

Chemical Engineering Department

Welcome to Our Third Annual Newsletter!

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Message From The Chair

Dear Alumni and Friends,

Greetings from the New Mexico Tech Chemical Engineering Department. 2010 was a very busy year for us. We underwent accreditation and saw a drastic growth in our enrollment over the past year from the low 90's to nearly 110.

At the 2010 graduation ceremony, our students swept the undergraduate awards with Kaourar "Coco" Abbou-Oucherif winning the Brown Award, and Caitlin Allen & Clay Beevers each winning a Cramer Award. These awards and other awards won by our students are a testament to the quality of our graduates in chemical engineering.

We, as well as all engineering departments, underwent an ABET accreditation evaluation starting in June of 2010. The evaluation includes a written report, site visit, and roughly eight months of follow-up from the visit before a final decision is made. All departments expect to receive ABET accreditation though a final decision is not made until this summer. It is important that I thank Professors Bretz, Riley, and Tartis for the amount of work they put into helping with all aspects of accreditation, as well as the Chemical Engineering Industrial Advisory Board whose contributions were noted by our evaluator as a program strength.

One area that we need improvement in is surveying our alumni. The process broke down for a few years, so there was not a lot of data to share with our evaluator. We have set-up department Facebook and LinkedIn pages to reconnect with alumni. Please let us know of any contact information changes, so we can keep in touch and gather the information we need for accreditation. Also, next year we would like to add an alumni updates section to the newsletter so you can see what your classmates are up to.

Finally, one of our goals as a department is to begin fundraising. Unlike many chemical engineering programs, our department was not started by an endowment. This leaves the department with essentially zero dollars for discretionary spending on things like workshops for faculty development, major equipment, guest speakers, and seed funding for new courses or student research. Currently a small core of alumni and advisory board members give to the department on an annual basis, but we would like to greatly increase the number of people who give to the department. Please consider giving to the department through the enclosed postcard or on our website.

Regards,

Corey Leclerc

New Chemical Engineering Lab Completed, Move-In Underway

M. Riley, Assistant Professor

A new laboratory for the Chemical Engineering department was completed in October 2010. The 800 square foot lab is located in what is currently being called the Workman Gold Annex, next to the Gold Building where the Mineral Museum is housed. In addition to the ChE lab, the Gold Annex also houses two Mechanical Engineering and one Civil Engineering lab.

The ChE lab was designed primarily to house the department's Unit Operations Lab, as well as Process Control labs. Future development of the two labs will merge process control and unit operations experiments, providing a unique education opportunity to combine the learning of both courses. The new lab is outfitted with multiple benches, shelving, and cabinets, multiple sinks, two fume hoods, two elephant trunks tied into the hood system, as well as compressed air, vacuum, and natural gas. While the primary function of the lab will be teaching, it was designed with flexibility in mind (four of the benches are in fact mobile, and most experiments will have a high degree of mobility as well) and will be able to serve as an additional research lab during non-class times.



The move and setup of the department's unit operation experiments has begun and will be completed during the summer of 2011. The first course, CHE 445L Unit Operations Laboratory, will be taught in the lab in the Fall 2011 semester. The Unit Operations experiments currently consist of a batch distillation column, a batch reactor, and packed absorption column, and an evaporative cooling unit. Two additional experiments are expected to be revived during the summer: a shell and tube heat exchanger and a fuel cell experiment, converted to run on methanol as well as hydrogen. A bioreactor and a pump technology demonstration unit are envisioned in the coming years. All experiments are being gradually fitted as the budget allows with additional monitoring and control functionality to both provide the students with a wider range of experience and process control experimentation capability. A new gas chromatograph was acquired in June 2010 through end-of-year university equipment funding, and will be incorporated into appropriate experiments as well. (Continued on page 3)

New Chemical Engineering Lab Completed, Move-In Underway

(From page 2) The move of the unit operations experiments to the new lab reduces crowding in our current teaching lab in MSEC 259. Changes to that lab have also begun. The computer lab has been expanded slightly to more easily accommodate the larger classes the department has been experiencing. New chairs have recently been acquired to replace the previous haphazard and often broken collection and have been much appreciated by the current students. The remaining section of the lab will be used in the near term primarily for student work space, particularly for our freshman and junior design labs, as well as additional research space. Long-term plans for this section of the lab have not yet been decided.

