

June 11 tornado hits engineering complex

Kansas will be forever linked with tornadoes because of its depiction in the Wizard of Oz. Manhattan residents and K-State students, faculty, and staff witnessed the destructive potential of a tornado firsthand on June 11, 2008. A tornado, topping out at an EF4 classification—the second-strongest class of tornado with wind speeds between 150 and 200 miles per hour—tore its way through Manhattan. After first destroying 45 single-family homes in the Miller Ranch and Amherst Avenue areas and damaging several businesses on Seth Childs Boulevard—Waters True Value hardware store was completely destroyed, while Little Apple Toyota Honda was badly damaged—the tornado continued in a northeast path to the K-State campus.

By the time the tornado reached campus, it had dissipated to a class EF1. Nevertheless, it caused significant damage to the engineering complex and to Ward, Weber, Moore, and Cardwell halls. Most of the damage was in the form of broken windows, roof damage, and



photo by Steve Coulson

damage to light poles and landscaping. It has been estimated that repair costs on campus will exceed \$20 million.

The main damage to Durland Hall was a shattered window on the main floor on the west side of the building. Minor damage to a few fume hoods was also sustained. Rathbone Hall was more substantially damaged as the tornado broke many of the windows in the atrium, leaving shattered glass throughout the area and closing it for several days. Because of the storm damage, enrollment was moved to Bramlage Coliseum on Thursday, June 12 before being returned to the engineering complex in subsequent days.

Several chemical engineering graduate students were in Durland Hall when the tornado hit. Chien-Chang Huang, Ph.D. student in Prof. Keith Hohn's laboratory, noted that he came to the "wrong building" when he chose to leave his apartment at Jardine, which had no damage, and come to Durland to wait out the storm.

Li Du, Ph.D. student in Prof. Jim Edgar's

Uprooted trees marred the landscape near Durland Hall.

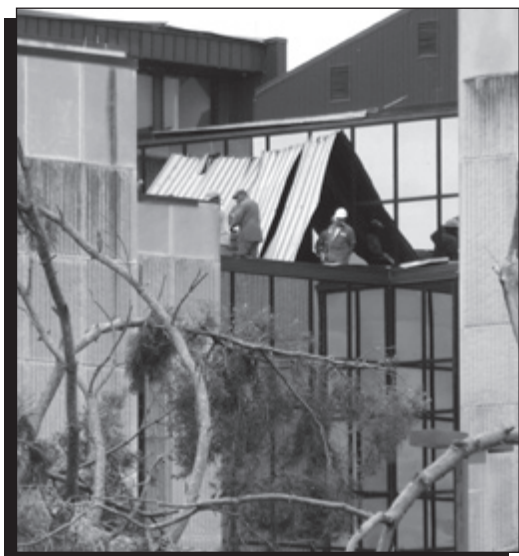


photo by Al Rankin

Fiedler Hall, above, had extensive roof damage.

In this issue

Dept. head message . . . 2

Nanostructured media . . . 3

Fan's 50 years 4

Seminar series 6

Undergrad research. . . 11

Editors
Keith Hohn
Mary Rezac

Continued on page 9

Message from the department head



Do you ever wonder what others would think about you if they could read the folder titles in your email system? The past year has seen the following additions to my list:

- Mold summer 2007
- Tornado summer 2008
- Durland 1029 renovations
- Durland 2051 renovations
- Student awards 07-08
- Energy research
- Plus about 50 other less interesting items.

In retrospect, I wonder about the pessimist in me that added the date to the first two items. Am I expecting more mold or additional tornadoes? I don't really think so (but as I write this, we're getting water on our hallway floors through a missing window caused by the tornado – so maybe there will be a Mold summer 2008 after all). Actually, I suspect I knew that in a few years, the events would blur together and I'd have a hard time correctly placing them in time.

In other sections of the newsletter, you can read about "Tornado summer 2008." No one was injured and we're making progress in getting the repairs done, so all should turn out well in the end. Unfortunately, it will be a costly event for the university and will almost certainly divert funds away from student activities.

