and support from the LafChBE community going forward as we continue to strive toward the standard of excellence we all associate with Lafayette.

James K Ferri, James T. Marcus ’50 Professor and Department Head
Robert Adenbaum ’49 Co-Director of the IDEAL Center for Innovation
I was beyond saddened to hear that Professor Tavakoli was retiring at the end of this semester. It’s hard to imagine not walking into Professor Tavakoli’s office, pulling up a chair at the table, and moving the model hydrogen car over to make space at the table for my homework. The books that line the office contain almost anything one could want to read about chemical engineering, from alternative energy (there are a lot of those!) to process control, and beyond. The wide variety of books represents one part of being a professor that Prof. Tavakoli loves—the challenge of constantly learning new developments in the field, in addition to the challenge of the new ideas that students bring to the classroom.

One of the characteristics that sets Professor Tavakoli apart from the average college professor is the deep investment he makes in a student’s overall development. Of course, learning is important in an academic setting like Lafayette, but Professor Tavakoli considers his students not just as pupils, but as long-term friends. That, he says, is one of the best parts of being a professor, the never-ending stream of long-term friends that one makes. Professor Tavakoli understands that students are not just individuals to be thrown information, but that students need to develop holistically in order to truly be successful. I experienced this kindness every time I have walked into his office. Professor Tavakoli has always asked, not just about school, but about all of the different activities that I have been involved with on campus. He was always concerned that I wasn’t having enough time to relax or sleep, and was always willing to work with me to ensure that I was taking the time to fully understand the course material. I remember the day he came into the office on a weekend to help me with a pre-lab, because we didn’t have a time that would work during the week. He stayed longer than he needed to in case my group and I had any questions.

Professor Tavakoli has taught me that there are more important things than grades that lead to success in life. He urges today’s young engineers to consider the social and environmental impact of projects they undertake, not just the economics of it. With everything he does, Professor Tavakoli sees things with a more global view than most engineers - even the most efficient process could have an impact on the surrounding area.

Professor Tavakoli has told me that it was always his dream to be a college professor, and that was the reason he went to graduate school. He wanted to be a college professor to experience the challenges of an ever-expanding field, in addition to the challenges presented by the students. Upon his retirement, I would like to say this: Professor Tavakoli, you have truly challenged me to think beyond the scope of just engineering to include the well-being of the people and environment. This rounded approach to engineering has changed the way I view the world, and for that, I will be eternally thankful. Rest assured Professor, you have indeed made a long-term friend out of me.

About Professor Tavakoli:
Favorite Color: Green
Favorite Animal: Cats (He has five!)
Favorite Movie: Movies with Charlie Chaplain
Dream Car: Hybrid
Favorite ChemE Subject: M&E
First ChemE Subject taught: Kinetics

Bonnie Malhotra ’15

Faculty Note: ChBE has a Baby
Evan Anderson was born on July 19, 2014, at 5:24am at Doylestown Hospital to Professors Christopher and myself. We only checked in to the hospital around 3am, so he was in a hurry to come into the world! He was 7 lbs 2 oz and 20.5 inches long, and now has dark red hair and blue eyes. Evan loves being outside in the fresh air, going on walks in the neighborhood with dad, and "dancing" to all kinds of music. His favorite "toy" is his dinosaur Wubbanub. He's looking forward to meeting everyone!

Professor Lauren Anderson
ChBE Symposium

On March 27-28, 2014, we hosted our inaugural ChBE Symposium titled “Engineering reConectons: framing future networks.” The purpose of this event was to expose underclassmen students to the professional engineering community and to enhance the connectivity among ChBE faculty, students, and alumni. This event was a great success, reaching over 70 students and over 35 alumni and friends of the department on Lafayette’s campus. This event also received recognition from the National AIChE through an article on their blog, ChEnected.

We will be hosting the 2nd Annual Symposium on Friday, March 27, 2015. The event will not only continue to meet the goals of last year’s event, but also highlight what sets engineering graduates apart from non-engineering graduates. As Steven Pryor said at last year’s symposium, “the world needs great engineers and great problem solvers.” This year, we hope to explore a bit more in depth into exactly what that means.