All of these changes are enhancing the education and research opportunities for our students. The Chemical Engineering faculty and staff will continue to work hard to develop these labs within our limited resources. Additional funds, however, are

always welcomed as they will help to maintain the department's educational strengths, while hastening our ability to usher in these improvements. Look to future newsletters as well as the department website for more updates on these exciting changes.



AIChE Dog wash Fundraiser

Earlier this year, AIChE began a new tradition. But it wasn't a car wash, it was a DOG WASH!!! Members showed up ready to get wet and washed about 25 dogs over the span of four hours.



The Dog Wash crew lines up for a photo.

Freshmen ChemE Cars



The Freshman class after the competition.

This year Chemical Engineering freshmen in Dr. Michaelann Tartis' class were given a \$50 budget to design and make a simple chemically propelled vehicle. Teams had to complete a Design and Experimental Review before vehicle construction and testing could begin. This plan had to include information on the reaction and its products and reactants. They also had to ensure that the vehicle was safe and would not emit flames, smoke, or harmful gases.

A new mentoring program headed by Chem E senior Justine Davidson provided new insight into car design for the freshmen. Each car group had two men-

tors, creating new networking between underclassmen and upperclassmen.

At the end of the semester, each team presented their research to the class and Chemical Engineering professors. They also presented their vehicles in a class-wide competition. The winning car was powered by a gas evolution and liquid ejection from a hydrochloric acid and sodium bicarbonate reaction. Winning team members were Eden Howard, PJ Trujillo, Vaughn Cahill, and Caitlyn Woznick. Their mentors were Lizzy Schares and Alyssa Rose, along with an honorary mentor, Randy Arnold.

Dr. Tartis and the freshman class would like to thank Dr. Altig of the Chemistry department, Norton Euart of the instrument room, all of the team mentors, and the staff at Gambles.



A team gets ready to compete.

Engineering Students Awards

Every year Chevron gives \$500 to AIChE for club activities, as well as a scholarship. On average, three to four students receive the yearly scholarship, given in the fall.

Department Highlight

Chemical Engineering Standout Techie, Alyssa Rose! See Alyssa's interview on the NMT website:

<http://www.nmt.edu/standout-techie-alyssa-rose>.



Chevron Scholarship winners: (from left to right) Alyssa Rose, Lee Massey, Justine Davidson, Garrett McKee, and Alex Albers.

Techie Receives Nation's Top Chemical Engineering Scholarship

SOCORRO, N.M. November 17, 2010 – Chemical engineering senior Mason Risley is the recipient of the top scholarship from the American Institute of Chemical Engineering.

A native of Santa Fe, Risley was selected from a nationwide pool of students to receive the John J. McKetta Scholarship. The \$5,000 award is based on a three-page essay about career goals, recommendation letters and academic performance.

"It's definitely a privilege and honor to receive this award," Risley said. "There's only one offered each year. It seems pretty prestigious. My transfer scholarship ran out last year, so I was falling into debt this semester. When I saw that I got this award, I was pretty relieved. I should be able to graduate without any debt. Considering I am putting myself through college, that's a big accomplishment. It's definitely an honor to receive this award."

Risley is the president of the student chapter of the AIChE. He was among about a dozen Tech students who attended the Institute's annual conference in Salt Lake City, where he was officially presented the award. Set to graduate in May 2011, Risley hopes to pursue a doctorate in chemical engineering, with a focus in fields of chemical kinetics or energy. Risley said he wants to leave a legacy of research, development, education and service to the field of chemical engineering.

"I'd like to make significant contributions to the discipline during my time as a chemical engineer," he said. "I feel the best way I can do that is to earn a doctorate. As for my career, I'd like to work in private industry, then be a professor after retiring from industry. I hope to use my experience to give back as much as I can to future engineers."

Risley spent one year at Santa Fe Community College before transferring to Tech. One of his instructors in Santa Fe, David Bloomfield, influenced him profoundly, Risley said.

