Dear Alumni and Friends of the Department:

As I write this note it is a mild early January and a demolition crew has just finished taking down the four buildings (Boyd, Johnston, Aviation and Haskett) which occupied the building site of our new building. The Chemical and Biomolecular Engineering and Chemistry (CBEC) building, which will have the Koffolt Laboratories name prominently displayed, is on schedule. We are expecting groundbreaking this summer with construction to start soon after.

This past year was one of continued growth and opportunity for our department. Undergraduate enrollment has continued to surge with the sophomore to senior count at 517 and 116 B.S. graduates. Our graduate student population is 89 with 9 Ph.D. degrees awarded. Our overall research expenditures declined to $10.6M, reflecting the end of the wave of State of Ohio “Third Frontier” funds that our faculty won in recent years. Overall the productivity of our department in both the spheres of undergraduate education and research remained quite high. In the midst of the enrollment surge Ohio State is preparing to convert to a semester based academic schedule at the end of the summer. This has required a substantial revamping of our curriculum and the faculty, led by the Chair of our Curriculum Committee, Jim Rathman, have made excellent progress in getting ready for the change. We are also charged by the university not to disadvantage any of our student's graduation progress in the transition, and we are working hard to implement that goal.

Last year Martin Feinberg presented the Wilhelm Lectures at Princeton University and Umit Ozkan was selected as a Fellow in the American Chemical Society. Umit was also appointed Distinguished Professor in the College of Engineering. Jeff Chalmers and Umit Ozkan won College of Engineering Lumley Research Awards and Jim Rathman won the Macquigg Award.

The Macquigg Award was presented to Jim for his “demonstration in a superior manner and interest in and willingness to help students…and his outstanding teaching ability.” Students in the College of Engineering nominate and elect the Macquigg award recipients.

While we still have significant fund raising challenges to meet our goal to raise $17.5M for our share of the new $126M CBEC building, there have been some outstanding successes in the past year. Dow Chemical pledged $1M to both Chemical and Biomolecular Engineering and Chemistry to name the 6th floor student lounge and Jim and Pat Dietz pledged $1M to name the Unit Operations Laboratory. Further details on the new building are described later in the report.

Best wishes from all our faculty, staff and students.

Stuart L. Cooper
Professor and Chair
Coopers@chbmeng.ohio-state.edu
614-247-8015

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614-247-8015
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**Inside Back Cover: CBE Directory**

_Cover: New building view from Woodruff Avenue; Rendering provided by Pelli Clarke Pelli Architects_
The planning for our new building is moving forward fairly smoothly. The site preparation is, if anything ahead of schedule, with the demolition of Boyd, Johnston, Aviation and Haskett completed as you can determine from a webcam view which can be accessed from the department homepage. The groundbreaking ceremony for the building will take place this summer with construction activity to begin shortly thereafter. So far we are within budget and slightly ahead of schedule. Our fund raising effort, while far from complete, is progressing nicely and we have naming gifts for several attractive spaces in the building. We have come a long way from the concept to build a new Koffolt Laboratories which began nearly a decade ago, and we eagerly look forward to occupying our superb new space at the end of 2014.
Koffolt Laboratories National Campaign Committee

The Koffolt Laboratories National Campaign Committee gathered October 28, 2011 to discuss progress to date on the new building.

Bill Lowrie, Chairman of the National Koffolt Campaign Committee, called the meeting to order and introductions were made around the room. Jim Dietz (CBE B.S. 1969, M.S. 1970) was recognized for his $1M gift to name the Unit Operations Laboratory and representatives from Dow Chemical were recognized for their $1M gift to name the Student Lounge. Lowrie reported that more than $14.5M had been pledged toward the $17.5M goal.

Department Chair Stuart Cooper gave a brief overview and update on the department.

Building architect Darin Cook from Pelli Clark Pelli gave a presentation explaining the details of many of the prominent named spaces in the new building including the latest images and renderings.

Rich Brandon (CBE B.S. 1983) and Tom Burns (CBE B.S. 1983, M.S. 1985) spoke about the Dow Chemical gift to name the student lounge and how it will serve to extend the already strong relationship between Dow Chemical and Ohio State.

Dr. Gary Booth (Chemistry Ph.D., 1965), Chairman of the Chemical and Biomolecular Engineering and Chemistry (CBE) Campaign Committee for Chemistry spoke about the chemistry perspective on the new building and how the two departments can combine strengths and resources to pursue more corporate giving with companies who have an interest in both engineers and chemists.

AIChE Student Chapter activities and efforts to grow enrollment were discussed and the ChemE Car Team presented their car and the results from their competition. CBE Clinical Faculty Carlo Scaccia updated the group on the Unit Operations Lab and explained how Unit Ops will be integrated into the semester conversion.

The meeting concluded with a fundraising update and workshop led by Director of Development Jason Haskins.
Koffolt Campaign Committee Members:

William G. Lowrie (B ChE ’66), Chair
Sheldon, South Carolina

Jeffrey D. Adams (B ChE ’87)
San Mateo, CA

Richard A. Arnold (B ChE ’48, MBA ’50)
Houston, TX

Cynthia (Cindy) Gerstle Bishop (B ChE ’86)
Coppell, TX

James (Jim) F. Dietz (B ChE ’69, MS ’70)
Northfield, IL

Matthew J. Galosi (B ChE ’80)
Katy, TX

David (Dave) Grove (B ChE ’70, MS ’70)
Stuart, FL

Jack A. Hammond (B ChE ’61)
Iron Gate, VA

Ronald D. Harris (B ChE ’61, MS ’61)
Columbus, OH

F. William (Bill) Hauschildt, Jr. (B ChE ’67, MS ’67)
San Francisco, California

Karen Lafferty Hendricks (B ChE ’71)
Maineville, OH

Kathleen (Kathy) Applegate Hogenson (B ChE ’82)
Houston, TX

Smith G. Howland (B ChE ’69, MS ’69)
Houston, TX

Clinical Professor Carlo Scaccia updating the committee on the Unit Operations Laboratories.

Dennis W. Hurley (B ChE ’67)
Midland, MI

Alex W. Kauczak (B ChE ’82)
Dublin, OH

Thomas J. Koffolt
Savannah, GA

Sumner (Sonny) Saeks (BS ChE ’82)
Cincinnati, OH

Christina Sistrunk (B ChE ’82)
Harvey, LA

Lawrence R. Steele (B ChE ’58, MS ’58, PhD ’62)
Princeton, NJ

Brian K. Weider (B ChE ’78)
Houston, TX

Eugene (Gene) N. Wheeler (B ChE ’65, MS ’65)
Livermore, CA

Michael D. Winfield (B ChE ’62)
Long Grove, IL
New Building Space Naming Gifts

Jim and Pat Dietz and Dow Chemical recently contributed naming gifts to the new building.

“Every college graduate recalls certain parts of their college experience with a sense of profound accomplishment. For most Chemical Engineering students at The Ohio State University, that remembrance is likely to be Unit Operations lab. It is a team-building, leadership experience unlike any other in the curriculum. Pat and I are extremely proud to be associated with such a critical element in the training and development of future OSU CBE grads.” Jim Dietz (’69)

The Dow Chemical Company has a long term relationship with Ohio State and especially with the Departments of Chemical and Biomolecular Engineering and Chemistry. The interactions have involved joint research activities and the recruitment of undergraduate and graduate students for employment opportunities throughout the United States. Dow Chemical representatives Rich Brandon and Tom Burns, both CBE alumni, have been recruiters for both undergraduate and graduate student chemists and chemical engineers. Working with OSU for many years, they facilitated the department's proposal to the Dow Chemical Company Foundation for a $1M gift to both departments. The departments and Dow Chemical have agreed to name the 6th floor student lounge in the new building to commemorate this generous gift. Darrell Zavitz, Dow Chemical Vice President, was also a key supporter and contributor throughout the process. According to Brandon and Burns, "Over the years, Dow has hired many outstanding undergraduate and graduate students as well as numerous undergraduate interns and co-op students. OSU educated chemists and chemical engineers have demonstrated an excellent, long term record of accomplishment throughout the company. Dow’s excellent relationship with Ohio State, the performance of OSU alumni and the recognized, world class research within these departments, enabled our approach to the Dow Foundation to be well received.”
Christina Sistrunk is a graduate of The Ohio State University with a B.S. in Chemical Engineering. She joined Shell in 1998 after working for the Amoco Production Company, where she worked in a variety of engineering and operations management roles focused on Gulf of Mexico production and development. Since joining Shell, Christina has worked in the Deepwater Engineering projects organization, as Operations Manager, Operations Skill Pool Manager, HSSE Manager – Americas Region, and Gulf of Mexico East Asset Manager. Christina’s last posting was in the Netherlands as the Asset Integrity Program Manager, which she began at the start of 2008. This role required leading a global effort to improve process safety across Shell’s upstream business. Her current position is VP - Producing Assets, Deep Water-GOM.

Christina and her husband, John, live in New Orleans and have one daughter, Nicole, who lives in Rutherford, New Jersey. Christina currently serves on the Koffolt National Campaign Committee.

CBE Advising Team Gives Semester Conversion Update

The conversion to semesters has introduced some challenges for the CBE advising team but has also brought about some positive changes. With more than 700 students (majors and pre-majors) now pursuing a degree in chemical engineering, Academic Advising Coordinator Brian Endres and Undergraduate Academic Advisor Holly Longman have been challenged with the responsibility of assuring that each student's progress towards completing the degree requirements is not hindered due to the conversion. To aid in this process, Brian and Holly conducted help sessions during the 2011 autumn quarter where they helped students better understand how the curriculum has changed and the guiding principles behind why the changes were made. Following the sessions, they began to meet individually with students or in small groups to develop an individualized plan for each student. This allows each student to not only plan ahead for their projected date of graduation but also to permit time to complete co-op and internship opportunities or a study abroad experience.

Brian has also worked intimately with the department faculty on the development of the semester curriculum and is helping upload all the new information on the university's and department's computer systems and websites.

In order to better prepare students for success within the engineering disciplines, each department within the College offers a survey course during a student’s first quarter of enrollment where students learn the rules and responsibilities of being a student at OSU, time management and study skills, and other helpful information related to their field of study. As the instructor of the course, Holly now has increased flexibility under semesters to determine the structure and format of the class, including the mode of instruction: in-class, online, or a combination of both.

While these changes have required a significant time commitment for Brian and Holly in addition to their regular responsibilities, they both welcome this opportunity to assist their advisees with their academic and professional goals and look forward to seeing increasing numbers of our students graduate and launch their careers.