"Mold summer 2007" was an interesting few months which resulted in complete modernization of the majority of the faculty offices. New paint, new white boards... new walls! On a very hot day last summer when the AC was out, a chilled-water coil burst, flooding all faculty offices on the south side of the building and resulting in two to six inches of standing water in each office. The next day saw removal of all standing water and initial attempts to dry books and papers. Unfortunately, it also saw a day of nearly 100 °F temperatures and another day without air conditioning. Have you guessed yet why the folder's not called "Flood 2007" or "Water 2007" but rather "Mold

2007?" The flooding was cleaned up in a day, far too quick to merit an email folder. Unfortunately, the combination of water, warmth, and our 1970s construction techniques resulted in significant mold growth between the two sheets of wallboard which comprised the room walls. Two weeks after the flood, at a point where the mold spores were prolific and a few weeks before students were scheduled back on campus, the affected faculty moved out of their offices to allow for mold remediation and repairs. For Professors Erickson, Glasgow, and Walawender, this was a moderately painful process, but provided an opportunity to examine the decades of materials that had accumulated in their offices since moving in in 1976. Repairs were complete by mid-October, with shiny new paint and fewer copies of student papers from the 1970s, '80s, and '90s.

The past year has been more than a series of man-made and natural disasters. Student successes are numerous and will be detailed elsewhere in the newsletter. This, coupled with a strong job market, has resulted in continued growth in our UG population to a current population of approximately 180 students. Due to changes in hiring trends, the majority of juniors and a significant fraction of sophomores are completing industrial internships this summer. Most students will accept full-time positions in the fall term. Internships are coordinated in both the fall and spring terms. If you'd like to learn more about recruiting these students to your firm, please give us a call.

As always, we hope that you'll drop in and see us when you're in Manhattan. The next College of Engineering Open House will be April 17- 18, 2009, and is always a great time to learn about the exciting projects on which students and faculty are working.

All the best,

Mary Rezac

Nanostructured media for air purification



Walton

Nanoporous materials play a crucial role in air purification for both military and non-military applications. Impregnated, activated carbon has been used in most air purification systems for over a decade. This material performs well in removing low vapor pressure compounds

from air, but it is not effective in filtering gases such as carbon monoxide. This inability to adsorb certain toxic gases is a major problem, and the solution will require the development of novel materials.

Dr. Krista Walton and her research group are confronting one of the primary challenges in designing or identifying novel porous materials for adsorption applications: developing an in-depth understanding of structure-property relations and host-guest interactions. This in-

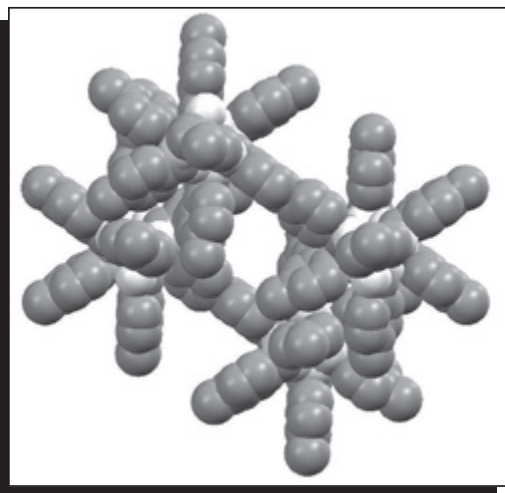


Figure 1. Crystal structure of Zn(BDC)(TED)

formation is critical because if we understand the adsorption mechanisms, i.e., how, where, and why a molecule adsorbs in a certain material, we can then exploit this knowledge to design structures that interact more effectively with the molecule of interest.

The goal of one project in the Walton research laboratory is to design, synthesize, and examine metal-organic frameworks (MOFs) for use in air purification systems. Carbon monoxide is one of our primary target mol-

ecules. The removal of CO from air requires a material with small pores that is unaffected by humidity. The group has been working on several mixed-ligand MOFs with hydrophobic surfaces that satisfy these requirements. The MOFs are assembled from zinc, copper, or cobalt, with two organic ligands, benzene dicarboxylic acid and triethylenediamine. The crystal structure is shown in Figure 1.

These materials are highly crystalline as shown by the SEM micrograph in Figure 2. Along with the high degree of crystallinity, the high porosity and high surface area of these MOFs lead to excellent adsorption properties. Currently, the group is focusing on extending their knowledge of metal-organic frameworks to design porous materials which possess open metal sites while preserving the hydrophobic surface. The open metal sites will enhance interactions with various gas molecules. Results from this work will lead to great improvements in air purification systems.

This material is based upon work supported by the U.S. Department of Defense Army Research Office under contract W911NF-07-1-0355, and by the National Science Foundation under Grant No. 0700489.