As president of the student chapter of AIChE, Risley is emphasizing outreach efforts. He is working with Liz Burton, president of the Society of Women Engineers chapter at New Mexico Tech, to lay the groundwork for establishing a tutoring program at Socorro High School and Sarracino Middle School.

"I want to expose students to what engineering is all about," he said.

Working with Dr. Michael Riley for the past year, Risley is on the trail of a new clay-based material to be used as a catalyst in hydrogen fuel cells. He has conducted an extensive literature review and is testing new materials in the laboratory. He has learned to use a handful of mainstay lab instruments and honed his research skills along the way.

"Going into grad school, it's important to have research experience," Risley said. "The big



Mason receives his award at the AIChE Regional Conference.

gest benefit I've gotten out of my research is how to be as resourceful as possible. When you're on your own and you have to identify an approach to take for the research, figuring it out and pulling it off are crucial aspects. The research work ethic I've gained over the past year is also very valuable."

Risley submitted three letters of recommendation – from his chapter advisor Dr. Michaelann Tartis, his research advisor Riley and from chemistry professor Dr. Jeff Altig.

Tartis wrote that, "Mason has exuded enthusiasm, self-reliance, and leadership in and outside of the classroom. He is eager to learn and makes good use of his resources to ensure that his understanding of engineering is solid."

(continued on page 6)

(from page 5) Tartis also praised Risley for his leadership and participation in the AIChE chapter, including mentoring freshmen, getting underclassmen involved in the club and exposed to chemical engineering activities, creating a club website, fund-raising and event planning.

Riley wrote that Risley has performed above all expectations in research projects. Risley is working on catalyst deposition to

ionically-conductive nanoclays for use in fuel cell applications. He is also working to improve the efficiency and reduce time and labor associated with our ion-exchange and deposition processes.

For two years, Risley worked at the campus computing center as a user consultant. He served as a liaison between Dr. Jeff Altig's physical chemistry class and the computing center. In 2008, Risley worked as a

(continued on page 6)

Technical Student Worker for the Petroleum Recovery and Research Center, constructing a pH sensing electrode for high temperature and pressure CO₂ monitoring.

(More information about this scholarship and the complete article can be found on the NMT website.)

– NMT –

By Thomas Guengerich/New Mexico Tech

AIChE Annual Banquet

Friday, April 15 2011

Presentations & Lunch in WORKMAN 101

Senior Design Presentations 12:00pm

Lunch 12:00pm

Junior Design Presentations Immediately following

The Annual AIChE Banquet is scheduled for Friday, April 15, 2011, on campus-Fidel Third Floor Ballroom A at 5:00pm.

Buffet Dinner includes tarragon chicken, saffron potatoes with salad and dessert.

Price: \$20 per person or \$25 at the door.

RSVP by Friday, April 8.

Payment due by 10:00am Friday, April 15.

Email Karen at karen.balch@gmail.com



Guest Speaker: Dr. John Weigle

Dr. John Weigle is currently a Research and Development Engineer at the Los Alamos National Laboratory in Los Alamos, NM. He began his career at Los Alamos as a Postdoctoral Fellow in the Engineering Sciences and Applications Division in 2002, and currently works in the Weapon Systems Engineering Division.

His work at Los Alamos spans a wide spectrum of technical activities. Dr. Weigle has developed processes for producing designed nanostructures, conducted characterization and design studies on hydrogen scavengers, and characterized the aging phenomena of complex systems. His current focus is on developing advanced technologies to ensure nuclear weapon safety. Prior to joining Los Alamos, Dr. Weigle worked as a Research Associate for Calgon Carbon Corporation in Pittsburgh, PA, and as a Manufacturing Engineer for Dow Corning Corporation in Midland, MI.

Dr. Weigle received a B.S. in Chemical Engineering from Bucknell University in 1991, and a Ph.D. in Chemical Engineering from Pennsylvania State University in 1999. He is a licensed Professional Engineer in Pennsylvania.

2010-2011 Pictures

AIChE and Department Halloween BBQ



Hannah Sullivan, Renee Kafka and Mick Hahn won the costume contest.