<table>
<thead>
<tr>
<th>Current Named Spaces</th>
<th>Gift</th>
<th>Alumnus/Donor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Operations Laboratory</td>
<td>$1,000,000</td>
<td>Jim and Pat Dietz</td>
</tr>
<tr>
<td>Sixth Floor Student Lounge</td>
<td>$1,000,000</td>
<td>Dow Chemical Company</td>
</tr>
<tr>
<td>Unit Operations Lounge/Student Lockers</td>
<td>$250,000</td>
<td>Karen and Milton Hendricks</td>
</tr>
<tr>
<td>Polymer Process/Synthesis Laboratory</td>
<td>$200,000</td>
<td>Larry and JoAnn Woodworth</td>
</tr>
<tr>
<td>Connector Conference Room</td>
<td>$150,000</td>
<td>Dennis Hurley</td>
</tr>
<tr>
<td>Recitation Room</td>
<td>$150,000</td>
<td>Mike and Arlene Winfield</td>
</tr>
<tr>
<td>Research Lounge</td>
<td>$50,000</td>
<td>Dave Grove</td>
</tr>
</tbody>
</table>
Umit Ozkan Honored

Selected American Chemical Society Fellow

Dr. Ozkan is an expert in heterogeneous catalysis, catalytic materials and their applications in industrially relevant reactions, as well as those that are important for energy and emission control. She has made significant contributions to the area of oxidation catalysis, reduction of NOx emissions from stationary combustion sources, fuel reformulation and electrocatalyst development for fuel cells. Dr. Ozkan has also made a significant impact as a leader in academic research administration and in many professional societies. She has published more than 150 technical papers and edited 7 books on energy and environmental catalysis. She has to date been invited to present lectures 125 times in 25 different countries, which reflects the reach of her outstanding research work. Dr. Ozkan has continuously devoted her professional efforts to the ACS Division of Petroleum Chemistry (PTRL) since 1992 by participating in all aspects of the division. Finally, she has impacted the lives of about 2000 students as a teacher, advisor, mentor and role model.

The 2011 ACS Fellows were honored at a special ceremony during the ACS National Meeting in Denver on Monday, August 29, 2011.

Appointed College of Engineering Distinguished Professor

Umit Ozkan has recently been appointed College of Engineering Distinguished Professor, one of the highest academic honors that can be bestowed on a faculty member by the College of Engineering at OSU.

In addition to recognizing Dr. Ozkan’s many significant accomplishments including recently being named Fellow of AIChe, ACS and AAAS, this appointment recognizes her value to the College of Engineering and to OSU. Dr. Ozkan received this appointment based on her excellent performance in research, leadership, teaching and mentorship.

Martin Feinberg Presented the 2011 Wilhelm Lectures at Princeton University

Martin Feinberg, the Richard Morrow Professor of Chemical and Biomolecular Engineering and Professor of Mathematics, was selected to deliver the highly prestigious 2011 Richard Wilhelm Lectures in Princeton University’s Department of Chemical and Biological Engineering. The lectureship is named for a seminal figure in chemical engineering, and the list of past winners is regarded as a “Who’s Who” of modern chemical engineering. Delivered in October, 2011, Feinberg’s two Wilhelm lectures were entitled Understanding Chemical Reaction Networks and Understanding Chemical Reactors.

Work by Feinberg and his students is truly interdisciplinary, sitting at the juncture of chemical engineering, chemistry, biology, and mathematics. Indeed, invitations to talk about chemical reaction network theory come not only from chemical engineering departments but also from a variety of disciplines. Recently, for example, Feinberg has been a principal lecturer at conferences on Synthetic Biology in Zurich and in Groningen, and he has been an invited speaker in biology departments at Harvard University, Rockefeller University, and the Weizmann Institute of Science.

Professor Feinberg has won several awards not only for research but also for teaching. When he was at the University of Rochester, he received the Edward Peck Curtis Award for Teaching Excellence, presented to just one professor each year at commencement, and, very shortly after his arrival at Ohio State, Feinberg received the College of Engineering’s Charles E. McQuigg Award for Outstanding Teaching. For his work on chemical reaction network theory Professor Feinberg received the Richard H. Wilhelm Award of the American Institute of Chemical Engineers.
Jim Lee Develops New Gene Therapy Method

Helen C. Kurtz Professor Jim Lee and colleagues have developed a new method of gene therapy, which they have named Nanochannel Electroporation, also called NEP.

Lee says that NEP allows them to investigate how drugs and other biomolecules affect cell biology and genetic pathways at a level not achievable by any other existing technique. This technique uses electricity to send bits of therapeutic biomolecules through a tiny channel and into a living cell in a fraction of a second, as opposed to using a needle.

Currently, this process only works on one or several cells at a time, but they are developing a mechanical cell-loading system that would inject up to 100,000 cells at once, which could make clinical and diagnostics and treatments possible. Lee says that they hope NEP could become a tool for early cancer detection and treatment, specifically in leukemia and lung cancer. He is working with researchers at the Ohio State Comprehensive Cancer Center to explore these possibilities. With high cell-loading, NEP has potential for efficient and safe cell reprogramming which is critical for regenerative medicine.

Bhavik Bakshi Co-Edits New Book

Dr. Bhavik Bakshi, CBE Professor and Research Director of the Center for Resilience, is co-editor of the recently published book, Thermodynamics and the Destruction of Resources. This book applies fundamental thermodynamics to problems of sustainability, energy, and resource use, and shows that some of the proposed sustainable solutions can be more destructive than the original problem. Both rigorous and readable, the book will be useful to a variety of educational and professional audiences interested in green engineering, industrial ecology, and sustainable manufacturing. The contributors are leading international figures from many disciplines, including engineers, ecologists, economists, physicists, chemists, and policy experts.

Bakshi is a recognized international expert on process systems engineering and sustainability science, and is the creator of Eco-LCA, an advanced software tool for ecologically-based life cycle assessment.

Chemical Looping Unit to Begin Construction

Sponsored by the Department of Energy’s Advanced Research Projects Agency-Energy and Ohio Department of Development, The Ohio State University will lead an effort to scale-up the chemical looping technology to a 250-KW high pressure pilot plant at the Department of Energy’s National Carbon Capture Center in Wilsonville, Alabama.

Partnering with Babcock & Wilcox Company, Particulate Solid Research, Inc., CONSOL Energy, Inc., Clear Skies Consulting LLC, and Air Products and Chemical, Inc., the pilot plant will begin construction this year. This demonstration will be the largest scale-up of the chemical looping gasification technology for hydrogen and electricity cogeneration from coal and is directed by L.S. Fan (inventor of the process) along with his team consisting of Ohio State post-doctoral research associates and graduate students.

Chemical looping dates back to the 1900’s with the steam iron process for hydrogen generation. Although simple in its concept, chemical looping has not been commercialized due to difficulties such as looping particle performance and system design. The patented syngas chemical looping unit is unique because it can allow electricity and/or hydrogen production by using countercurrent moving bed reactor design and specially tailored oxygen carrier particles.
Undergraduate Program

Cooperative Learning Experiences: Autumn 2010 through Autumn 2011

The Engineering Cooperative Education & Internship Program (ECIP) helps undergraduate students obtain career-related employment of two types: cooperative education (co-op) positions and internships. A co-op experience provides an opportunity to apply what is learned in the classroom in career-related positions by alternating quarters of full-time coursework with periods of paid, full-time employment. An internship involves one work period with an employer. A work period may last for one quarter or for two consecutive quarters. Summer internships are the most popular among students and employers.

Students meet with advisors, Brian Endres and Holly Longman, to evaluate different schedule arrangements before interviewing because many employers hire for specific “rotations.” For instance, students may work full-time during the summer quarter, attend full-time classes in autumn, and return to their employer for full-time work in the winter. The most popular term to work is the summer. Last year, CBE students completed 48 co-op rotations and 96 internships.

The following is a list of companies who hired OSU undergraduates for co-ops and internships and the students who were hired by those companies:

Abbott Industries: Mehak Chawla
Adsorption Research, Inc.: Albert Shin
Albemarle Corp: Jessica Tufts
Algae Venture Systems: Asher Kay
Ashland, Inc.: Nicole Bayona, Zachary Johnson
ATI Allegheny Lulum: Robert Warburton
Batelle Memorial Institute: Alexander Sarmiento
Bayer Corp: Katherine Zorc
CDM: Ashley Fortman, Katherine Zorc
CEMEX: Alexander Shumar
Charter Steel: Karen Kwong
Chemical Abstracts Service: Steven Cooper, Ryan D’sa, Katherine Erickson, Theo Hicks, James Hynes, Karen Kwong, Andrew Lust, Gina Pietro, Daniel Weckstein
Colgate-Palmolive: Megan Butts
ConAgra Foods: Christine Copa
Cooper Tire & Rubber Co.: Alex Elchert
Crown Equipment Corp.: Eric Piening
Dannon Co.: Ronald Lechner
Delta Airlines: Michael Birkmeyer
Diamond Innovations: Thomas Mascolino, Michael Yingling
Dow Chemical: Adam Kowalski, Janee McNeil, Brittany Niles, Kristi Olesik, Michael Witwer
Dow Corning Corp.: Nirupa Manohae, Chelsea Quinn
Duke Energy Corp.: William Holthaus, Joseph Nurre
DuPont: John Logue, Daniel Morris, J. Todd Starkey
Exelon Corp.: William Szumski
Exxon Mobil: Nicole Bayona, Nicholas Deerlake
Ferro Corp.: Rebecca Heyse
Ford Motor Co.: Brooke Laing
General Electric Corp.: Dylan Silbiger, Bryan Summerlin
General Mills: Melissa Grigger, Kendel Mesch, Jacquelyn Pittman
General Motors: Kyle McLaughlin
GrafTech International: George Gerges
Honda: James Emmenecker, Rayvion Sanford
Idaho National Laboratory: Timothy Kremer
ISP (International Specialty Products): Steve Schwab
Kelly Services: Mandy Sheridan
Kodak: Peter Dobler
Lawrence Livermore National Laboratory: Nikita Kevlich
Limited Brands: Steven Ross
Marathon: Kara Bihn, Robert Dugan, Lily Glick, Michael Hartman, Matthew Konderson, Joshua Martin, Steven Ottobre, Ashley Sandlin, Vadim Vishnepolsky, Daniel Weckstein
MedImmune: Matthew Cox
Momentive: Nathan Fahrenkamp
NASA: Christine Copa
Nationwide: James Rustin
NexTech Materials: Pradeep Kanakarajan
Northern Tier Energy LLC: Vadim Vishnepolsky
Oak Ridge National Laboratory: Alison Boyd
Ohio State University: Zachary Adams, Joshua Burke, Ryan Gallagher, Mandy Sheridan
Ohio Willow Wood Co.: Ethan Ott
OMNOVA Solutions Inc.: Justin Reed, Matthew Rowley
Owens Corning: Daniel Griffin
Owens-Illinois (O-I): Chase Miller, Paul Robertson
Course Enrollment