For additional information about Dr. Walton's research, please visit her Web site at www.che.ksu.edu/research/walton

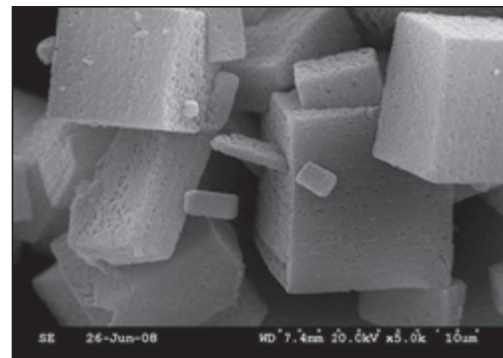


Figure 2. SEM micrograph of Zn(BDC)(TED)

Research sponsors for the Walton Group

- Army Research Office – YIP
- National Science Foundation
- Defense Threat-Reduction Agency

Recent publications

- Dubbledam, D., C.J. Galvin, K.S. Walton, D.E. Ellis, and R.Q. Snurr. Separation and Molecular-Level Segregation of Complex Alkane Mixtures Using Metal-Organic Frameworks, *Journal of the American Chemical Society*, in press.
- Karra, J.R., and K.S. Walton. Effect of Open Metal Sites on Adsorption of Polar and Nonpolar Molecules in Metal-Organic Framework Cu-BTC, *Langmuir*, in press.
- Walton, K. S., A. R. Millward, D. Dubbledam, H. Frost, J. J. Low, O. M. Yaghi, and R. Q. Snurr. Understanding Inflections and Steps in Carbon Dioxide Adsorption Isotherms in Metal-Organic Frameworks, *Journal of the American Chemical Society*, 2008, 130, 406-407.
- Walton, K. S. and R. Q. Snurr. Applicability of the BET Method for Determining Surface Areas of Metal-Organic Frameworks, *Journal of the American Chemical Society*, 2007, 129, 8552-8556.
- Dubbledam, D., K. S. Walton, D. E. Ellis, and R. Q. Snurr. Exceptional Negative Thermal Expansion in Metal-Organic Frameworks, *Angewandte Chemie*, 2007, 46, 4496-4499.

Fan celebrates 50 years of service to department

For the past 50 years, L.T. Fan has played a vital role in the department of chemical engineering at Kansas State University as a researcher, a teacher, and as department head for 30 years. Fan's amazing longevity and significant contributions to the department were celebrated March 30, 2008, at a banquet at the Holiday Inn in Manhattan.

Fan first came to K-State from Taiwan as a student, receiving his M.S. in chemical engineering. After getting his Ph.D. in chemical engineering and M.S. in mathematics from West Virginia University, Fan returned to K-State as an instructor in the department in 1958. This began his 50 years of service here. In 1959, he was named an assistant professor and rose to the rank of full professor in 1963. He began a 30-year stint as department head in 1968.

Fan has been enormously productive as a researcher, publishing more than 600 journal articles in a wide range of topics including chemical-reaction engineering, biochemical engineering, transport phenomena, and systems engineering. He has been recognized for his outstanding research, winning numerous awards, including being named a University Distinguished Professor at K-State, receiving the first-ever Engineering Research Excellence Award from the College of Engineering at K-State, and winning the Computing in Chemical Engineering Award from the American Institute of Chemical Engineering in 2003.

Many gathered to celebrate Fan's 50 years of service: faculty and staff, present and past; his wife, Eva; and speaker for the 2008 L.T. Fan Lecture, Darsh Wasan. Current department head, Mary Rezac, spoke about Fan's many contributions to the department, and faculty peers from various periods in his career—Ben Kyle, Larry Glasgow, and Keith Hohn—spoke about their memories of working with him. In particular, Fan was lauded for his leadership in getting Durland Hall constructed, for his efforts to establish a chemical engineering Ph.D. program at K-State, and for his productive and influential research program.

On the day following the banquet, the annual L.T. Fan Lecture was delivered by Darsh Wasan, Motorola chair and chemical engineering professor at the Illinois Institute of Technology. Wasan spoke on "Novel Fluid-Particle Interaction Mechanisms in Dispersions."



Mike Chen (PhD 1964), left, and L.T. Fan pose in an early photo. Chen was Fan's 12th Ph.D. student. He and his wife, Alice, recently honored Fan with a \$500 donation to the chemical engineering department.