AIChE President Mason Risley grills for staff and students alike.



AIChE Members line up after touring Ceramtec in Salt Lake City at the Regional AIChE conference.



Spring "Back To School" Bonfire



New at Tech: SNOW!!!

2010-2011 Pictures



Thomas Budner, Clay Beevers and Caitlin Allen



May 2010 Graduates.

Faculty and Upperclassmen turn out to watch the Freshmen test their Chem E cars



Dr. Riley and Vic Briseno



Dr. Tartis



Erica, Vic, Justine and Jacy



Dr. Altig and Dr. Leclerc

AIChE at the Regional Conference, Salt Lake City



Members in front of the Salt Palace.



Sunday morning at the Mormon Tabernacle Choir.



Playing hacky sack with Chem E's from around the country.



AIChE members got the chance to attend many technical presentations.



Mason prepares to sumo wrestle.



Mick Hahn and Mason Risley battle at the conference.



Members enjoy one of Salt Lake's many restaurants.

NM Tech AIChE Student Chapter

The American Institute of Chemical Engineers student chapter at NMT focuses on providing engineering and science students with exposure to the myriad aspects of engineering through guest speakers, industry tours, and conference trips. We are also active in cultivating a diversified and involved collegiate community through campus events including volunteering, outreach, fundraising and working with other engineering clubs such as the Society of Women Engineers, the American Society of Mechanical Engineers, the Institute of Electrical and Electronics Engineers, the American Society of Civil Engineers, Tau Beta Pi, the American Association of Drilling Engineers and the Society of Petroleum Engineers. In addition to bringing together the campus community, we enjoy being involved with the Socorro community by helping students at Socorro High School and Sarricino Middle School with their course material through our tutoring program. We also help out at the annual Socorro Community Arts Party, the Science Olympiad competi-

tion, and the New Mexico State Science and Engineering Fair.

We have been working with the AIChE chapter at New Mexico State University to combine events such as last fall's tour of the Western Refining oil refinery in El Paso TX. We are also planning on having a car bomb demonstration here at Tech for both of our chapters. One of the highlights of the last year included going to the national AIChE conference in Salt Lake City, Utah. We had 15 of our members attend the conference, all of whom not only had a great time, but were able to network with chemical engineers throughout the country as well as attend several workshops on cutting edge chemical engineering fields. Having engineering students involved in our community and aware of the international engineering environment is a crucial aspect of our development as engineers; AIChE focused on these opportunities this year.

Mason Risley
NMT AIChE Chapter President

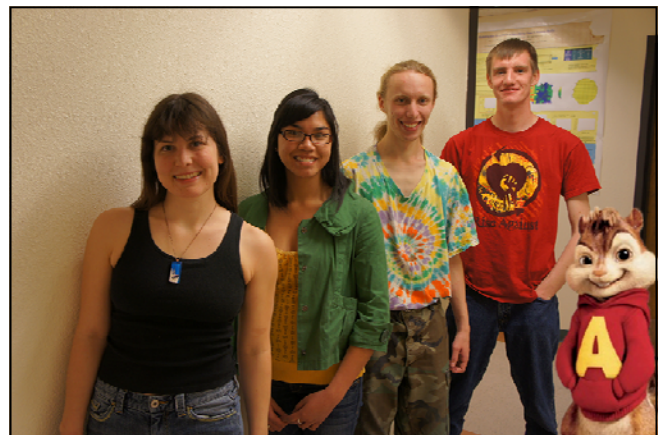
AIChE Officers

Officers of 2010-11



From left to right: CFO Amanda Trujillo, Web Developer James Fallt, Secretary Hannah Sullivan, Vice President Stephanie Gonzalez, and President Mason Risley

New Officers for 2011-12



From left to right: President Christina Pierce, Secretary Kathleen Hunyh, Vice President Spencer Lane, CFO Allen Erickson, and Web Developer Dustin Lima.

*** Photoshop artwork done by Mason Risley***

Two Tech Students Earn Industry Scholarships



Stephanie Gonzalez and Randy Arnold

SOCORRO, N.M. June 14, 2010 – Two New Mexico Tech chemical engineering students won competitive scholarships from a Texas natural gas organization.