### Winter 2011

<table>
<thead>
<tr>
<th>Students</th>
<th>Course</th>
<th>Instructor</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>88 200</td>
<td>Dr. David Wood</td>
<td>Chemical Processes &amp; Calculations I</td>
<td></td>
</tr>
<tr>
<td>96 201</td>
<td>Dr. Aravind Ashagiri</td>
<td>Chemical Processes &amp; Calculations II</td>
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</tr>
<tr>
<td>0 489</td>
<td>Dr. James Rathman</td>
<td>Professional Practice in Industry</td>
<td></td>
</tr>
<tr>
<td>36 508</td>
<td>Dr. Umit Ozkan</td>
<td>Thermodynamics I</td>
<td></td>
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<tr>
<td>89 509</td>
<td>Dr. Mike Paulaitis</td>
<td>Thermodynamics II</td>
<td></td>
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<tr>
<td>42 521</td>
<td>Dr. Winston Ho</td>
<td>Transport Phenomena II</td>
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<tr>
<td>134 522</td>
<td>Dr. Kurt Koelling</td>
<td>Transport Phenomena III</td>
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<tr>
<td>42 760</td>
<td>Dr. Carlo Scaccia</td>
<td>Engineering Economics &amp; Strategy</td>
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<tr>
<td>65 764</td>
<td>Dr. Jeffrey Chalmers</td>
<td>Process Design</td>
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<tr>
<td>23 766</td>
<td>Dr. S.T. Yang</td>
<td>Biotechnology and Bioprocess Engineering</td>
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<tr>
<td>30 771</td>
<td>Dr. Barbara Wyslouzil</td>
<td>Air Pollution</td>
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<tr>
<td>16 777</td>
<td>Dr. L. James Lee</td>
<td>Polymer Nano Engineering</td>
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<td>85 779</td>
<td>Dr. James Rathman</td>
<td>Experimental Design</td>
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<td>13 693</td>
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<td>11 H783</td>
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<tr>
<td>120 200</td>
<td>Dr. Umit Ozkan</td>
<td>Chemical Processes &amp; Calculations II</td>
<td></td>
</tr>
<tr>
<td>34 420 &amp; 520</td>
<td>Dr. Andre Palmer</td>
<td>Transport Phenomena I</td>
<td></td>
</tr>
<tr>
<td>3 489</td>
<td>Dr. James Rathman</td>
<td>Professional Practice in Industry</td>
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<tr>
<td>111 508</td>
<td>Dr. Aravind Ashagiri</td>
<td>Thermodynamics I</td>
<td></td>
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<tr>
<td>116 521</td>
<td>Dr. Isamu Kusaka</td>
<td>Transport Phenomena II</td>
<td></td>
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<tr>
<td>120 624</td>
<td>Dr. Bhavik Bakshi</td>
<td>Process Dynamics &amp; Controls</td>
<td></td>
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<tr>
<td>15 715</td>
<td>Dr. L.S. Fan</td>
<td>Novel Separation Processes</td>
<td></td>
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<tr>
<td>55 735</td>
<td>Dr. Jessica Winter</td>
<td>Cellular Nanotechnology</td>
<td></td>
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<tr>
<td>79 760</td>
<td>Dr. Carlo Scaccia</td>
<td>Engineering Economics &amp; Strategy</td>
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<tr>
<td>16 769</td>
<td>Dr. Stephen Lee</td>
<td>Biomedical Nanotechnology</td>
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<tr>
<td>28 773</td>
<td>Dr. Stuart Cooper</td>
<td>Introduction to High Polymer Engineering</td>
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<tr>
<td>63 790</td>
<td>Dr. James Rathman</td>
<td>Colloids &amp; Surfaces</td>
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<tbody>
<tr>
<td>63 201</td>
<td>Dr. Jack Zakin</td>
<td>Chemical Processes &amp; Calculations II</td>
<td></td>
</tr>
</tbody>
</table>

PCC Airfoils Inc.: Daniel Grover
Procter & Gamble: Andrea Calamari, Ryan Fleming, Michael Fontaine, Steven Lim, Ashley Sandlin
Rich Products Corp.: Christopher Bailey
Rockwell Automation: Scott Hochberg
RoviSys Co.: Sean Hawkins
Scotcs Co.: Joanna Gobielle, Jean Johnson, William Murray, Michael Nechay
Scripps Research Institute: Brian Richards
Standard Register: David Lienesch
State Industrial Products: Sean Pattison
Tec^Edge Works: Stacey Sherman
Therma-Tru Corp.: Micahel Smith, Frank Sweaterlitsch
Timken Co.: Brian Wohlfarth
Toyota: Morgan Doty
Unilever: Lisa Reisenauer, Madeline Shirn
University of Queensland: Julia Mueller
US Nuclear Regulatory Commission: Craig Hoying
Veyance Technologies Inc. Philip Kotich

Summer 2011

<table>
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<th>Students</th>
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<th>Instructor</th>
<th>Course Title</th>
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<tr>
<td>113 630</td>
<td>John Corn &amp; Carlo Scaccia</td>
<td>Unit Operations Lab</td>
<td></td>
</tr>
<tr>
<td>19 755</td>
<td>Dr. Bob Johnson (Adjunct)</td>
<td>Chemical Process Safety</td>
<td></td>
</tr>
<tr>
<td>3 693</td>
<td>Various</td>
<td>Undergraduate Research</td>
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<tr>
<td>1 H783</td>
<td>Various</td>
<td>Undergraduate Honors Research (Thesis Track)</td>
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2011 Placement Record for Undergraduates

Graduates of our program continue to have strong placement records both within industry and graduate and professional programs. The percentages provided here are based on senior exit surveys at the time of graduation.

Fifty-nine percent of our graduates will be going directly to industry with their B.S. degrees. About fifteen percent of our students will be going on to graduate or professional school. Approximately thirty percent of our students have accepted positions in Ohio and will stay in the state to pursue their post graduation plans. Students will be working at various corporations such as Exxon Mobil, the Dow Chemical Company, Procter and Gamble, and DuPont.

A number of our graduates received Latin Honors, With Distinction Honors or With Honors in Engineering. Latin honors are defined as follows: a cumulative grade point average (GPA) of 3.5-3.69 is Cum Laude; 3.70-3.89 is Magna Cum Laude; and 3.90-4.00 is Summa Cum Laude. Forty percent of our students graduated with some level of Latin Honors.

A student who graduates “With Honors Research Distinction” is an honors student (greater than a 3.4 GPA) who has completed a senior honors research thesis. A student who graduates “With Honors in Engineering” has completed a three-prong program consisting of completing a required number of honors courses, participation in community service, leadership and outreach as well participation in “investigational studies” which typically includes completing a research paper or thesis or completing a minor. Fourteen students graduated with Honors in Engineering and nine students graduated With Distinction in various disciplines.

Engineering Career Services (ECS) welcomes all employers to register, to recruit Ohio State engineering students and graduates. There is no cost to register and no fees for ECS services. If you or someone you know is interested in hiring Ohio State students for co-op experiences, internships or for full time placement, please contact Amy Thaci, Director of Engineering Career Services at (614) 292-6651. You can read more about the services offered through ECS by visiting their webpage: http://career.eng.ohio-state.edu.

2011 B.S. Graduates:

**Autumn 2010 (December 2010)**

<table>
<thead>
<tr>
<th>Name</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feras Alhothali</td>
<td>Hired by SABIC, Saudi Arabia</td>
</tr>
<tr>
<td>Mohammed Alsekhan</td>
<td>Hired by SABIC, Saudi Arabia</td>
</tr>
<tr>
<td>John Augustine</td>
<td>Graduated Magna Cum Laude; Hired by Owens</td>
</tr>
<tr>
<td>Geoffrey Bailey</td>
<td>Hired by Trutec Industries, Inc., Ohio</td>
</tr>
<tr>
<td>Adam Brandt</td>
<td>Hired by Anheuser Busch-InBev, Ohio</td>
</tr>
<tr>
<td>David Bukovec</td>
<td>Seeking employment</td>
</tr>
<tr>
<td>Benjamin Doup</td>
<td>Graduated Cum Laude, With Honors Research Distinction; Pursuing M.S. Nuclear Engineering, The Ohio State University</td>
</tr>
<tr>
<td>Sarah Garrett</td>
<td>Hired by Pilot Chemical Company</td>
</tr>
<tr>
<td>Matthew Isabel</td>
<td>Hired by Appleton Paper, Ohio</td>
</tr>
<tr>
<td>Amanda Janasov</td>
<td>Hired by American Electric Power, Ohio</td>
</tr>
<tr>
<td>Michael Klimek</td>
<td>Hired by Arkema Group, Texas</td>
</tr>
<tr>
<td>Saud Milibari</td>
<td>Hired by SABIC (Saudi Arabia)</td>
</tr>
<tr>
<td>Rebecca Murphy</td>
<td>No information given</td>
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</table>