Larry Erickson, left, and L.T. Fan examine motionless mixtures in this photograph from 1973.



Left to right: Eva Fan, L.T. Fan, Darsh Wasan, and Mary Rezac gather after the L.T. Fan Lecture.

Major Awards Won by L.T. Fan

- Kansas State University Distinguished Professor, 1984
- Irvin E. Youngberg Research Award (Higuchi/Endowment Research Achievement Award), University of Kansas, 1987
- Hausner Award, Fine Particle Society, 1992
- Engineering Research Excellence Award, K-State College of Engineering, 1995
- Kansas State University Presidential Award for Outstanding Department Head, 1998
- Taiwanese-American Foundation, Science and Engineering Achievement Award, 2001
- Computing in Chemical Engineering Award, American Institute of Chemical Engineering, 2003
- Erwin W. Segebrecht Distinguished Faculty Achievement Award, Kansas State University Departments of Chemistry and Chemical Engineering, 2003

Alumni notes

- Brian (BS 2002) and Kaila (BS 2002) Lindsay welcomed Nathan Joseph Lindsay on Nov. 22, 2007.
- Sharon (Hagan) Hamaker (PhD 2004) and her husband, Chris, announce the arrival of their second son, Jonah Joseph Hamaker, Nov. 2, 2007. He has a big brother, Joshua. The Hamakers reside in Normal, Ill.
- Kyle Smith (BS 2007) was highlighted in a *Fortune Magazine* feature, "Faces of the Future."
- Professor Jeffrey Hubbell (BS 1982) of Ecole Polytechnique Federale de Lausanne and director of the ETH Institute for Biomedical Engineering received the 2008 AIChE Alpha Chi Sigma Award for his seminal contributions to biomaterials science and engineering. Hubbell also received the 2008 Food, Pharmaceuticals, and Bioengineering Award of AIChE.



Nathan Lindsay



Joshua and Jonah Hamaker

Open House skit wins Gold Brick award



Chemical engineering undergraduates won the 2008 Open House skit competition on a rainy April afternoon. The skit focused on conventional and futuristic energy sources and how chemical engineering is central to achieving future success. Make plans to attend next year's parade set for April 17, 2009.

CONOCO PHILLIPS SUPPORTS D

Seminars by national and international leaders in academics, government, and industry allow our students to stay abreast of the trends in the profession as well as new technological developments. Through generous support of the ConocoPhillips Corporation, the department hosted 11 visitors during the 2007-2008 academic year. In 2008-2009, we anticipate hosting another 15.

For fall 2008, the presentations listed to the right are planned:

- **September 10, 2008** . . . Lealon Martin, assistant professor, ch
- **September 17, 2008** . . . Ralph Yang, professor, chemical engine
- **October 1, 2008** Robert Armstrong, professor, chemical
- **October 8, 2008** Pablo Debenedetti, professor, chemica
- **October 15, 2008** James Edgar, professor, chemical engine
- **October 22, 2008** Brian Korgel, professor, chemical engi
- **October 29, 2008** David Bliss, Hanscom Air Force Base

CHE ACADEMY MEMBERS JU

INDIVIDUALS

Academy Associate

\$250 - \$499

Jack and Alberta Bailie
 Bill and Beth Barrett
 John Boehnke
 Thomas Cox
 Shelli and John Dennis
 Michael Dole
 Tansukhlal Dorawala
 Cyrus Elting Jr
 Cady and Pamela Engler
 Kirk Jilg
 Donald and Nancy Livingston
 Stephen and Dixie Long
 Steven Marzullo
 Kurt and Theresa Nuss
 Ross and Lise Ostenberg
 Sarah Patterson
 Thatcher and Anne Reist
 Tracy Sandow
 John Stewart

Edward and Dorothy Travnicek
 Kerry Williams
 Debra Zoloty

Partner

\$500 - \$999

Terrie and Arnold Allemang
 Bryan Anderson
 Jeffrey and Trixie Bone
 Sherri and Michael Burnette
 David and Kathy Carr
 Te-Yu and Shu-Chen Chen
 Rex and Gloria Garrelts
 Erin Green
 Warren and Gisela Kennedy
 Tracey and Larry Lindeen
 Robert and Betty Meyer
 Kathleen Nafus
 Randy Newcomer
 Chris and Edward Null
 Morey Oldweiler
 David and Leah Ott
 Joseph Rahija Jr.
 Marc and Jody Ramsdale