If you are interested in learning more about or attending the Symposium, please contact us by emailing aiche@lafayette.edu.

Ally Hill ’15

Conference Corner

On the weekend of March 29th 2014, the sweet smell of Chemical Engineering was in the air in Charlottesville, Virginia. That’s right, the annual AIChE Mid-Atlantic Regional Conference was taking place at the University of Virginia. It was an action-packed weekend full of professional presentations and workshops, student poster sessions, and the annual ChemE car competition. Barker Carlock ’17, Tyler Fruneaux ’14, Seth Gottlund ’14, Allyson Hill ’15, Dana Lapides ’16, and Danielle Ricciardi ’17 had the great privilege of representing Lafayette’s AIChE at the conference.

Sponsored by Syngenta and many other companies, the conference exuded the idea of belonging to causes greater than oneself. The keynote speaker John Davis—Manager of Crop Protection Finished Product Processing for Syngenta’s North America region—spoke towards the duty of chemical engineers to solve the issues of feeding an ever-growing global population responsibly.

The most memorable moment of the entire conference was the successes of Tyler Fruneaux and Dana Lapides who won first and third place respectively in the research competition and aptly demonstrated Lafayette’s presence. Tyler will represent the Mid-Atlantic region in the national research competition at the AIChE national conference in Atlanta.

The conference was not only a great experience to share ideas with fellow Chemical Engineering majors in the region but also a wonderful time to better know the career paths available within our major. Although UVA did an incredible job organizing this year’s conference, the AIChE chapter of Lafayette hopes to host its own Mid-Atlantic conference in the near future and take it to new heights!

C. Barker Carlock ’17
Visitors in the ChBE Department

There are a few new faces around the Department this semester. The ChemE Connection sat down with each of our visiting professors as they enthusiastically embark on their first semester here at Lafayette. Professors Clark, Cramer, and Woltornist will be joining us for the 2014-2015 academic year. Here are some facts to help you know them better.

Compiled by Hayden Jarboe ’16, Michael Meshberg ’16, and Danielle Ricciardi ’17

Ashley Cramer

Background:
- M.S., Chemical and Biological Engineering, Northwestern University
- B.S., Chemical Engineering, Lafayette College

Why did you choose Lafayette?
I chose Lafayette because of the emphasis it places on teaching and the quality of students that go here; students here are afforded many unique opportunities as undergraduates and are able to further excel. Also, I went to Lafayette as an undergraduate, and am grateful to teach and give back to the Lafayette community.

What from your past experiences do you plan to bring to ChBE Department?
I plan to bring my knowledge of the process of product design and development, as well as systems integration to the students at Lafayette. In addition, I have the unique experience of designing products for use in underdeveloped countries and have an understanding of the different requirements for these areas.

What else would you like the ChBE department to know about yourself?
I would like the department to know that I have a golden retriever named Moxon. We make frequent visits to the Quad so if you see us feel free to stop and pet him, he loves attention!

Alex Woltornist

Background:
- MBA, Wharton School of Business, University of Pennsylvania
- M.S., Chemical Engineering, Stevens Institute of Technology
- B.S., Chemical Engineering, Lafayette College

Why did you choose Lafayette?
I am a 1980 Lafayette grad in Chemical Engineering. I have been engaging with many aspects of the Career Services group at Lafayette for many years, and felt that what better way to give back than to teach?

What from your past experiences do you plan to bring to ChBE Department?
From what I have seen, a lot of graduating engineers at many schools are very smart theoretically but need some more insight into the practical applications of what they learn. I also see that many students do not get exposed to a lot of the non-technical skills such as team dynamics, change management, etc. I hope that through my many years of operations experience in the technical arena I can impart some of my learnings to the students through Design Analysis.

What else would you like the ChBE department to know about yourself?
I believe in a couple key principles; strike a good work-life balance in everything you do in your career and always push yourself to learn new and challenging things throughout your life.