**Winter 2011 (March 2011)**

<table>
<thead>
<tr>
<th>Name</th>
<th>Status</th>
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<tbody>
<tr>
<td>Andrew Pitts</td>
<td>Hired by Cambridge Isotope Laboratories Inc (CIL)</td>
</tr>
<tr>
<td>Jason Porter</td>
<td>Pursuing M.S. Food Science, The Ohio State University</td>
</tr>
<tr>
<td>Ryan Silver</td>
<td>Hired by URS Corp, Ohio</td>
</tr>
<tr>
<td>Matt Tackett</td>
<td>Graduated Cum Laude; Hired by Capital One, Virginia</td>
</tr>
<tr>
<td>Rushinbahi Patel</td>
<td>Hired by Pilot Chemical Co, Ohio</td>
</tr>
<tr>
<td>Matthew Dawson</td>
<td>Hired by ABB, Inc, Ohio</td>
</tr>
<tr>
<td>Andrew Guay</td>
<td>Hired by Procter &amp; Gamble</td>
</tr>
<tr>
<td>Pradeep Kanakarajan</td>
<td>Hired by NexTech Materials, Ohio</td>
</tr>
<tr>
<td>Barrett Richter</td>
<td>Graduated Summa Cum Laude, With Honors in Engineering; Pursuing M.S. ChE, Massachusetts Institute of Technology</td>
</tr>
<tr>
<td>Joshua Burke</td>
<td>Hired by Emerald Performance Materials, Illinois</td>
</tr>
<tr>
<td>Andrew Guay</td>
<td>Hired by Procter &amp; Gamble</td>
</tr>
<tr>
<td>Pradeep Kanakarajan</td>
<td>Hired by NexTech Materials, Ohio</td>
</tr>
<tr>
<td>Barrett Richter</td>
<td>Graduated Summa Cum Laude, With Honors in Engineering; Pursuing M.S. ChE, Massachusetts Institute of Technology</td>
</tr>
<tr>
<td>David Schnell</td>
<td>Hired by Procter and Gamble, Tennessee</td>
</tr>
<tr>
<td>Parth Shah</td>
<td>Graduated Magna Cum Laude, With Honors in Engineering; Hired by Accenture, Ohio</td>
</tr>
<tr>
<td>Name</td>
<td>Status/Additional Information</td>
</tr>
<tr>
<td>---------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Matthew Smith</td>
<td>Seeking employment</td>
</tr>
<tr>
<td>Josh Smith</td>
<td>Seeking employment</td>
</tr>
<tr>
<td>Brian White</td>
<td>Hired by Epic, Wisconsin</td>
</tr>
<tr>
<td><strong>Spring 2011 (June 2011)</strong></td>
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</tr>
<tr>
<td>Steven Adams</td>
<td>Graduated Cum Laude, With Honors in Engineering</td>
</tr>
<tr>
<td>Bilal Azzam</td>
<td>Hired by Schlumberger, Oklahoma</td>
</tr>
<tr>
<td>Scott Baldwin</td>
<td>Graduated Cum Laude; Hired by Newell Rubbermaid, Georgia</td>
</tr>
<tr>
<td>Ahmed Basar</td>
<td>Seeking employment</td>
</tr>
<tr>
<td>Sarah Basnight</td>
<td>Graduated Magna Cum Laude; Hired by General Mills</td>
</tr>
<tr>
<td>Fawn Bradshaw</td>
<td>Graduated With Honors in Engineering; Hired by DOW Chemical, Louisiana</td>
</tr>
<tr>
<td>Daniel Breckenridge</td>
<td>Graduated Magna Cum Laude; Seeking employment</td>
</tr>
<tr>
<td>William Brigode</td>
<td>Graduated Cum Laude; Pursuing M.D, The Ohio State University</td>
</tr>
<tr>
<td>Dmitriy Burdzhalov</td>
<td>Graduated Cum Laude; No information provided</td>
</tr>
<tr>
<td>Martin Bussja</td>
<td>Hired by Kennametal</td>
</tr>
<tr>
<td>Adam Collier</td>
<td>Pursuing M.S. Business Logistics, The Ohio State University</td>
</tr>
<tr>
<td>Nicholas Cotton</td>
<td>Graduated Cum Laude; Hired by Schlumberger, Arkansas</td>
</tr>
<tr>
<td>Frederick Crawford</td>
<td>Pursuing Ph.D ChE, New Mexico State University</td>
</tr>
<tr>
<td>Kelley Crum</td>
<td>Hired by Boehringer Ingelheim Roxane Inc, Ohio</td>
</tr>
<tr>
<td>David Diaz-Rivera</td>
<td>Hired by Aptalis Pharma Tech, Ohio</td>
</tr>
<tr>
<td>Katherine Erickson</td>
<td>Graduated Cum Laude; Hired by Epic, Wisconsin</td>
</tr>
<tr>
<td>Joshua Ferry</td>
<td>Hired by American Woodmark Corp.</td>
</tr>
<tr>
<td>Natalie Fountas-Davis</td>
<td>Pursuing M.S. Biomedical Engineering, University of Akron</td>
</tr>
<tr>
<td>Justin Glasgow</td>
<td>Graduated Magna Cum Laude; Hired by Capital One, Virginia</td>
</tr>
<tr>
<td>Adam Granitto</td>
<td>Graduated Magna Cum Laude, With Honors in Engineering; Hired by Arkema Group, Kentucky</td>
</tr>
<tr>
<td>Daniel Griffin</td>
<td>Graduated Magna Cum Laude, With Honors Research Distinction in Chemical Engineering; Pursuing Ph.D ChE, Georgia Tech University</td>
</tr>
<tr>
<td>Danielle Hartley</td>
<td>Hired by Nestle USA</td>
</tr>
<tr>
<td>Thaddaus Huber</td>
<td>Graduated Cum Laude; Pursuing Ph.D ChE, Colorado State University</td>
</tr>
<tr>
<td>Matthew Johanning</td>
<td>Hired by Dover Chemical Corp, Ohio</td>
</tr>
<tr>
<td>Jean Johnson</td>
<td>Hired by Epic, Wisconsin</td>
</tr>
<tr>
<td>Sean Kernan</td>
<td>Hired by Schlumberger, Louisiana</td>
</tr>
<tr>
<td>Steven Kiracofe</td>
<td>Hired by ANH Refractories Co, Pennsylvania</td>
</tr>
<tr>
<td>Katherine Kolakowski</td>
<td>Hired by Unilever</td>
</tr>
<tr>
<td>Kevin Kuhn</td>
<td>Hired by Honda, Indiana</td>
</tr>
<tr>
<td>John Lammers</td>
<td>Seeking employment</td>
</tr>
<tr>
<td>Peter Leatherman</td>
<td>No information provided</td>
</tr>
<tr>
<td>Sean Lee</td>
<td>Graduated Cum Laude, With Honors Research Distinction in Chemical Engineering; Hired by Microsoft, Washington</td>
</tr>
<tr>
<td>Chelsea Liao</td>
<td>Graduated Magna Cum Laude, With Honors in Engineering; Hired by Schlumberger, Colorado</td>
</tr>
<tr>
<td>Joseph Lollini</td>
<td>Hired by Schlumberger, Oklahoma</td>
</tr>
<tr>
<td>Charles Lorence</td>
<td>Graduated Cum Laude; Hired by Schlumberger, Ohio</td>
</tr>
<tr>
<td>Richard McConnell</td>
<td>Graduated Cum Laude; Hired by Frito-Lay, Ohio</td>
</tr>
<tr>
<td>Bryant Michael</td>
<td>Hired by First Solar, Ohio</td>
</tr>
<tr>
<td>Trenton Mueller</td>
<td>Pursuing M.D., University of Cincinnati</td>
</tr>
<tr>
<td>Najima Mwase</td>
<td>Hired by AK Steel, Ohio</td>
</tr>
<tr>
<td>James Nelson</td>
<td>Hired by Frito-Lay, Ohio</td>
</tr>
<tr>
<td>Bobby Nguyen</td>
<td>Graduated Cum Laude; Hired by Schlumberger, Oklahoma</td>
</tr>
<tr>
<td>Huy Nguyen</td>
<td>Graduated Magna Cum Laude; No information provided</td>
</tr>
<tr>
<td>Kassandra Officer</td>
<td>Hired by Schlumberger, Colorado</td>
</tr>
<tr>
<td>Steven Ottobre</td>
<td>Graduated Cum Laude; Hired by DOW Chemical, Texas</td>
</tr>
<tr>
<td>Varun Patel</td>
<td>Seeking employment</td>
</tr>
<tr>
<td>Joseph Petrik</td>
<td>Graduated Cum Laude; Hired by DuPont, Tennessee</td>
</tr>
<tr>
<td>Benjamin Pierson</td>
<td>Pursuing M.A. Biomedical Science, Midwestern University</td>
</tr>
<tr>
<td>Mark Politz</td>
<td>Graduated Summa Cum Laude; Pursuing MS/PhD ChE, University of Wisconsin</td>
</tr>
<tr>
<td>Suraj Prakash</td>
<td>Hired by Procter and Gamble, Ohio</td>
</tr>
<tr>
<td>Japheth Pritchett</td>
<td>Hired by DOW Chemical, Texas</td>
</tr>
<tr>
<td>Kelly Ramos</td>
<td>Graduated Summa Cum Laude; Hired by ABB Inc.</td>
</tr>
<tr>
<td>Timothy Regan</td>
<td></td>
</tr>
<tr>
<td>Garrett Ringler</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Employment/Status</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>Lindsay Roberts</td>
<td>Pursuing DDS, University of Maryland</td>
</tr>
<tr>
<td>Stephen Rosegger</td>
<td>Hired by Capital One, Virginia</td>
</tr>
<tr>
<td>Walter Sandford</td>
<td>Seeking employment</td>
</tr>
<tr>
<td>Daniel Savel</td>
<td>Hired by ANH Refractories Co, Michigan</td>
</tr>
<tr>
<td>Steve Schwab</td>
<td>Graduated Magna Cum Laude; Hired by DuPont, Missouri</td>
</tr>
<tr>
<td>David Slesher</td>
<td>Hired by Entrotech, Ohio</td>
</tr>
<tr>
<td>Greg Shoemaker</td>
<td>Hired by Newell Rubbermaid, Illinois</td>
</tr>
<tr>
<td>Stephanie Smith</td>
<td>Hired by T. Marzetti, Ohio</td>
</tr>
<tr>
<td>Isaac Song</td>
<td>Hired by Organic Technologies, Ohio</td>
</tr>
<tr>
<td>Samantha Spano</td>
<td>Hired by ABB Inc.</td>
</tr>
<tr>
<td>Eric Stibora</td>
<td>Hired by Anderson International Corp, Ohio</td>
</tr>
<tr>
<td>Yuhao Sun</td>
<td>Graduated Cum Laude, With Honors in Engineering, With</td>
</tr>
<tr>
<td></td>
<td>Honors Research Distinction in Chemical Engineering;</td>
</tr>
<tr>
<td></td>
<td>Pursuing Ph.D Petroleum Engineering, University of</td>
</tr>
<tr>
<td></td>
<td>Texas at Austin</td>
</tr>
<tr>
<td>Kevin Sutton</td>
<td>Graduated Summa Cum Laude, With Honors in Engineering;</td>
</tr>
<tr>
<td></td>
<td>Hired by DOW Chemical, Texas</td>
</tr>
<tr>
<td>Daniel Valco</td>
<td>Graduated with Honors Research Distinction in Chemical</td>
</tr>
<tr>
<td></td>
<td>Engineering; Pursuing Ph.D ChE, Michigan State University</td>
</tr>
<tr>
<td>Qi Wang</td>
<td>Graduated Cum Laude, With Honors in Engineering, With</td>
</tr>
<tr>
<td></td>
<td>Honors Research Distinction in Chemical Engineering;</td>
</tr>
<tr>
<td></td>
<td>Seeking employment</td>
</tr>
<tr>
<td>Robert Wensing</td>
<td>Graduated Magna Cum Laude, With Honors in Engineering,</td>
</tr>
<tr>
<td></td>
<td>With Honors Research Distinction in Chemical Engineering;</td>
</tr>
<tr>
<td></td>
<td>Pursuing Ph.D ChE, University of Illinois at Urbana-</td>
</tr>
<tr>
<td></td>
<td>Champaign</td>
</tr>
<tr>
<td>Hazel Wicks</td>
<td>Hired by Actuant Corp, Wisconsin</td>
</tr>
<tr>
<td>Mary-Margaret Williamson</td>
<td>Hired by General Mills, California</td>
</tr>
<tr>
<td>Kevin Yang</td>
<td>Graduated Summa Cum Laude; Hired by Teach for America;</td>
</tr>
<tr>
<td></td>
<td>later pursuing Ph.D ChE, University of California-Berkeley</td>
</tr>
</tbody>
</table>