Mary Rezac and Peter Pfromm
 Dennis Rogalsky
 Ann and Donald Schaechtel
 Christine Steichen
 Ralph Wedd

Fellow

\$1000 - \$2499

Marla and Wayne Benyshek
 Lyn and Jerri Boyer
 Michael and Pamela Brown
 Tom and Rosaline Carlisle
 Dick and Mary Elizabeth Corbin
 Matthew and Lynn Dassow
 Lewis Ho
 Ed and Ming Hsu
 Robert Hubbard
 William and Karen Shump
 Jim Siefkin
 Bob and Peggy Smith
 Keith Steyer
 Fred and Lois Stoller
 Patrick and Carolyn Wilburn

Executive

\$2500 - \$4999

Tom and Marilyn
 Larry and Laurel
 Judith Fan
 L T and Eva Fan
 Gordon and Joyce
 Charlotte Gollobi
 Wayne and Barbara
 Art and Georgan
 Virginia Honstead
 Scott and Karen
 Dana and Liz Mat
 Judith Fan and R
 Don and Barbara
 Norman and Don
 Spencer and Susa

DEPARTMENTAL SEMINAR SERIES

Chemical engineering, Rensselaer Polytechnic Institute

Engineering, University of Michigan

Engineering, Massachusetts Institute of Technology

Chemical engineering, Princeton University

Engineering, Kansas State University Distinguished Graduate Faculty Award Presentation

Engineering, University of Texas at Austin



Fall seminars are normally held at 2:30 p.m. on Wednesdays in Durland 1029. Spring seminars are held at 10:30 a.m. on Tuesdays in the same location. The seminars are free and open to the public.

JULY 1, 2007—JUNE 30, 2008

Member

\$2500+

Barrett
Erickson

Goering

Harms

Hiser

Love

Steyer

Taylor

Tetlow

Tholstrup

Barrett

Erickson

Goering

Harms

Hiser

Love

Steyer

Taylor

Tetlow

Tholstrup

Founder

\$25,000+ Lifetime Giving

Terrie and Arnold Allemang
Tom and Marilyn Barrett
Dick and Mary Elizabeth Corbin
Cosmo Ec Co Ltd
Larry and Laurel Erickson
Joe Hyer
Judith Fan and Robert Reay
L T and Eva Fan
Gordon and Joyce Goering
Len and Charlotte Gollobin
Art and Georganne Hiser
William and Virginia Honstead
Ed and Ming Hsu
Scott and Karen Love
Ken Martin
Don and Barbara Riedl
Bob and Peggy Smith
Keith Steyer
Tim and Sharon Taylor
Norman and Donna Tetlow
Charles Tillotson

CORPORATIONS

Academy Associate

\$250 - \$499

BP
The Boeing Company
The Williams Companies Inc
Valero Energy Corporation

Partner

\$500 - \$999

ChevronTexaco
Dow Corning Corporation
Pella Rolscreen Foundation
Quaker Chemical Foundation

Fellow

\$1000 - \$2499

Burns & McDonnell Foundation
Cargill Inc
Pfizer Foundation
Shell Oil Company Foundation
Tesoro Petroleum Corporation

Executive Member

\$2500+

Akron Community Foundation

Founder

\$25,000+ Lifetime Giving

Chevron Phillips Chemical
Company LP
ConocoPhillips
E I Du Pont De Nemours and
Company
ExxonMobil Foundation
KUBOTA Corporation
Mobil Foundation Inc
Monsanto Company
Nisshin Flour Milling Co, Ltd
The Dow Chemical Company
The Dow Chemical Foundation
The Procter & Gamble Mfg
Company

Chemical engineering M.S. and Ph.D. graduates

May 2007

Andres Argoti – (Fan) (PhD) KSU,
Research Associate

August 2007

Jimmy Chow – (Erickson) (MS, Distance)
Bayer

December 2007

Juan Salazar – (Hohn) (PhD) University of
Chicago, Post-Doctoral Assoc.

