

Lafayette ChBE Students Attend AIChE Conferences

Colleen Lavelle, '17.

Mentored by Lafayette College AIChE Advisor, **Assistant Professor Michael Senra**, several Lafayette Chemical Engineering students were able to learn, present research, win awards, and network through attending professional AIChE conferences.

In the spring of 2017, five students from traveled to Rowan University in Glassboro, NJ for the Mid-Atlantic Regional Conference. On the first day, Patrick Leggieri '18, Cameron Darkes-Burkey '18, Colleen Lavelle '18, and Sara Mikovic '18, Lafayette's first ever ChemE Jeopardy team, took a close second place finish in their round. The following day, two students presented their research, Leggieri in the oral presentation competition and Colleen McGovern '18 in the poster competition. Lavelle and Mikovic attended the student chapter officer meeting. Students were also able to attend workshops on a variety of topics, a career fair, and the student bash, getting to meet students from other chapters.

Then in October, nine Lafayette ChemE students traveled to Minneapolis, Minnesota for the National AIChE conference. Here students attended keynote lectures, a graduate school and career fair, leadership workshops, and research presentations and multiple students received awards. Aleeza Ajmal '18, Nahin Ferdousi '19, Ugochukwu

Okeibunor '18, Rachel Tenney '18, and Junwei Xiang '18 presented posters in the Undergraduate Student Poster Competition. Tenney and Xiang each earned recognition, winning 1st place in their respective divisions. Patrick Leggieri '18 gave an oral presentation of his work as part of the Undergraduate Research Forum on Energy and the Environment. Andrew Frucht '20 was awarded the Freshman Recognition Award which he accepted at the award's ceremony. Finally, Colleen Lavelle '18 and Frucht were in attendance at the AIChE Chapter Officer's meeting, where updates were given for student chapter programs and strategies for improving student chapters were discussed.

The students found many aspects of the conference extremely valuable. Favorites included the recruitment fair, where over 60 graduate schools were present, and the Executive Industry Panel, which had executives from 3M, Honeywell, and ExxonMobil. Faculty members in attendance presenting work and recruiting included Professors Christopher Anderson, Lauren Anderson, Melissa Gordon, Polly Piergiovanni, Michael Senra, and Lindsay Soh. In their free time, many enjoyed exploring Minneapolis and visiting the Mall of America. We are looking forward to great conferences this year in Princeton, NJ and Pittsburgh, PA.

Photo Spotlight



Above: Visiting Assistant Professor Kyle Doolan socializes with seniors at ChemE Pub Night (From L to R: Aditya Mehta '18, Danhui Zhang '18, Rukhmitha Shridhar '18, Bilal Akbar '18.)

Below: Owen Robinette '18 assists middle school students from Nitschmann Middle School in an outreach activity.



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 AIChE 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 e-mailing us for a link at aiche@lafayette.edu.

Lafayette Chemical Engineering website: che.lafayette.edu

Lafayette AIChE website: sites.lafayette.edu/aiche

We're on Facebook! 'Friend' Lafayette AIChE

AIChE Board 2017-2018: Professors Lauren Anderson, Polly Piergiovanni, and Michael Senra; Colleen Lavelle '18, Sara Mikovic '18, Alexandra Bord '19, Trent Eastman '19, Andrew Frucht '20, Sarah Park '20, Cassandra Warrenner '20

LAFAYETTE
CHEMICAL & BIOMOLECULAR ENGINEERING

The ChemE Connection

Lafayette College Chemical and Biomolecular Engineering News

Chemical and Biomolecular Engineering Departmental Highlights

The Department continues to offer a premier undergraduate experience in chemical engineering through a combination of courses rich in experiential learning and research opportunities in cutting edge areas like sustainable energy sources, smart materials, atmospheric chemistry, and bioengineering. The department is home to approximately 150 undergraduate students across all four class years and 10 full-time faculty. In both cases, we are well above national averages with 49% female students and 5 full-time female faculty. Students and faculty are actively engaged in departmental affairs, as you will read about in the following pages. Select highlights of the past year include:

Faculty and students continue to engage in research projects at a high rate. 12 students participated in summer research through the EXCEL Scholars or Clare Boothe Luce Scholars Programs students; 10 students are currently conducting Honors Theses in Chemical Engineering, and over 10 additional students have been involved in independent projects throughout the academic year. Several of these projects have led to peer reviewed publications in the past year, featuring student co-authors.