**2011 B.S. Graduates Continued**

<table>
<thead>
<tr>
<th>Name</th>
<th>Employment/Status</th>
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<tbody>
<tr>
<td>Vincent Frascello</td>
<td>Graduated Summa Cum Laude; Hired by DuPont, Ohio</td>
</tr>
<tr>
<td>Dale Freier</td>
<td>Hired by Cargill, Ohio</td>
</tr>
<tr>
<td>Justin Hayhow</td>
<td>Hired by Procter &amp; Gamble, Ohio</td>
</tr>
<tr>
<td>Charles Kiessling</td>
<td>Hired by ADM-Archer Daniels Midland Co, Illinois</td>
</tr>
<tr>
<td>Thomas Mascolino</td>
<td>SRG Global-Guardian Automotive, KY</td>
</tr>
<tr>
<td>Mark McGown</td>
<td>Graduated Cum Laude; Hired by Intel Corp, Arizona</td>
</tr>
<tr>
<td>Bradley Moore</td>
<td>Graduated Summa Cum Laude; Pursuing DDS Dentistry, The Ohio State University</td>
</tr>
<tr>
<td>William Murch</td>
<td>Graduated Summa Cum Laude, With Honors in Engineering, With Honors Research Distinction in Chemical Engineering; Hired by Whirlpool Corp, Michigan</td>
</tr>
<tr>
<td>Jennifer Murphy</td>
<td>Seeking employment</td>
</tr>
<tr>
<td>Allison Payne</td>
<td>Graduated Cum Laude; Hired by Exxon Mobil, Virginia</td>
</tr>
<tr>
<td>Alexander Sarmiento</td>
<td>Graduated Cum Laude; Hired by Keyence Corp, Georgia</td>
</tr>
<tr>
<td>Haytham Shoib</td>
<td>Hired by Schlumberger, Oklahoma</td>
</tr>
<tr>
<td>Hyun Tae Sohn</td>
<td>Graduated Cum Laude, With Honors Research Distinction in Chemical Engineering; Pursuing MS/Ph.D ChE, The Ohio State University</td>
</tr>
<tr>
<td>Jonathan Su</td>
<td>Graduated Magna Cum Laude; Hired by General Mills, Minnesota</td>
</tr>
<tr>
<td>Kibrome Teklemichael</td>
<td>Seeking employment</td>
</tr>
<tr>
<td>Laurin Turowski</td>
<td>Graduated Magna Cum Laude; Hired by General Electric Corp, Ohio</td>
</tr>
<tr>
<td>Christopher Wielgus</td>
<td>Graduated With Honors in Engineering; Hired by DOW Corning Corp, Michigan</td>
</tr>
<tr>
<td>Kevin Wilkens</td>
<td>Hired by Honda, Ohio</td>
</tr>
<tr>
<td>Zhi Zheng</td>
<td>Graduated Cum Laude, With Honors in Engineering; No information provided</td>
</tr>
<tr>
<td>Yusu Zhu</td>
<td>No information provided</td>
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</table>

**Autumn 2011 (December 2011)**

<table>
<thead>
<tr>
<th>Name</th>
<th>Employment/Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yazeed Almotowa</td>
<td>Hired by SABIC, Saudi Arabia</td>
</tr>
<tr>
<td>Abdulaziz Almousa</td>
<td>Hired by SABIC, Saudi Arabia</td>
</tr>
<tr>
<td>Aqeel Alrajhi</td>
<td>Graduated Magna Cum Laude; Hired by SABIC, Saudi Arabia</td>
</tr>
<tr>
<td>Brandon Clinger</td>
<td>Seeking employment</td>
</tr>
<tr>
<td>Anthony Garber</td>
<td>Hired by Capital One, Virginia</td>
</tr>
<tr>
<td>Sean Hawkins</td>
<td>Graduated Magna Cum Laude; Seeking employment</td>
</tr>
<tr>
<td>Rebecca Heyse</td>
<td>Graduated Cum Laude; Hired by Bechtel Marine Propulsion Corp-Bettis and KAPL Labs, South Carolina</td>
</tr>
<tr>
<td>Bryan Hobocienski</td>
<td>Graduated Magna Cum Laude; Pursuing M.S. ChE, location not specified</td>
</tr>
<tr>
<td>James Hynes</td>
<td>Hired by Baker Hughes, West Virginia</td>
</tr>
</tbody>
</table>

**Summer 2011 (August 2011)**

<table>
<thead>
<tr>
<th>Name</th>
<th>Employment/Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sultan Aldhaheri</td>
<td>Returned to homeland</td>
</tr>
<tr>
<td>Musa Alharoon</td>
<td>Graduated Cum Laude; Hired by SABIC, Saudi Arabia</td>
</tr>
<tr>
<td>Michael Birkmeier</td>
<td>Hired by Americas Styrenics LLC, Ohio</td>
</tr>
<tr>
<td>Mark Borysiak</td>
<td>Graduated Magna Cum Laude; Pursuing M.S. ChE, University of Washington</td>
</tr>
<tr>
<td>Chris Bowles</td>
<td>Graduated Magna Cum Laude; Hired by DuPont</td>
</tr>
<tr>
<td>Jeanne Durell</td>
<td>Hired by Franklin International, Ohio</td>
</tr>
<tr>
<td>Christina Elias</td>
<td>Hired by IBM Corp, New York</td>
</tr>
<tr>
<td>Robert Enouen</td>
<td>Graduated Magna Cum Laude; Hired by Shell Oil Co., Louisiana</td>
</tr>
</tbody>
</table>
Aleese Lewis  Hired by Schlumberger, Texas
Matt McKinney  Seeking employment
Matthew Murray  Hired by IBM Corp, New York
Joshua Post  Hired by Baker Hughes, Texas
Barric Reed  Hired by IBM Corp, New York
Brian Saunders  Hired by HB Fuller Co., Minnesota
Henrick Sawczak  Seeking employment
Robert Wiest  Graduated Cum Laude; Seeking employment
Brian Wohlfarth  Seeking employment

Right:
CBE 200 is the department’s first major course. This table shows total enrollment in that course and the break down enrollment of women and ethnic minority students. Previous years include only students who passed the course with a C- or better.

Undergraduate Enrollment Graphs

Undergraduate Enrollment

<table>
<thead>
<tr>
<th>Year</th>
<th>Pre-Majors</th>
<th>Majors</th>
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<td>2008</td>
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<td>2011</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Number of B.S. Degrees Per Year
Shows Total Students, Number Granted to Women and Number Granted to Ethnic Minorities
A total of 115 students were awarded undergraduate scholarships in the Chemical & Biomolecular program. The vast majority of those students were current majors, although a small amount went to recruit high ability first year students as well. A total of $99,600 was awarded to students heading into the 2011-2012 school year. The average award was $866 this year compared to $894 the previous year.

Trends in data from financial aid show that the number and amount of both student and parent loans have been increasing. Both Ohio State tuition and University financial support have also increased yearly. However, since the increase in scholarship support hasn't been able to keep up with tuition increases, engineering students and their families have had to increase their debt levels to cover the additional costs. In the Chemical & Biomolecular Engineering Department, department scholarships from alumni and corporate donors help defray a small part of the loan burden for many of our students.

Department scholarships are determined mainly by need, however, when a scholarship specifies that a student’s merit be considered, both merit and need are taken into account. We thank those of our alumni who have established scholarship endowments for this purpose as well as our corporate donors who provide scholarships on an annual basis.

A description of the qualifications for each endowed scholarship is available on the Ohio State Treasurer's website: [http://www.treasurer.ohio-state.edu/endowment/index.html](http://www.treasurer.ohio-state.edu/endowment/index.html).
Lubrizol Foundation Scholarship
Brooke Laing  Steven Ross

The Tom and Gail Reardon Chemical Engineering Scholarship Fund
Alexander James  Nicholas Wood

The Howard R. Steele Memorial Scholarship in Chemical Engineering
Mariah Benson

Aldrich Syverson Scholarship
Kevin Asper  Scott Hochberg
Lauren Dellow  Timothy Kremer

H. Richard Unkel Chemical Engineering Class of 1941
David Benco  William Luppino
Steven Cooper  Ronald Lechner
Chloe Higgins  Sean Merrill
Clinton Holloway  Alexander Weber
Matthew Konderson

Harry B. Warner Scholarship
Peter Dobler

William H. Whirl Scholarship
Leslie Vanderkolk

The Michael D. Winfield Scholarship
Ryan Clark

Fred H. Winterkamp Memorial Scholarship
Cole Lapp  Abigail Prickett
Daniel Manning  Alexander Woll
Daniel Morris

Student preparing the water-diluted acetic acid charge for the activated carbon fixed bed adsorption experiment in the Unit Ops Lab.
Graduate Program

Ranking

The 2012 *U.S. News and World Report* rankings of engineering graduate programs placed the Lowrie Department of Chemical and Biomolecular Engineering at #27. While the college rankings are based in good part on objective measures such as research funding, number of Ph.D. graduates, number of publications, etc., the departmental rankings are based on subjective surveys of deans of engineering and industrial executives.

<table>
<thead>
<tr>
<th>Ohio State College of Engineering</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering Specialties</td>
<td></td>
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</tr>
<tr>
<td>Aerospace</td>
<td>21</td>
<td>21</td>
<td>22</td>
<td>19</td>
<td>19</td>
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<tr>
<td>Biomedical</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td><strong>Chemical</strong></td>
<td><strong>26</strong></td>
<td><strong>27</strong></td>
<td><strong>27</strong></td>
<td><strong>27</strong></td>
<td><strong>27</strong></td>
</tr>
<tr>
<td>Civil</td>
<td>36</td>
<td>38</td>
<td>36</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>Computer Engineering</td>
<td>23</td>
<td>29</td>
<td>28</td>
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<td>23</td>
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<tr>
<td>Electrical</td>
<td>26</td>
<td>26</td>
<td>22</td>
<td>22</td>
<td>22</td>
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<tr>
<td>Environmental/Env. Health</td>
<td>39</td>
<td>39</td>
<td>42</td>
<td>42</td>
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<td>Industrial/Manufacturing</td>
<td>19</td>
<td>18</td>
<td>21</td>
<td>16</td>
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<tr>
<td>Materials</td>
<td>14</td>
<td>14</td>
<td>15</td>
<td>15</td>
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<tr>
<td>Mechanical</td>
<td>21</td>
<td>20</td>
<td>22</td>
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<td>21</td>
</tr>
<tr>
<td>Nuclear</td>
<td>Nr</td>
<td>Nr</td>
<td>13</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

Faculty Productivity

The following table, relating to faculty research and our Ph.D. program, attests to our faculty’s productivity. In the past five years the average graduation rate was 13 Ph.D. students per year and a ratio of 0.73 Ph.D. degrees per faculty member. 2011 shows a decline in research expenditures to $10.6M, reflecting the end of substantial funding from the “Third Frontier” program from the State of Ohio.