May 2008

Kyle Swanson – (Edgar) (MS) II-VI, Inc.
Clinton Whiteley – (Erickson) (MS) KSU,
PhD program
Russ McDonald – (Glasgow) (MS) Intel

August 2008

Chundi Cao – (Hohn) (PhD)
Pacific Northwest National Laboratory,
Post-Doctoral Assoc.
Satish Santharaman – (Erickson) (PhD)
Kansas Dept. of Health and Environment
Xiangxin Yang – (Erickson) (PhD)
Pacific Northwest National Laboratory,
Staff

Chemical engineering B.S. graduates



December 2007

Ang, Kar – seeking
Dunn, Timothy – Exxon-Mobil
Jorgenson, Cody – Black and Veatch
Pope, Michael – Occidental
Richards, Tanner – Cargill

May 2008 graduates

Al Shammaa, Abdulrhaman – Kuwait Oil
Bass, Ranier – Frontier Oil
Bollin, Steve – ADM
Cocke Kaylee – Burns and McDonnell
Frampton, Christopher – Cargill
Gurtler, Ben – Koch-Glitsch
Hacker, Joseph – Ulysses High School
Hanson, Michael – Chesapeake Energy
Harper, David – seeking
Hemphill, Deborah – Burnam Composites
Johnson, Erin – Dow Chemical
Machauf, Ilana – Schlumberger
Mercurio, Lise – Dow Chemical
Pharmaceuticals
Pankratz, Savanna – VCP Midstream
Rohlfing, Ryan – Linde BOC
Schroeder, Matthew – Kansas State
University, ChE graduate student
Service, William – ConocoPhillips
Stern, Jacob – ADM
Voigt, Emily – University of Wisconsin,
ChE graduate student
Young, Matthew – NCRA

Faculty and staff notes

■ Sigifredo Castro was named 2007 Outstanding Junior Scientist by the K-State chapter of Sigma Xi. This award is given in recognition of outstanding ability in scientific research, as judged by nominations, peer review, and recommendations.



Castro

■ James Edgar was awarded the Commerce Bank Distinguished Graduate Faculty Award. He was recognized at the K-State graduate school commencement ceremony Dec. 7, 2007. A reception in his honor was held May 6, 2008. This award includes a \$2500 honorarium. Edgar was lauded for his pioneering contributions to the field of wide-band gap semiconductors that use nitride compounds. His research has improved the materials that are the building blocks of a new generation of micro devices.



Edgar

■ Larry Erickson received a Kansas Association for Conservation and Environmental Education Award given annually to a pre-K to 16 educator. Erickson was honored for his instruction of more than 1000 chemical engineering students, his role as director of the Great Plains/Rocky Mountain Hazardous Substance Research Center, and recent establishment of the Consortium for Environmental Stewardship and Sustainability at K-State.



Erickson



Fan

■ L.T. Fan received the Particle Technology Forum Award from the Particle Technology

Forum of the AIChE at the institute's 2007 annual meeting in Salt Lake City.

■ Larry Glasgow was awarded the Charles H. Scholer Faculty Achievement Award.



Glasgow



Schlup

■ John Schlup was named a Wakonse Fellow, and in this capacity attended the Wakonse Conference on Teaching at Camp Wakonse, Mich., May 22-27.

■ Florence Sperman received the 2008 College of Engineering Above and Beyond Staff Award for her outstanding contributions to the department of chemical engineering and the College of Engineering. She was also recognized by the K-State chapter of AIChE for her 20 years of service.



Sperman

June 11 tornado damage

Continued from page 1

laboratory, had come to Durland to work on her research. She was on her way to the basement from her second-floor office when the tornado hit. While noting that it is hard to describe the feeling of being in the tornado, Li said that it felt like everything was shaking and everything seemed blurry. Then she felt as if she was being "sucked by something." Along with these feelings, Li said she could hear numerous loud noises: things being smashed, glass being broken. It wasn't until after the tornado had passed that she realized how devastating it had been. Everything was dark because the power had gone out, but when the lightning struck, she could see the damage in the area. Li noted the amazing amount of branches from trees

littering the area. She also saw that the roof on the fraternity house across the street had been lifted off, and noted the damage to Fiedler Hall and to many cars in the parking lot. Li had heard about tornadoes and seen them on television but now has a new respect for the power of nature.

Chemical engineering students, faculty, and staff were fortunate to not be significantly impacted by the tornado. Prof. Hohn and his family live in the Miller Ranch neighborhood and witnessed damage to many of their neighbors' homes, but sustained only minor damage to their home—some roof damage, a cracked glass door, and missing playground equipment.