Visiting Professors **Kyle Doolan** and alumnus **Alex Woltornist '80** have significantly enhanced experiential learning opportunities for our students. Professor Doolan has actively engaged students through his teaching in the laboratory sequence, while Professor Woltornist continues to provide our seniors with hands-on, real-world capstone design projects with local industry. This year, we are also grateful for the time and energy that alumnus **John**



Kyla Dewey '18 and Rachel Young '18 perform undergraduate research in the Center for Biomolecular Engineering in the Acopian Engineering Center.

Plumeri '78 is donating to our capstone projects. Mr. Plumeri brings an industrial perspective commensurate with his 37+ years of experience working with Mobil and ExxonMobil. The ability to provide students with innovative and entrepreneurial opportunities depends on the generosity of dedicated alumni and strong industrial partnerships.

Assistant Professors **Melissa Gordon '11**, **Lindsay Soh**, and **Joseph Woo** attended and presented at the Chemical Engineering Summer School in late July at NC State University. **Professor Polly Piergiovanni** designed and led a highly-rated workshop on using food to teach chemical engineering principles. The summer school, sponsored by ASEE and offered every five years, is designed to provide guidance and resources to help new faculty excel as teachers and as scholars.

Professor **James Schaffer** continues to mentor students in an independent study course focused on the mathematical modelling of chemical engineering

systems. These students apply problem-solving skills across the curriculum and study advanced mathematical topics to prepare them for graduate study.

Finally, this past summer James T. Marcus '50 Professor of Chemical Engineering **James Ferri** accepted a position at Virginia Commonwealth University. In his 16 years at the College, James played a central role in growing enrollments, adding faculty lines, acquiring several major assets, including a twin-column distillation plant, and forging strong partnerships with industry. We thank Professor Ferri for his vision, leadership, and strong mentorship of students, and in wishing him well in his new position. The Department is currently searching for a tenure-track assistant professor to fill this vacant line.

Thank you all for your continued support of Lafayette ChBE. We love to hear from our alumni, so please stay in touch!

Lauren Anderson '04
Associate Professor and Department Head

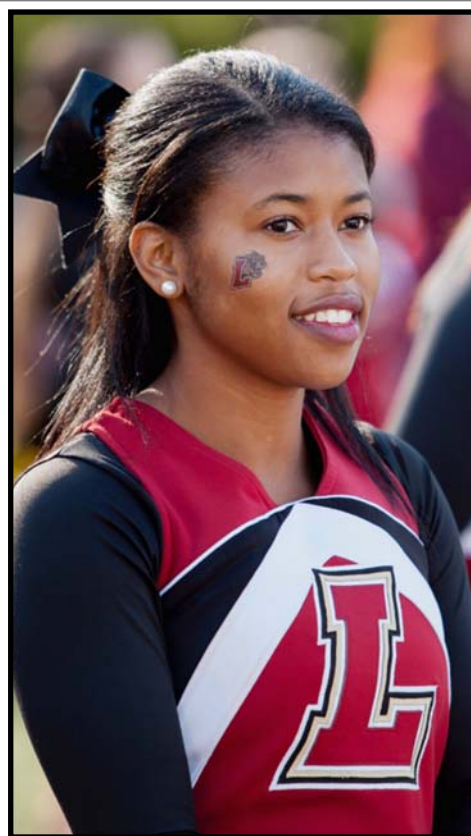
Student Spotlight—My’Kelya Dickerson, Class of 2019

Alexandra Bord, '19.

My’Kelya Dickerson '19 a highly driven student, participating in many different activities on Lafayette’s campus. She is one of a number of chemical engineering student athletes, as she is a member of the Lafayette College Cheerleading Team. In addition to cheering at football games and basketball games, she is responsible for choreographing some of the team routines. As Co-President of the Marquis Scholars and Fellows My’Kelya is responsible for planning events for all of the scholars and fellows on campus, encouraging them to maintain a strong connection to the rest of campus. Further, My’Kelya is a Kaleidoscope Coordinator, which entails organizing social justice advocacy and working fellow “scopes” to pursue a more fair and just society. She explains that the group of students “all have different passions, but have the same goals.”

My’Kelya leads a Bible Study, where she reads the Bible and everyone can bond over his or her common values. This semester, My’Kelya became a Resident Advisor (RA) and absolutely loves it because she is responsible for first-years who are enthusiastic, with fresh ideas, and come to her floor programs. For Winter Break, My’Kelya traveled to Madagascar with the Lafayette Initiative Malagasy Education Program, where she helped teach students how to take the SATs and how to apply for college.