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Faculty</td>
<td>17</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>Publications</td>
<td>89</td>
<td>78</td>
<td>91</td>
<td>125</td>
<td>100</td>
</tr>
<tr>
<td>Publications per Faculty</td>
<td>5.23</td>
<td>4.58</td>
<td>5.06</td>
<td>6.58</td>
<td>5.26</td>
</tr>
<tr>
<td>Books or Book Chapters</td>
<td>11</td>
<td>8</td>
<td>14</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Patents</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Total Grad Students</td>
<td>96</td>
<td>95</td>
<td>95</td>
<td>88</td>
<td>89</td>
</tr>
<tr>
<td>Grad Students/Faculty</td>
<td>5.65</td>
<td>5.58</td>
<td>5.58</td>
<td>4.89</td>
<td>4.94</td>
</tr>
<tr>
<td>Ph.D. Degrees Granted</td>
<td>11</td>
<td>11</td>
<td>15</td>
<td>18</td>
<td>9</td>
</tr>
<tr>
<td>Ph.D. Degrees/Faculty</td>
<td>0.65</td>
<td>0.65</td>
<td>0.88</td>
<td>0.95</td>
<td>0.5</td>
</tr>
<tr>
<td>Research Expenditures*</td>
<td>12,249,000</td>
<td>12,462,000</td>
<td>13,332,000</td>
<td>16,181,000</td>
<td>10,648,893</td>
</tr>
<tr>
<td>Research Exp/Faculty</td>
<td>720,530</td>
<td>733,060</td>
<td>740,670</td>
<td>851,580</td>
<td>560,468</td>
</tr>
</tbody>
</table>

*Data from the Ohio State University Foundation (fiscal year)*

Research Expenditures

For the past five years, our research expenditures (data from the Ohio State Research Foundation) have been outstanding. On a per-capita basis, expenditures averaged over $700k per year during fiscal years 2007-2011. Our faculty are among the most productive at Ohio State and near the top of all Chemical Engineering departments in the nation.
Graduate Degrees Granted

**Winter Quarter 2011**

**Master of Science**  
Aarti Arumugam  
Preshit Gawade  
Daniel Lundy  

**Doctor of Philosophy**  
Ning Han  

**Dissertation:** Hydrogel-Electrospun Fiber Mat Composite Materials for the Neuroprosthetic Interface

Hamsa Priya Mohana Sundaram  
Michael Paulaitis  

**Dissertation:** Molecular Modeling of Solute/Co-Solvent/Water Preferential Interactions: Toward Understanding the Role of Hydration and Co-solvent in Weak Protein-Protein Interactions

Fu-Chen Yu  
L.S. Fan  

**Dissertation:** Reactivation Mechanism Studies on Calcium-Based Sorbents and its Applications for Clean Fossil Energy Conversion Systems

**Spring Quarter 2011**

**Master of Science**  
Ashutosh Bhabhe  
Adeline Sadeli  
Daniel Lamone  
Troy Vogel  
Dieter von Deak  

**Doctor of Philosophy**  
Congcong Lu  

**Dissertation:** Butanol Production from Lignocellulosic Feed Stocks by Acetone-Butanol-Ethanol Fermentation with Integrated Product Recovery

**Summer Quarter 2011**

**Master of Science**  
Harshad Pathak  

**Doctor of Philosophy**  
Ching-Suei Hsu  

**Dissertation:** Integrated Rotating Gibrous Bed Bioreactor - Ultrafiltration Process for Xanthan Gum Fermentation

Troy Vogel  

**Dissertation:** Dynamic Behavior of Self-Assembled Langmuir Films Composed of Soluble Surfactants, Insoluble Amphiphiles, and Nanoparticles

Dieter von Deak  

**Dissertation:** Heteroatom-containing Carbon Nanostructures as Oxygen Reduction Electrocatalysts for PEM and Direct Methanol Fuel Cells

**Autumn Quarter 2011**

**Master of Science**  
Adam Burley  
Nicole Guzman  
Kevin Hinkle  
Shweta Singh  

**Doctor of Philosophy**  
Jacob Elmer  

**Dissertation:** Expression, Purification, and Characterization of Mammalian and Earthworm Hemoglobins

Yipin Zhou  

**Dissertation:** Synthesis and Biophysical Characterization of Polymerized Hemoglobin Dispersions of Varying Size and Oxygen Affinity as Potential Oxygen Carriers for use in Transfusion Medicine

**Graduate Student Fellowships**

**Presidential Fellowship**  
Haifeng Shi  

**University Fellowships**  
Clayton Deighan  
Ankita Majumder  
Sumant Patankar  
Varun Vakharia  

**Other Fellowships**  
Nicole Guzman – Ohio Space Grant Consortium Fellowship, Dow Chemical Graduate Student Fellowship

Robert Urban – Dow Chemical Graduate Student Fellowship
Graduate Program Seminar Series

**Winter 2011**

1/6  **Randall Meyer**, Assistant Professor, Department of Chemical Engineering, University of Illinois at Chicago, “Density Functional Theory Studies NOx Storage Reduction Catalysis”

1/13 **Ian Wheeldon**, Post-doctoral Fellow, The Wyss Institute for Biologically Inspired Engineering, Harvard University, and The Center for Biomedical Engineering, Brigham and Women’s Hospital, Harvard Medical School, “Proteins as Materials: Engineering Multi-Functional and Biologically Active Hydrogels”

1/27 **Sunho Choi**, Dreyfus Foundation Post-doctoral Fellow, Georgia Institute of Technology, School of Chemical and Biomolecular Engineering, “Engineering Nanostructured Materials for Clean Energy”

2/3  **Susan Napier Thomas**, Postdoctoral Researcher, Laboratory for Lymphatic & Cancer Bioengineering, Laboratory for Regenerative Medicine & Pharmacobiology, Institute of Bioengineering, Swall Federal Institute of Technology, “Biochemical Engineering of Cancer Immunotherapeutics”

2/10 **Rui Huang**, Ph.D. Candidate, Department of Chemical Engineering, Carnegie Mellon University, “Advanced Control and Dynamic Real-time Optimization for Large-scale Processes”

2/17 **Zeynep Gumus**, Department of Physiology and Biophysics and the Institute for Computational Biomedicine, Weill Medical College, Cornell University, “Construction, Analysis and Visualization of Networks in Systems Engineering”

2/24  **Pedro Cabrales**, Assistant Professor, Bioengineering, University of California, San Diego, “Gasotransmitters From Earth’s Primordial Atmosphere to Key Regulators of the Cardiovascular System”

3/3  **Lisa Hall**, Postdoctoral Associate, Department of Computational Materials Science and Engineering, Sandia National Laboratories, “Ionic Aggregate Morphology and Counterion Diffusion in Model Ionomers”

**Spring 2011**

4/7  **Jonathan Dordick**, Howard P. Isermann Professor and Director of the Center for Biotechnology and Interdisciplinary Studies, Department of Chemical & Biological Engineering, Rensselaer Polytechnic Institute, “Enzyme-Based Nanocomposites: From Topological Stabilization to Self-Decontaminating Surfaces”

4/14  **Suljo Linic**, Assistant Professor, Department of Chemical Engineering, University of Michigan, “Design of Targeted Nanostructures for Efficient and Environmentally Friendly Catalysis and Photo-Catalysis”

4/21  **Mark McCready**, Professor and Department Chair, Department of Chemical and Biomolecular Engineering, University of Notre Dame, “Limits of Analysis (in multiphase flows)”

4/28  **Jennifer Maynard**, Assistant Professor, Department of Chemical Engineering, University of Texas at Austin, “Discovery and development of biologicals to protect against Bordetella pertussis”

5/12  **Jacob Masliyah**, Distinguished University Professor Emeritus, Department of Chemical and Materials Engineering, University of Alberta, “Bitumen Production from Alberta Athabasca Oil Sands: Challenges and Opportunities”

5/19  **Frank Bates**, Lowrie Lecture I, Regents Professor and Department Head, Chemical and Materials Science, University of Minnesota, “Macromolecular Surfactants”

5/20  **Frank Bates**, Lowrie Lecture II, Regents Professor and Department Head, Chemical and Materials Science, University of Minnesota, “Reflections on Our Discipline: A Tribute to Neal Amundson”

5/26  **Robert Weiss**, Hezzleton E. Simmons Professor of Polymer Engineering, College of Polymer Science and Polymer Engineering, University of Akron, “Shape Memory Polymers Based on Compounds of an Ionomeric Elastomer and Fatty Acid Salts”

6/2  **Jacqueline Shanks**, Mamley Hoppe Professor, Metabolic Engineering Leader, NSF Engineering Research for Biorenewable Chemicals, Department of Chemical and Biological Engineering, Iowa State University, “Metabolic Flux Cartography – On the Road to Sustainable Food, Feed, Fuels and Chemicals”

**Autumn 2011**

9/29  **Xiaoan Sean Fu**, Assistant Professor, Chemical Engineering, University of Louisville, “A Microreactor Device Approach for Analysis of Trace VOCs in Exhaled Breath”
Graduate Student Awards

Hyunkyu Choi: Outstanding Graduate Award for Academic Achievement, Lowrie Banquet

Jacob Elmer: Outstanding Graduate Award for Academic Achievement, Lowrie Banquet

Daniel Knight: Outstanding Graduate Award for Academic Achievement, Lowrie Banquet

Congcong Lu: Outstanding Graduate Award for Academic Achievement, Lowrie Banquet

Laura Merugula: Accepted to attend the 2nd Women’s International Research Engineering Summit – March 30 – April 1, 2011.

Elif Miskioglu: Special Recognition at the Lowrie Banquet, Selected to receive an NSF Graduate Research Fellowship; Accepted into the HHMI MED into GRAD Scholars Program at The Ohio State University

Kelley Mullick: Outstanding Graduate Award for Academic Achievement, Lowrie Banquet

Kartik Ramasubramanian: Outstanding Graduate Award for Academic Achievement, Lowrie Banquet; 2011 AIChE Separations Division Graduate Student Award

Shreyas Rao: Won the Ray Travel Award from the Council of Graduate Students, Special Recognition, Lowrie Banquet, American Institute of Chemists (AIC) Outstanding Graduate Student Award

Haifeng Shi: Outstanding Graduate Award for Academic Achievement, Lowrie Banquet, Won Travel Grant from the Society of Rheology to attend the 83rd Annual Meeting, Received Presidential Fellowship from the Graduate School

Shweta Singh: Outstanding Graduate Award for Academic Achievement, Lowrie Banquet

Deepak Sridhar: Outstanding Graduate Award for Academic Achievement, Lowrie Banquet

Ru Zang: Outstanding Graduate Award for Academic Achievement, Lowrie Banquet

Yanan Zhao: Won the 2011 Eliaz Klein Founders’ Travel Award to attend the 2011 Annual Meeting of NAMS in Las Vegas, NV
2011 Alumni Donors

1936 - Joseph G. Mravec

1940 - Charles Boardman III, Loren F Grandey, E. H. Strobel

1941 - David Thomas

1943 - Dalton F. Drake, Roy E. Schneider, James C. Wynd

1944 - Wallace L. Bostwick, Edward W. Powell

1946 - Kenneth A. Brandstetter, Haskell H. McGriff

1947 - William K. Fell, Thurman L. Graves, John M. Kolbas, Herbert G. Krane, John B. Martin, Bryce H. McMullen, Donald E. Stauffer

1948 - Richard A. Arnold, John A. Burgbacher, Lee B. Fosdick, Earl W. Goodman, Manuel Ramos

1949 - Paul E. Bates, J. Howard Kerstetter Jr., Theodore A. Rado, Donald R. Roberts, Roland L. Spencer


1951 - Charles L. Dornbusch, Richard Eilerman, John R. Parkinson, Norbert Reinert, David Strang

1952 - James Froning, Donald E. Haupt, C. Richard Heil, Charles Schmitz, David Stephan

1953 - Robert Bates, Roger L. Briggs, David E. Buskirk, Donald E. Findlay, Wilfred C. Ling, Donald A. MacDougall, Harold Stelzer, James Wilson

1954 - Gilbert E. Raines


1956 - Robert A. Cody, William D. Coe, Herbert H. Fanning

1957 - Walter R. Andrews, Jr., Walter A. Flack, Jon D. Helms, Sung Ho Hong


1961 - Paul R. Bigley, Thomas Cattarin, Richard B. Cooper, Ronald L. Follmer, Jack Hammond, Ronald D. Harris, David E. Hazlebeck, Donald I. King, Kenneth Negley, Jerry Pausch, John N. Rapach, Larry E. Woodworth