Student notes



Williamson



Cocke



Voigt



Cao



Skov

■ K-State chemical engineering students received the National Outstanding Chapter Award for the 13th consecutive year at the AIChE annual meeting in Salt Lake City, Utah.

■ Eleven students attended the regional AIChE conference at the University of Nebraska-Lincoln this spring. Three teams entered the regional ChemE Car Competition. One team was composed of seniors, a second of sophomores, and a third of freshmen. The senior and sophomore teams placed first and second, respectively, in the poster portion of the competition. The senior team placed second in the performance portion of the competition and received the Golden Tire Award for best car design.

■ Lance Williamson earned third place in the reaction and catalysis engineering section of the student poster competition at the 2007 AIChE annual meeting.

■ Kaylee Cocke was named St. Patricia at the 2008 College of Engineering Open House. This award is given to one female engineering student and is selected through a college-wide vote.

■ Emily Voigt received a National Science Foundation Graduate Research Fellowship. It awards a \$30,000 stipend and a \$1,500 cost-of-education allowance per year for three years of education, totaling nearly \$120,000 over three years. Fellows are expected to become knowledge experts who can contribute signifi-

cantly to research, teaching, and innovations in science and engineering. Voigt will enroll in the Ph.D. program in chemical and biological engineering at the University of Wisconsin in fall 2008. In addition to the NSF Fellowship, Voigt also received the Phi Kappa Phi Fellowship and the National Defense Science and Engineering Fellowship for graduate studies.

■ James Swanson was recognized for academic excellence by being inducted into the K-State chapter of Phi Kappa Phi.

■ Logan Proctor was selected for the K-State chapter of Mortar Board, a national college senior honor society. Members are chosen in their junior year based on exemplary leadership, scholarship, and service.

■ Chundi Cao received a departmental award for Best Graduate Student Presentation at the spring 2008 seminar series entitled, "In-Situ Infrared Study of Ignition of Methane Catalytic Partial Oxidation."

■ The Dow Scholars for 2008-2009 are Jose Armesto, Megan Battig, Jose Leal, and Bristen Krinhop. Kevin Skov was selected as the Dow Outstanding Junior.

■ Matthew Schroeder received the 2008 Richard G. Akins Student Service Award.

■ Amanda Jacobs, Elaine Lamm, and Ben Tryon were named Conoco-Phillips Spirit Scholars for 2008-2009.

Note: In our previous newsletter, we highlighted former chemical engineering students who had won national awards. We neglected to include **Shelli R. (Letellier) Dennis**, who received an NSF Graduate Fellowship to pursue her M.S. and Ph.D. degrees in bioengineering at the University of Washington. There are likely others we missed, so please contact us (hohn@ksu.edu) if you received a national award that was not recognized in the 2007 departmental newsletter.

Undergraduate students gain research experience

To broaden their educational experience, many K-State chemical engineering students are choosing to include an undergraduate research experience in their studies. Approximately 75% of K-State chemical engineering students perform undergraduate research before graduating.

This research experience can come in many forms. Some students seek opportunities at other universities in the summer, typically as part of a National Science Foundation-funded Research Experience for Undergraduates (REU) program. For example, Lance Williamson, current ChE senior, participated in summer REU programs at Pennsylvania State University and the University of Colorado in 2006 and 2007, respectively.

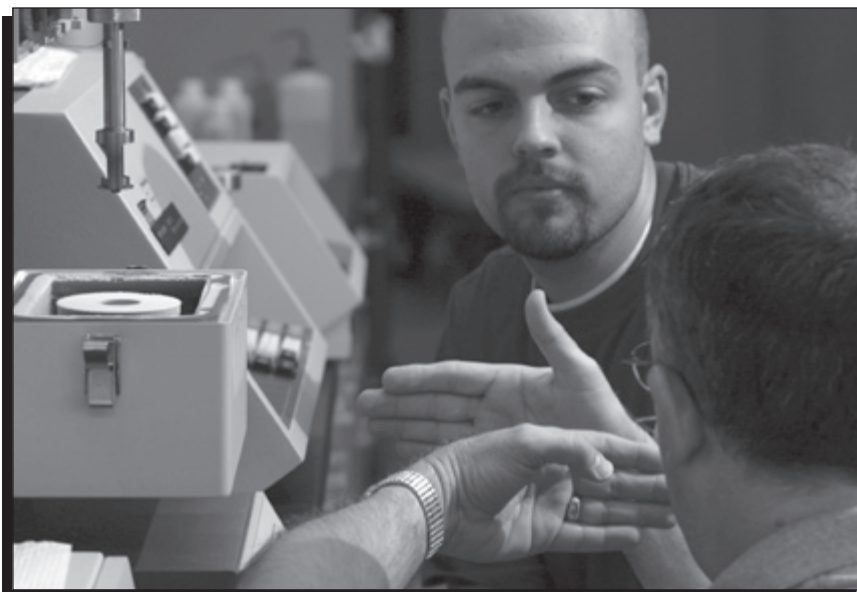
Other students perform research at K-State, either for pay or for credit. When the chemical engineering curriculum was substantially changed in 2002, one significant update involved students being required to take a three-hour elective within the chemical engineering department. A popular way to fulfill this elective is to perform undergraduate research with one of the chemical engineering professors.