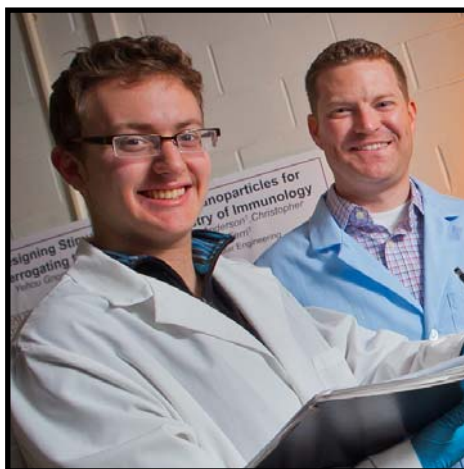
My’Kelya chose to pursue Chemical Engineering at Lafayette College because in high school she really liked chemistry, but didn’t really know what she wanted to do. She knew that it would be easier to switch out of engineering than into it later, so she decided to try chemical engineering, but when she got here, she loved it, so she stayed.



Continued, **DICKERSON (Page 4)**

Catching Up with an Alum: The Other Warrener ChemE

Cassandra Warrener, '20.



Matt Warrener '14, with **Assistant Professor Christopher Anderson.**

When I was contemplating where I wanted to go to college and what I wanted to major in-I was completely lost. I’ve always had many diverse in-

terests, but none particularly screamed, "Do this!" Naturally, I turned to my parents and two older brothers for advice. That is when my oldest brother, Matthew, told me to look into chemical engineering. He said, "You enjoy and are good at math and chemistry. This might be good for you." Since then, I never looked back. I applied to Lafayette as a chemical engineer and am now happily in my second year, studying abroad in Spain. His suggestion, however, wasn't without bias, as he graduated with a BS in Chemical Engineering and a minor in Religious Studies in 2014 from Lafayette College.

After graduating, Air Products hired Matthew and he began their three year Career Development Program with some of his classmates. He began in

Allentown, Pennsylvania, and then moved to Houston, Texas for year two of his rotation and has been there ever since. At the moment, he is the production engineer at one of the HyCO plants in La Porte, TX which produces hydrogen and carbon monoxide via partial oxidation. Recently, he and the process safety and process system teams team worked to determine if it would be safe to increase the interval for testing the Critical Safety System (CSS) for two of the large compressors from 2 to 4 years. The tests ensure that the safety interlocks are functioning properly, i.e. sending out an alarm if there is too little pressure at the compressor inlet and shutting it down to avoid potential damage to the machine. By extending the interval, the impact on productivity and reliability

Continued, **WARRENER (Page 6)**

Photo Spotlight



Above Left: Students at the AIChE National Conference in Minneapolis, Minnesota. From left to right: Cameron Darkes-Burkey '18, Colleen McGovern '18, Sara Mikovic '18, Patrick Leggieri '18, and Colleen Lavelle '18.



Above Right: Kyla Dewey '18 participates in a test drive of a hydrogen-powered car hosted by Air Products, during Engineering Week 2017 at Lafayette College.

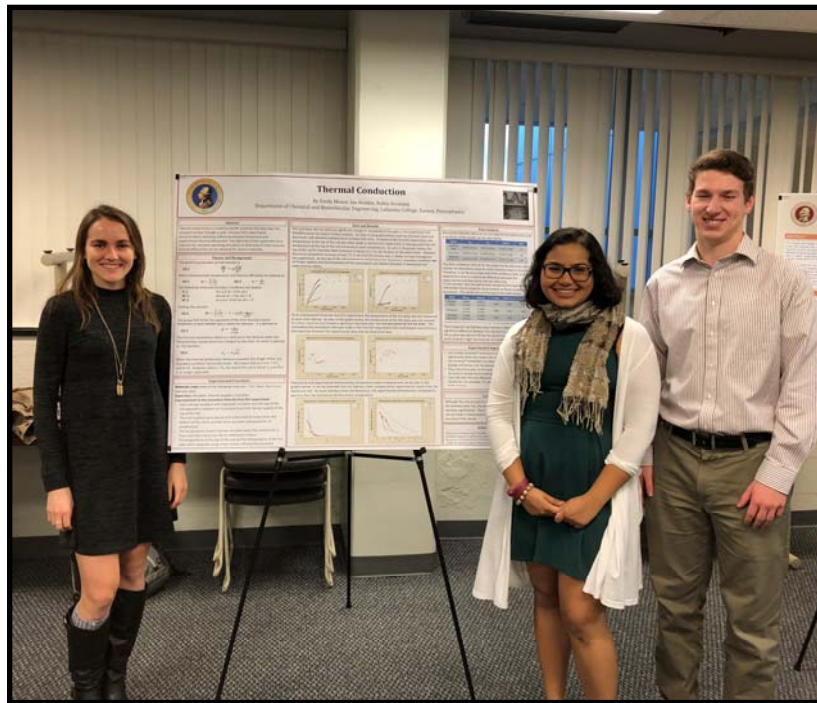
Professor Polly Piergiovanni Joins ASEE Delegation to Cuba