Rising junior Randall Arnold and rising senior Stephanie Gonzalez each earned \$3,000 awards from the Permian Basin chapter of the Gas Processors Association. The scholarships are intended to reward exceptional engineering students from southeastern New Mexico and west Texas who have shown an interest in a career in the natural gas industry. Arnold is from Carlsbad; Gonzalez is from Roswell.

“I was so excited to find out I got it,” Gonzalez said. “I didn’t think I’d win it. The scholarship will totally help out a lot.”

Gonzalez said she was also surprised to find out the size of the award.

“Pure joy! I was absolutely elated that I got this scholarship,” Arnold said. “That’s a lot of money. I was surprised it was \$3,000.”

Dr. Mike Riley, professor of chemical engineering, encouraged the two to apply for the scholarship.

“New Mexico Tech has had a good relationship with the Gas Processors Association for quite a while,” Riley said. “It’s been incredibly beneficial for our students. They’ve been very supportive and helpful.”

Both students have impressive resumés with volunteerism and civic involvement.

Gonzalez is a Student Association senator, Residence Hall Association officer, vice president of the Tech chapter of the American Institute of Chemical Engineering and an active member of both InterVarsity Christian Fellowship and Society of Hispanic Professional Engineers. She has volunteered for Science Olympiad, Puerto Seguro homeless shelter and the Socorro animal shelter. She is also working at Tech this summer as a conference coordinator.

“Natural gas processing is the backbone of New Mexico’s energy sources,” Gonzalez wrote in her scholarship application form. “Natural gas helps improve the lives of New Mexicans and I would enjoy a career in natural gas because I think it’s an essential part of the economy.”

Arnold is a member of the American Institute of Chemical Engineers and the Chemistry Club. He also volunteers in his hometown of Carlsbad, including at the local library, and at Puerto Seguro homeless shelter in Socorro. He is a residential assistant at Tech and, overall, he enjoys life at Tech.

“I am a devoted student and I proudly support New Mexico Tech,” he said. “And I love assisting other students in their classes.”

Arnold said a chemical engineering degree from Tech will present him with many career options, including the natural gas industry.

“Natural gas is a big part of Carlsbad’s economy,” Arnold said. “I have family here – a lot of family – so it will be good to stick around Carlsbad and have some job security.”

In addition to the scholarships, the Tech student winners also received a set of engineering data books, including a digital version, which are an essential source of data for the gas processing industry. Gonzalez said the books are two 3-inch binders with a wealth of information.

– NMT –

By Thomas Guengerich/New Mexico Tech

Giving

The Chemical Engineering Department at New Mexico Tech is truly a unique program with an unparalleled commitment to developing undergraduates into solid engineers. The vision of our program is to expand on the experience of students outside of the lecture hall. Our goals involve increasing NM Tech's student presence at regional and national AIChE conferences, supporting expenses for independent studies and national design competitions, as well as providing new equipment for the student's labs. All of these efforts will require outside forms of support.

There are various forms of donations. Donations can also be made directly to the department to assist with large or small department upgrades, pieces of equipment, faculty development, or any other discretionary needs.

Thank You!

We would like to thank the following donors for their generous contributions to the department:

Dave Boneau
 Dick Traeger
 Jason Harper
 Peter Valdez
 Erick Dang
 Ian Meason

In addition to our annual giving drive, the department has a brand new unnamed laboratory. If your company would like to sponsor our laboratory, please contact the department.

2010-2011 Chemical Engineering Advisory Board Members

Dick Traeger	Retired	Albuquerque, NM
Lincoln D. Busselle	Intel	Albuquerque, NM
Kevin Honnell	LANL	Los Alamos, NM
Don Hooper	Intel	Albuquerque, NM
Dave Boneau	Yates Petroleum	Artesia, NM
Justine Johannes	Sandia National Laboratories	Albuquerque, NM
Jason Harper	Sandia National Laboratories	Albuquerque, NM
Glenn Kuswa	Retired	Albuquerque, NM
Jay Carnes	LANL	Los Alamos, NM