1962 - David E. Bidstrup, Michael Hauswirth, C. David Osburn, Michael D. Winfield


1964 - Alkis Constantinides, Michael B. Cutlip, William R. Ferris, Alan K. Kochsiek, Girish D. Parikh, James B. Sapp


1966 - James G. Arnold, William F. Deerrhake, Thomas E. Fitz, Sr., William G. Lowrie, Glenn McKe, John W. Mitchell


1968 - Geoffrey A. Lindsay, Dean Reber, John M. Salladay


1971 - Juliet Davison Balmer, Kerry G. Hertenstein, Jeffrey L. Kosch, William E. Pritchard, Armen Tergevorkian

1972 - Yoon Soo Song

1973 - John C. Bost, Thomas E. Claugus,

1974 - Christopher R. Behary, John E. Myers, George L. Ott, Michael A. Patterson, Michael J. Pedersen

1975 - John T. Erikson, Kurt Frey, Stephen L. Grant

1976 - Debra G. Billman, James M. Delabar, Larry Zeagler

1977 - Robert L. Collins, Linnea A. Sheppard


1981 - Jerri B. Comer, Ronald A. Gibson, Douglas Lenz, Sunil Satija, James A. Telljohann

1982 - Alex W. Kawczak, Dan Lambert, Christina S. Sistrunk, Terry Song-Hsing Chern, Heng-Sheng Torng

1983 - Michael Brian Begland, Tracy Flora Begland, Rita Eiben Broestl, Thomas D. Burns, Samuel D. Fink, Robert L. Newman, Keith R. Nowak, Jeffrey W. Patterson, Christopher Richied, Manoj Kumar D Sanghvi, Clark Wade

1984 - Joseph Herzog, Gregory M. Masica, Patrick A. Renner, Tyrone A. Scopec

1985 - Douglas J. Ball, Roger G. Facer, Timothy A. Johnson, David J. Moonay

1986 - Edward Bochenek, Rajeev L. Gorowara, Brian A. Yanok

1987 - D. Brian Noe, Donna M. Walter

1988 - Amy Schmidt Doty
1989 - Stuart F. Doty, Amy Reynolds Pressly

1990 - Frank Kizlik, James V. Lombardi, Timothy F. Matheis

1991 - Kristan K. Latham, Rick Wright

1992 - Pamela J. Archer, Julie Vander Meer Joehlin, Scott A. Joehlin, Shanthi Sravana

1993 - Frank E. Seipel

1994 - John Dee Clay, Kumar Karnati Sravana, Christopher W. Voight

1995 - Aisha Barry

1996 - Beth Gibson, Jack R. Reese II

1997 - David I. Evans, Michael T. Timko

1999 - James W. Holder, Mohamadou Sarr

2000 - Regis Paul Geisler III

2001 - Thomas J. Jaynes, Eric S. Jensen, Paul M Noltemeyer

2002 - Jun Luo, Yunying Qi

2003 - Siyi Lai

2004 - Lori Engelhardt, Erica Nicole Jones

2005 - Garrett E. Pavlovicz

2006 - Emily A. Jordan

2007 - Stephen M. Gronauer, Maxwell J. Wingert

2009 - Conor Hawkins, Andrew W. Vail


Top Photo: Class of 1976
Above Photo: Class of 1976’s 35th Reunion at the Buckeyes’ Spring Game
**Faculty**

**Aravind Asthagiri**

**Referred Papers**


**Current Projects and Grants**

- **Asthagiri, Aravind (50%) 2009-2011**
  Tailoring enantiospecific properties of chiral metal nanoclusters on chiral metal oxides, National Science Foundation.

- **Asthagiri, Aravind (50%) 2009-2014**
  Computational catalysis and atomic-level synthesis of materials: building effective catalysts from first-principles, DOE-EFR (LSU)

- **Asthagiri, Aravind (25%) 2009-2012**
  Growth and reactivity of oxide phases on crystalline Pd and Pt surfaces, DOE-BES.

**Bhavik Bakshi**

**Books and Book Chapters**


**Refereed Papers**


- **Grubb, G. F., and Bakshi B. R.,** “Appreciating the Role of Thermodynamics in LCA Improvement Analysis via an Application to Titanium Dioxide Nanoparticles”, *Environmental Science and Technology*, 45, 7, 3054-3061, 2011


- **Bakshi, B. R.,** “The Path to a Sustainable Chemical Industry: Progress and Problems;” *Current Opinion in Chemical Engineering*, 1, 1, 64-68, 2011


**Current Projects and Grants**

- **$200,000 Fiksel, Joseph, (co-PI: Bhavik R. Bakshi)** Resilient Enterprise Consortium, Center for Resilience

- **$300,000 Bakshi, Bhavik R. (co-PI William J. Mitsch)** 2009-2012 Toward Integration of Industrial Ecology and Ecological Engineering, National Science Foundation

- **$418,965 Li, Yebo (co-PI: Bhavik R. Bakshi)** 2012-2015 Production of Bio-polyols and Derivatives from Biodiesel Based Crude Glycerol for Low VOC Coating Applications, U.S. Department of Agriculture

**Robert S. Brodkey**
Professor Emeritus, Ph.D., University of Wisconsin, 1952. Validation of computational fluid dynamic codes with experimental measurements that involves full field, time-resolved, velocity vector measurements.

**Jeffrey Chalmers**
Professor, Ph.D., Cornell, 1988. Director, Analytical Cytometry Shared Resource, The Ohio State University Comprehensive Cancer Center

**Awards and Honors**

- College of Engineering Lumley Research Award

**Refereed Papers**


Sun, J., Zborowski, M., Chalmers, J.J. “Quantification of both the presence, and oxidation state, of Manganese in Bacillus atrophaeus spores and its imparting of magnetic susceptibility to the spores,” Biotechnology and Bioengineering, 108(5):1119-1120. 2011. PMID: 21449026


Current Projects and Grants
CTC blood testing and Analysis. Navel Health Research Center

$50,000 Chalmers, J.J. 9/1/2010-12/31/2011
Characterization of Millipore disposable Bioreactor, (Millipore Corporation)

$144,565 Chalmers, J.J. (P.I. sub-contract) 1/31/2011-1/31/2012, Cell Election by magnetic flow sorting (NCI)


$30,000 Chalmers, J.J. (Jackson, PI of Center) 6/30/2010-6/30/2011, (ARRA) CCTS NCTMP ARRA Pilot

$969,920 Chalmers, J.J. 9/9/2008-6/30/2012
Large-scale human placenta progenitor, Cell-derived erythrocyte production – continuous red blood cell production

CCLI: Educational materials to enhance Chemical Engineering Curricula with applications in biological engineering


Stuart Cooper
University Scholar Professor and Department Chair, Ph.D., Princeton University, 1967. Polymer Science and Engineering, Properties of Polyurethanes and Ionomers, Blood-Materials Interactions, Tissue Engineering

Awards and Honors

Elected to the National Academy of Engineering

Books and Book Chapters

Liang-Shih Fan
University Distinguished Professor and C. John Easton Professor, Ph.D., West Virginia University, 1978. Fluidization and Multiphase Flow, Particle Technology, Energy and Environmental Engineering, and Tomography.

Honors and Awards

Distinguished Lectureship, University of Utah, Chemical Engineering Department, April 5, 2011.

Refereed Papers


**Current Projects and Grants**

- **Awards and Honors**
  - Advisor Recognition for Graduate Research Paper Award in Separations, Separations Division of the American Institute of Chemical Engineers, 2011.
  - Invited Distinguished Lecture, "New Membranes for CO2 Separation and H2 and Water Purification"; Distinguished Lecture Series, Waterloo Institute for Nanotechnology, University of Waterloo, Waterloo, ON, Canada, April 14, 2011.

- **Refereed Papers**

- **Internet articles**

- **Current Projects and Grants**
  - **$3,200,000** Fan, Liang-Shih 2010-2013
    - Pilot Demonstration of the Carbon Negative Syngas Chemical Looping Process, DOE and Ohio Coal Development Office (OCDO)
  - **$2,860,143** Fan, Liang-Shih 2009-2012
    - Coal-Direct Chemical Looping Retrofit to Pulverized Coal Power Plants for In-Situ CO2 Capture, Department of Energy (DOE)
  - **$560,00** Fan Liang-Shih 2012-2014
    - Electrical Capacitance Volume Tomography for High Temperature Applications, Department of Energy (DOE)
  - **$299,819** Fan, Liang-Shih 2009-2012
    - Process/Equipment Co-simulation on Syngas Chemical Looping Process, Department of Energy (DOE)
  - **$160,000** Fan, Liang-Shih 2010-2012
    - Coal Feeder Development for the Coal-Direct Chemical Looping Process, Ohio Coal Development Office (OCDO)
  - **$160,000** Fan, Liang-Shih 2010-2012
    - Quantum Calculation to Predict Oxygen Migration Pathway, Ohio Coal Development Office (OCDO)
  - **$160,000** Fan, Liang-Shih 2010-2012
    - CCR Process for CO2 and SO2 capture: Investigation of Realistic Regeneration and Reactivation Conditions, Ohio Coal Development Office (OCDO)
  - **$100,000** Fan Liang-Shih 2011-2013
    - Hydrator Design for CCR Process, Ohio Coal Development Office (OCDO)
  - **$202,444** Fan, Liang-Shih 2010-2013
    - I-SMART: Integrated Curriculum for Smart Power Engineering, Department of Energy (DOE)
  - **$381,826** Feinberg, Martin 2008-2013
    - Collaborative Research: Multistability in Biological Networks, National Institutes of Health - General Medical Sciences
  - **$340,718** Feinberg, Martin 2010-2013
    - Design Principles of Biochemical Reaction Networks, Emerging Frontiers, National Science Foundation

**Martin Feinberg**

Richard Morrow Professor of Chemical and Biomolecular Engineering and Professor of Mathematics, Ph.D., Princeton University, 1968, Complex chemical systems, behavior of chemical and biochemical reaction networks

**W.S. Winston Ho**

Professor, Ph.D., University of Illinois, Urbana, 1971. Molecularly Based Membrane Separations, Fuel-Cell Fuel Processing and Membranes, Transport Phenomena in Membranes, Separations with Chemical Reaction

**Awards and Honors**

Advisor Recognition for Graduate Research Paper Award in Separations, Separations Division of the American Institute of Chemical Engineers, 2011.

Invited Distinguished Lecture, "New Membranes for CO2 Separation and H2 and Water Purification"; Distinguished Lecture Series, Waterloo Institute for Nanotechnology, University of Waterloo, Waterloo, ON, Canada, April 14, 2011.


**Refereed Papers**


Kurt Koelling
Professor, Ph.D., Princeton University 1993. Polymer Rheology and Processing, Polymer Nanocomposites, Multi-phase flows, Micro/Nanofluidics.