In February 2018, **Professor Polly Piergiovanni** was one of 13 attending representatives from 10 institutions attending the American Society of Engineering Education (ASEE)’s Delegation to Cuba. Developed in cooperation with the Cuban Ministry of Superior Education, the delegation made several site visits around Old Cuba. Participants engaged with Cuban engineering professionals and gained unique insight on the current educational advances and challenges currently taking place in their community.



Right: Professor Piergiovanni (Front row, second from right) with the ASEE Delegation in front of the Ministry of Education.

Photo Spotlight



Above: Emily Moore '19, Nahin Ferdousi '19, and Joe Holden '19 present their final projects for CHE 312, Experimental Design I.



Right: Assistant Professor Christopher Anderson shows his school spirit at the ChemE Breakfast, where he and other ChBE faculty prepared food for students studying for their final exams.

WARRENER (from Page 2)

can be minimized as it allows testing to better align with normal plant outage schedules. During this time, he worked with another Lafayette alumnus, Shannon Noll, '13, and together their groups decided that raising the limit from two years to four was, in fact, safe.

While in Texas, Matthew also volunteers at the Houston Humane Society and Hermann Park. Matthew explained that the Lafayette arts and science co-curricular education has continued to encouraged him to explore and "test out the other half of [his] brain [he] doesn't use at work." This is evident in his other hobbies like taking jazz piano lessons and a beginner's pottery class. When he participates in a weekly trivia night, he uses both halves of his brain to help take his team to victory. Fortunately, when Hurricane

Harvey struck Huston, Matthew was mostly unaffected, but he couldn't leave his apartment for a few days due to flooding in the streets. After the State of Emergency was lifted, he went to volunteer at the Houston Food Bank, citing, "I wanted to give back to the community and those who were devastated by the storm, especially considering how fortunate, comparatively, I was." He also said that Lafayette helped to instill the importance of "giving back," that is still essential for him today. Matthew continued, explaining how Lafayette taught him leadership and how to work in a group. He has had many projects that utilized teams, and having the tools Lafayette gave him to communicate, clarify, and "focus on individual strengths and weaknesses" has led to many successes. Matthew added one more Lafayette lesson to the list: effective presenta-

tions. He found that doing presentations in lab classes and at national conferences allow him to speak clearly and confidently. Matthew is grateful for all that Lafayette has given him and hopes to continue to take the spirit of Lafayette with him on his journey.



Cassandra Warrener '20.

Assistant Professor Lindsay Soh Awarded Named Chair Position

Trent Eastman, '19.

On July 1st, 2017, Assistant Professor Lindsay Soh became the Kate and Walter A. Scott '59 Scholar in Engineering. This award, funded by an endowment given by the Scott family, was established in 2016 to allow Lafayette to strengthen its support for women and other under-represented groups in engineering.

In addition to her strong research record, Professor Soh cites several activities as reasons why she was chosen for this achievement. She is the faculty advisor for the Minority Scientists and Engineers student club on campus, which works to create a supportive community for minorities in these fields. They offer tutoring programs, mentoring programs, and encourage attendance at national conferences. She is also involved with the Society of Women Engineers (SWE) chapter at Lafayette and the Clare Boothe Luce scholarship program, a summer research program aimed at supporting



Assistant Professor Lindsay Soh instructs students in her Chemical Engineering elective, Alternative Energy Sources.

women in STEM fields.

Professor Soh is very grateful for the award because of its representation that other people believe in the work she is doing for women and minorities

in engineering. She holds this scholar position for two years. As a part of this accomplishment, Professor Soh receives funds that she hopes to use to attend a conference. Congratulations, Professor Soh!