Almost every chemical engineering professor has had undergraduate students in his or her laboratory in recent years. The role of the faculty research advisor is to choose the student's project, provide guidance to the student on how to conduct the research, and evaluate the student's performance if he or she is taking the class for credit. Students are typically required to submit a report detailing their results at the end of the research experience.

Undergraduate research can be extremely beneficial for students. It allows them to see practical applications of the coursework they are taking. It gives them experience in a career that might involve research. This is particularly beneficial for students who might be thinking about going to graduate school.

Ben Gurtler, ChE 2008, studied the retention of organic carbon in sea water under Prof. Peter Pfromm in both his junior and senior years.

"This experience allowed me to better understand the information that I was learning in the classroom. I think things are easier to learn when you actually see it happen in person rather than just reading it out of a book," Gurtler said.



Lance Williamson said of his undergraduate research experiences, "I took part in designing experiments, developing proper technique, and analyzing results. This experience showed me that I enjoy research and was very significant in my decision to pursue graduate school."

Prof. Keith Hohn explained one benefit to faculty in mentoring undergraduate researchers, "Undergraduate researchers can be very effective in trying out new research ideas. Because they do not have to worry about writing a thesis, like graduate students, if an idea fails, it's not a big deal. Whether the idea is successful or not, the student still learns how to conduct research and how to communicate research results."

Prof. Larry Glasgow has long emphasized the importance of research involvement for undergraduate students as part of their educational experience. This has resulted in an extensive record of undergraduate research participation and productivity. Glasgow has published six refereed journal articles with undergraduate research students. Several of these students have won awards for presentation of their results at annual AIChE meetings. This group includes Rob Rainbolt, Matt Pretz, Kristin Ecord, Jessica Holmes, Matt McGuire, and Aliasha Scott. A poster paper authored by Scott, McGuire, and Glasgow won first prize in its division at the annual AIChE meeting in San Francisco in November 2003.

Professor Schlup, foreground, and undergraduate student Kyle Swanson prepare an infrared spectrometer for experiments characterizing biobased materials.

Let us know what you've been up to!

We would like to feature alumni in future issues of *ChemE News*. Please fill out the section below and mail it to Keith Hohn, Department of Chemical Engineering, Kansas State University, Manhattan, KS 66506-5102; e-mail to hohn@ksu.edu; or fax to 785-532-7372. Thank you.

name _____ degree/year _____

title _____ company name _____

business address _____ phone _____

home address _____ phone _____

news/accomplishments _____

Kansas State University
Department of Chemical Engineering
Durland Hall
Manhattan, KS 66506-5102

Phone: (785) 532-5584

Fax: (785) 532-7372

www.engg.ksu.edu

Non-profit Organization U.S. POSTAGE PAID Permit #525 Manhattan, Kan. 66502
--



Notice of nondiscrimination

Kansas State University is committed to nondiscrimination on the basis of race, sex, national origin, disability, religion, age, sexual orientation, or other nonmerit reasons, in admissions, educational programs or activities and employment (including employment of disabled veterans and veterans of the Vietnam Era), as required by applicable laws and regulations. Responsibility for coordination of compliance efforts and receipt of inquiries concerning Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, the Age Discrimination Act of 1975, and the Americans With Disabilities Act of 1990, has been delegated to Clyde Howard, Director of Affirmative Action, Kansas State University, 214 Anderson Hall, Manhattan, KS 66506-0124, (Phone) 785-532-6220; (TTY) 785-532-4807.

?????-8/08-??