Michael Clark

Background:
- Post-Doc, Rutgers University
- M.S., Ph.D., Chemical Engineering, Columbia University
- B.S., Chemical Engineering, Rutgers University

Why did you choose Lafayette?
I chose Lafayette because the undergraduates seem outstanding, and there is a strong focus on teaching plus research. Many of institutions do one or the other really well, but don’t achieve the balance as Lafayette does.

What from your past experiences do you plan to bring to ChBE Department?
I am really strong in numerical analysis and using computers to solve chemical engineering problems. If given the opportunity, I’d like to teach a numerical analysis course in the spring. Additionally, I am hoping that students can benefit from some of my industry experiences. In thermodynamics, for example, we are starting to learn about power plants. I’ve been in a power plant; I’ve designed equipment for it. I’d like to share my experience with the students.

What else would you like the ChBE department to know about yourself?
My first child was born four days before I started grad school. Now I have three kids, and we all feel welcome in the Lafayette community.
This past summer, I interned with the New York City Department of Environmental Protection (NYC DEP), a governmental agency that is in charge of NYC’s drinking water, wastewater and storm water, noise control, and air pollution control.

I worked in the Bronx at the Croton Water Filtration Plant, NYC’s first water filtration plant and one of DEP’s most expensive projects. The plant is still under construction and is currently undergoing a variety of experiments to maximize filtration efficiency by also minimizing cost. In about a year however, around 290 million gallons of clean drinking water per day will be delivered to the Bronx and parts of Manhattan. I worked with the Process Controls and Operations and Engineering Asset Management sectors and spent a lot of time in the lab and out on the field sampling the Croton raw water supply.

For my final project, I analyzed all of the process changes (chemical dose changes, flow changes, pump changes, etc.) that occurred at the plant over a certain amount of time. I then observed the effect of these process changes on water quality, filter efficiency, and the cost of running the plant. Through my experience, I learned teamwork skills, problem-solving skills, and used concepts learned in Unit Operations, Process Control, Economics, and General Chemistry.

Georgia Papagianis ’15
Recent Events

In the past number of years, AlChE has become an integral part of the student experience for all chemical engineers at Lafayette. Some highlights of our work include:

♦ Strengthening connections with alumni: The ChBE symposium provided a wonderful opportunity for alumni to come back and talk about their experiences and reconnect with their alma mater. We hope that future symposia and other events will only further solidify these bonds, both with alumni and their places of employment.

♦ Increasing the number of students attending AlChE regional and national conferences: Lafayette ChBE is succeeding at improving its visibility both regionally and nationally. Last year, three of our students won prizes for their research and we hope to continue this trend in future years.

♦ Developing and strengthening our mentoring program: This year’s mentee class of 37 is the largest we have ever had.

♦ Increasing our work outside of the ChBE community: We have become more active with cooperating with other student groups for events and participating in a number of volunteer events. This year’s Air Products Hometown tour was done in conjunction with Lehigh’s AlChE student chapter.

♦ Refining our seminars: AlChE has assisted the Department in developing the ChBE brownbags for ES101. This year, we have added a professional development seminar series (connected to capstone design) with the assistance of Professors Lindsay Soh and Alex Woltonist.

♦ Increasing opportunities for students and faculty to meet each other outside of the classroom and laboratory: The ChBE cookoff has been a very popular event bringing the entire Department in a fun (and sometimes competitive) environment.  

Professor Michael Senra

Connect with us!

We are always interested in connecting and reconnecting with alumni. We are grateful to alumni that have given their time by speaking at AlChE and ChBE events and/or opening their workplace to us to host a plant tour or workshop. For more about Lafayette ChBE, please join our mailing list by emailing us for a link at aiche@lafayette.edu.

Lafayette Chemical Engineering website: che.lafayette.edu
Lafayette AlChE website: sites.lafayette.edu/aiche
We’re on Facebook! ‘Friend’ Lafayette AlChE
AlChE Board 2014-2015: Professor James Ferri, Professor Michael Senra, Ally Hill ’15, Bonnie Malhotra ’15, Hayden Jarboe ’16, Michael Meshberg ’16, Danielle Ricciardi ’17