Isamu Kusaka
Associate Professor, Ph.D., Caltech 1998. Statistical mechanics

Referred Papers

L. James Lee
Professor, Ph.D., University of Minnesota, 1979. Polymer Engineering, Micro/Nanotechnology, BioMEMS/NEMS

Books and Book Chapters

He, W.S. Winston


$150,000 Ho, W.S. Winston 08/01/2011-07/31/2013 National Science Foundation, Carbon Dioxide and Hydrogen Sulfide Clean-up of Gases, OSURF Project No. 60030576.


Current Projects and Grants

$12,900,000 Lee, L. James (PI) 2009-2014 Nanoscale Science and Engineering Center for Affordable NANOEngineering of Polymer Biomedical Devices-Phase II, National Science and Foundation

$8,000,000 Lee, L. James (PI) 2007-2011 Commercialization of High-Performance Nano-Taille Structural Composites for Energy and Survivability Applications, Ohio Department of Development

$2,886,763 Lee, L. James (co-PI) 2008-2013 Targeted Lipopolyplexes for Oligonucleotide Delivery to AML, National Institute of Health

$419,375 Lee, L. James (co-PI) 2011-2013 Therapeutic Delivery of Anti-miR Oligos to Hepatocellular Cancer, National Institute of Health

$354,000 Lee, L. James (PI) 2008-2011 Novel Microfluidic Synthesis of Nanoparticles for Oligonucleotide Delivery, National Institute of Health

$275,000 Lee, L. James (PI) 2011-2012 New Bio-nanotechnology Methods for Toxicity Evaluation of Industrial Nanoparticles, National Science and Foundation/EPA

$95,000 Lee, L. James (PI) 2011-2012 Polymer Nanocellular Fibers Prepared via Supercritical Carbon Dioxide Extrusion, Taichung Textile Research Institute

$35,000 Lee, L. James (PI) 2011-2012 Polymer Foams for Thermal Insulation, Owens Corning

Umit Ozkan

College of Engineering Distinguished Professor, Ph.D., Iowa State University, 1984. Catalysis and catalytic materials. Application of catalysis in the areas of energy conversion and emission control.

Awards and Honors

Elected a Fellow of the American Chemical Society (2011)

Received the title of College of Engineering Distinguished Professor (2011)

TechColumbus Innovation Award (2011)

Referred Papers


Lakshminarayanan, N., Choi, H., Kuhn, J.N., Ozkan, U.S., “Effect of additional B-site transition metal doping on oxygen transport and activation characteristics in La₉₋₅(Coₓ₋₅Feₓ₋₅)ₓO₉₋₅ (where X= Zn, Ni or Cu) perovskite oxides,” Applied Catalysis B, 103, 318-325 (2011)


Ozkan, U.S. “Th e Effect of additional transition metal doping on oxygen transport and activation characteristics in La₉₋₅(Coₓ₋₅Feₓ₋₅)ₓO₉₋₅ (where X= Zn, Ni or Cu) perovskite oxides,” Applied Catalysis B, 103, 318-325 (2011)

Patents


Current Projects and Grants

$990,000 Ozkan, U.S. 2007-2013 Investigation of the nature of active sites on heteroatom-containing carbon nano-structures for oxygen reduction reaction, US Department of Energy-Basic Energy Sciences

$162,057 Ozkan, U.S. 2009-2010 Internal Steam Reforming of Natural Gas for SOFC, Rolls-Royce/OHio Department of Development

$570,000 Ozkan, U.S. 2009-2012 Natural Gas Engine After-treatment, Caterpillar, Inc.

$30,000 Ozkan, U.S. 2010-2011 Dual NOx/NH3 Sensors for Diesel After-treatment Systems NSF/NexTech Materials

$80,000 Ozkan, U.S. 2010-2011 Novel cathode electrocatalysts for reduced temperature coal gas-fed SOFC systems, Ohio Coal Development Office


$160,000 Ozkan, U.S. 2010-2012 Coal-based SOFC, Ohio Coal Development Office
Andre Palmer

Associate Professor, Ph.D., The Johns Hopkins University, 1998. Bioengineering & Hemoglobin-Based Oxygen Carriers

Refereed Papers


Current Projects and Grants
$1,875,000 Andre Palmer (PI) 2006-2012 Mechanically stable blood substitutes Agency: National Institutes of Health Grant: R01HL078840

$2,500,000 Andre Palmer (PI) 2008-2013 Ohio’s Sustainable Science and Engineering Talent Expansion Program (OSTEP) – Bridges to Success National Science Foundation; Co-PIs: S. Olesik, J. Ridgway, L. Mayer

$530,548 Andre Palmer (PI), (PI, John Lannutti (Co-PI) and Mariano Viapiano (Co-PI)) 2010-2013 Title: Nanofiber-based sensors for oxygen determination in model glioblastomas Agency: National Science Foundation; Grant: CBET-1033991

Michael Paulaitis

Professor and Ohio Eminent Scholar, Ph.D., University of Illinois, 1976. Molecular Thermodynamics, Role of Hydration in Biological Organization, Self-Assembly and Molecular Recognition, Multi-scale Modeling of Biological Interactions.

Refereed Papers


Current Projects and Grants
$100,000 2011 - 2012 Characterization & Synthesis of Mimetic Cell-Secreted Exosomes for Cell Signaling; MRSEC Proto-IRG Seed Grant

$263,754 2010 - 2012 Exosome miRNA in Thyroid Cancer Progression. NIH DAB Activities to Promote Research Collaborations

$49,394 2011-2012 CANPBD II: MicroRNA expression profiling for tumor-cell secreted microvesicles. National Science Foundation

$23,360 2009-2011 Cell Trap, NIH ARRA

James Rathman

Professor, Ph.D., University of Oklahoma, 1987. Chemical informatics, interfacial phenomena, molecular self-assembly

Awards and Honors
College of Engineering Charles E. MacQuigg Outstanding Teaching Award (2011)

Current Projects and Grants
$12,500 James Rathman 10/2010-2/2011 Cell Membrane Interactions with Small Molecules, L’Oreal Foundation


$148,000 James Rathman 4/2011-12/2013 Development and Implementation of Chemoinformatics and Statistical Methods for Assessing Chemical Toxicity Evidence From Multiple Sources, Altamira, LLC

David Tomasko

Professor, Ph.D., Univ. of Illinois Urbana-Champaign, 1992. Molecular Thermodynamics, Supercritical Fluid Processing, Polymer Processing, Engineering Education

Refereed Papers


Current Projects and Grants
$2,500,000 Tomasko, David (PI) 2008-2013 Ohio’s Sustainable Science and Engineering Talent Expansion Program (OSTEP) – Bridges to Success National Science Foundation; Co-PIs: S. Olesik, J. Ridgway, L. Mayer
Tomasko, David (Co-PI) 2009-2014 Center for Affordable Nanoengineering of Polymeric Biomedical Devices, National Science Foundation; PI: L.J. Lee, Co-Pi: A.T. Conlisk, J.J. Chalmers, R. Lee

MRI: Acquisition of High Field Physical Properties Measurement System with Cryogenic AFM/MFM, National Science Foundation. $12,000,000

Tomasko, David (Co-PI) 2011-2012 Collaborative Research: Nanopore confinement of C-H-O mixed-volatile fluids relevant to subsurface energy systems, Department of Energy; PI: D.R. Cole (Earth Sciences) $150,000


Current Projects and Grants
$275,000 Wood, David W. 2010-2012 Bacterial Biosensors for Endocrine Disrupting Compounds, National Institute of Environmental Health Sciences, NIH Exploratory Research Grant(R21)


Barbara Wyslouzil

Professor, Ph.D., Caltech, 1992. Aerosol Science, Nucleation, Nanoparticle Growth and Structure, Biomedical Applications of Aerosols

Books and Book Chapters


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Barbara Wyslouzil

Professor, Ph.D., Caltech, 1992. Aerosol Science, Nucleation, Nanoparticle Growth and Structure, Biomedical Applications of Aerosols

Books and Book Chapters


Books and Book Chapters


Refereed Papers


Current Projects and Grants
$450,000 Wyslouzil, Barbara E. 2009-2012 Nanodroplet aerosols: Nucleation rates and structure, National Science Foundation

$134,367 Wyslouzil, Barbara E. 2009-2012 Multifunctional nanoparticles: Formation and fundamental studies, National Science Foundation (OSU NSEC, subaward)

$399,961 Bohrer, Gil, Zhao, Ling Ying, Wyslouzil, Barbara E., 2010-2012 Large eddy simulations of PM dispersion to quantify the effects of windbreaks on air quality around CAFOs, U.S. Department of Agriculture

$213,178 Wyslouzil, Barbara E. 2010-2013 GOALI: Collaborative Research: Fundamental studies of water-hydrocarbon condensation National Science Foundation

Shang-Tian Yang
Professor, Ph.D., Purdue Univ. 1984. Bioprocess Engineering, Biochemical Engineering, Metabolic Engineering, Tissue Engineering; Biofuels and Bio-based Chemicals; High Throughput Screening for Drug Discovery and Bioprocess Optimization; Stem Cell Engineering

Awards and Honors
AIChE Division 15 Food, Pharmaceuticals & Bioengineering Plenary Lecture Award (2011)

Books and Book Chapters


Jacques Zakin

Refereed Papers


**Current Projects and Grants**

$136,852  
Faculty & Staff

Professors
Bhavik Bakshi
Jeffrey Chalmers
Stuart Cooper
Liang-Shih Fan
Martin Feinberg
Winston Ho
Kurt Koelling
L. James Lee
Umit Ozkan
Andre Palmer
Michael Paulaitis
James Rathman
David Tomasko
Barbara Wyslouzil
Shang-Tian Yang

Emeritus Professors
Robert S. Brodkey
Harry C. Hershey
Thomas L. Sweeney
Jacques L. Zakin

Associate Professors
Aravind Ashagiri
Isamu Kusaka
Jessica Winter
David Wood

Clinical Faculty
Carlo Scaccia

Administrative Staff
Angela Bennett
David Cade
Bill Cory
Mike Davis
Brian Endres
Leigh Evrard
Lynn Flanagan
Paul Green
Jason Haskins
Geoff Hulse
Dave Jones
Kirsten Marinko
Holly Longman
Susan Tesfai

Graduate Program Coordinator
Building Coordinator
Human Resources Manager
Systems Specialist
Academic Advising Coordinator
Design Engineer
Fiscal Manager
Laboratory Supervisor
Director of Development
Director of Information Technology
Senior Support Engineer
Communications Coordinator
Undergraduate Academic Advisor
Fiscal Associate

Post Doctoral Researchers
Anne-Marie Alexander
Chih-Chin Chen
Ying Jin
Meng Lin
Xiaowa Nie
Shahid Rameez
Juan Tian
Dawei Wang
Jianquan Xu
Jingbo Zhao
Haojin Zhou
Qiang Zhou

Research Scientists
Richard Lease
Gang Ruan

Research Associates
Qussai Mohammad
Marashdeh
William Kane Wang

Senior Research Associate

Visiting Scholars
Xiaochong Gao
Ding Li
Changhua Shi
Kai-jun Xiao
Chunhai Yi
Lijie Zhang
Tiantao Zhao
Xiang Zou