Photo Spotlight

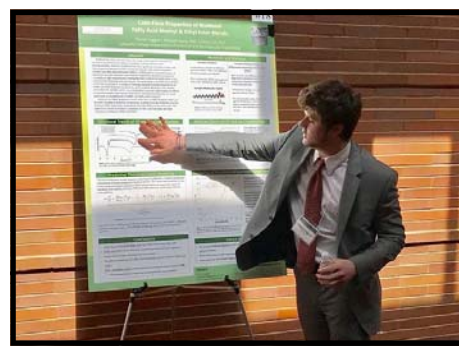
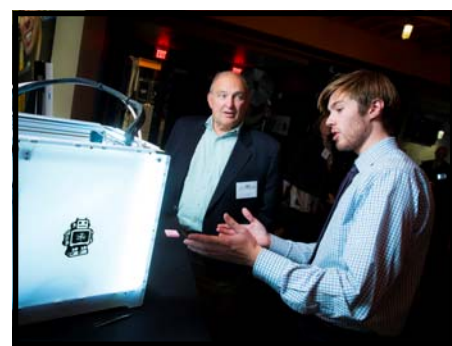


Left: Class of 2020 chemical engineering students studying abroad in Madrid (from left to right): David Goundie, Jenna Triano, Andrew Frucht, Cameron Cranley, Stephanie Wagner, Cassandra Warrener, Haleigh Clark, and Kylie Ryan.



Right: Patrick Leggieri '18, Rachel Tenney '18, and Assistant Professor Michael Senra with Professor H. Scott Fogler at the 2017 AIChE Annual Meeting in Minneapolis, MN.

Lafayette Students Earn Prestigious Scholarships and Fellowships



From L to R: Cara Abecunas '17, Sean McSherry '17, and Patrick Leggieri '18.

Andrew Frucht, '20.

Sean McSherry '17, Cara Abecunas '17, and Patrick Leggieri '18 have earned impressive scholarships and fellowships during the past year. McSherry earned a fellowship grant from the National Science Foundation's Graduate Research Fellowship Program, while Cara received an NSFGRFP Honorable Mention. Leggieri was named a Goldwater scholar from the Barry M. Goldwater Scholarship and Excellence in Education Program.

McSherry, hailing from Doylestown, PA, is currently a graduate student at the University of Michigan investigating radiative energy transfer in two-dimensional hyperbolic metamaterials. At Lafayette, McSherry conducted a senior honors thesis researching Percolation Network Characterization within Segmented Polyurethanes under the mentorship of Professors James Ferri and Ashley Cramer.

The NSF grant will help McSherry research his own ideas in grad school.

He was quoted in *The Lafayette* as saying, "If there is a really awesome, novel idea ... but the professor hasn't secured funding for it, then you can be that person [to research it]."

Abecunas, from Medfield, MA, is also currently pursuing graduate studies at the University of Michigan in the field of biomedical engineering, conducting research in systems biology focusing on melanoma cancer. In the summer of 2016, she was named one of 20 AMGEN Scholars in the UCLA program. The AMGEN Scholars Program allows undergraduates to participate internationally in cutting-edge research opportunities at one of 17 world-class institutions. At Lafayette, she investigated the fabrication of PNIPAM-collagen thermally responsive hydrogels for drug delivery applications in a senior honors thesis, mentored by Professor Christopher Anderson.

Leggieri, originally from East Stroudsburg, PA, was awarded the Barry Goldwater Scholarship. The Goldwater Scholarship helps cover tuition costs for undergraduate students in STEM

pursuing careers in research. Considered the most prestigious scholarship in the STEM field, it is awarded to only 300 highly qualified college sophomores and juniors across the United States. This merit scholarship was established by Congress in 1986 to honor the former U.S. Senator and presidential candidate by the same name.

Leggieri plans to earn a PhD in chemical engineering or bioengineering while pursuing research opportunities integrating both biotechnology and integrating alternative energy. He recently presented his work on ethyl ester cold flow properties at the 2017 AIChE annual meeting held in Minneapolis (see national conference article) and was first author on an article recently accepted by the scientific journal *Fuel*. Leggieri has worked with Professors Michael Senra and Lindsay Soh, and has listed both professors as mentors during his time at Lafayette.

Congratulations to Cara, Sean, and Patrick and good luck in your future researching endeavors!

DICKERSON (from Page 2)

This past summer, My'Kelya interned for Amtrak as an Environmental Specialist Intern. She worked as a manager and HR representative as she managed and hired field workers, tested train stations for their environmental safety, and made sure that all trains were meeting safety standards for all

railroads. My'Kelya envisions working in a place where she can work with youths and cars, such as Disney or Tesla. At Disney she would like to examine the chemical side of rides so that they will be safe for people with asthma, or Tesla, working with the lithium ion batteries for cars.

One last message from My'Kelya: "I want the people in my neighborhood, especially the youth, to know that it's possible to get a good education in a difficult field, all you have to do is work hard and have faith."

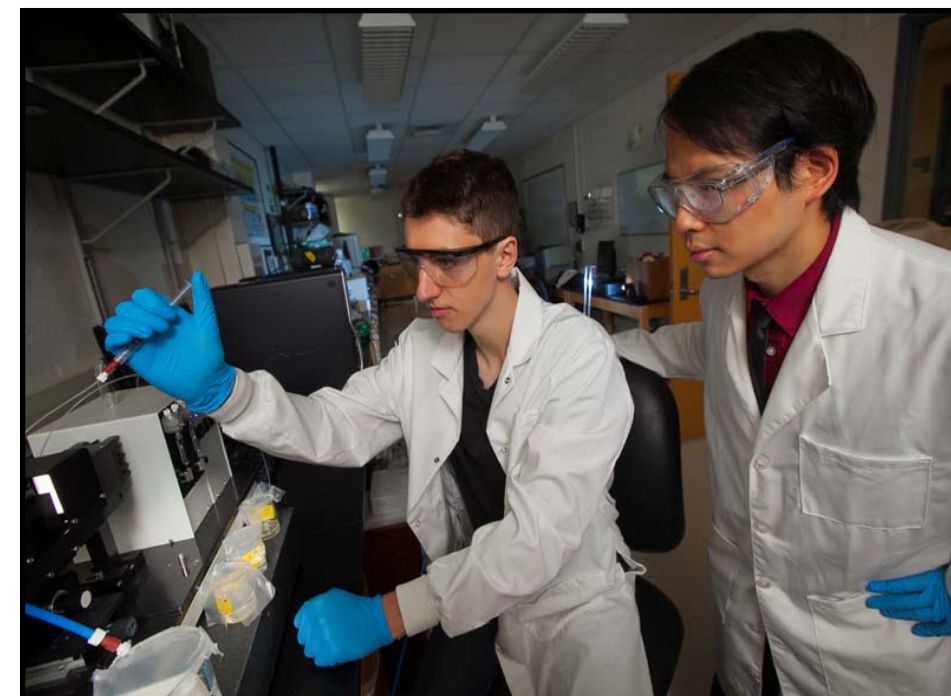
Assistant Professor Joseph Woo Receives Student Government Teaching Award

Trent Eastman, '19.

Assistant Professor Joseph Woo was awarded the Student Government Superior Teaching Award for Natural Science or Engineering for the 2016-2017 academic year! Every year, this award is given to the faculty member who embodies the skills and traits of outstanding teaching technique, and the winner is chosen by a student vote among three finalists selected by a student panel based on student nominations.

Students are asked to nominate faculty who have taught above and beyond the expectations of the students and impacted them positively both inside and outside the classroom. Professor Woo is very thankful to have received this honor. In teaching, Professor Woo strives to be the professor he wishes he had.

During his undergraduate studies he struggled in the classes he currently teaches, Process Controls and Thermodynamics. Because of those struggles he now better understands where his students can get tripped up. He be-



Assistant Professor Joseph Woo (R) and Thomas Beier '19 (L) performing laboratory research on atmospheric chemistry.

lieves it is very important to see your mistakes and not only learn from them, but also be transparent with the students about them.

From a student perspective, his intense desire to constantly improve his classes

and teaching style is inspiring to students. Thank you Professor Woo for your hard work and your dedication to our education!

Chemical Engineering Elective Focus: Polymers

Polymers is a Chemical Engineering elective course currently being taught by Assistant Professor Melissa Gordon '11. Alexandra Bord ('19) sat down with Professor Gordon to hear her thoughts about teaching the course.

Why did you want to teach Polymers?

"I wanted to teach Polymers because I am really interested in it and I got my PhD in the subject as well. I hope the class will encourage students to pursue the area in their futures. I was happy to come back to alma-mater to teach something I am so passionate about."

What do you hope the students

get out of the class?

"I want to ensure that the students have a general understanding of the fundamentals of polymer chemistry and polymerizations. I hope that some students become interested in a field they may have only heard briefly about, and potentially could even consider this field for their graduate work. I also get a sense of fulfillment sharing the various projects I have worked on. I am working on how to best explain the field of polymers to those who are interested, but may not have had any previous experience."

What are your goals?

"The overall goal of the class is to have

students learn the most about polymers with the most excitement. I definitely try to keep the excitement alive, even in a lecture."



Assistant Professor Melissa Gordon '11.