Dear Alumni, Students and Friends:

On behalf of our faculty, I wish everyone all the best in 2009. We’ve had an extraordinary year in the department, with enrollment rising fast, plans for our new building evolving, many successes noted for our students and faculty and a wonderful gift commitment by Ernestine R. and William G. Lowrie (BCE ’66). This annual report includes articles on all of these achievements, and I especially urge you to read the piece on Ernie and Bill.

The Lowrie gift includes $11 million for our new, larger facility and $1 million for an endowed professorship in memory of Professor H.C. “Slip” Slider. In addition, the gift plan includes a future $2 million endowed Ernestine R. Lowrie chair and a $3 million endowment for emerging priorities. The University is responding to this magnanimous investment by naming the department the “William G. Lowrie Department of Chemical and Biomolecular Engineering.” Ours will be the first named department at Ohio State. Ernie wanted only Bill’s name in the department title, but we are pleased to name the new endowed chair in her name. The Lowries’ gift will facilitate a significant transformation of the department both physically, in terms of a new building, and intellectually, as it opens the door with enhanced resources to recruit new faculty, strengthen our undergraduate program and support advanced research. All of our faculty and students thank the Lowries for their generosity, which will greatly strengthen our department in the years to come.

In addition to Bill and Ernie’s $11 million for the new Koffolt building, other ChemEs and friends have given nearly $600,000 for the project. We must raise $17.5 million by 2014 for the $120 million complex. The department is counting on you to help close this $6 million gap. There will be naming opportunities throughout our new home, beginning at $25,000 and up.

This fall, more than 100 students, mostly sophomores, took our first course in material and energy balances. We taught a third section winter quarter, so we are anticipating graduation classes approaching or exceeding 100 in the not-too-distant future. Our new students are excellent, as Ohio State and the College of Engineering have become more and more selective over the past decade. Indeed, retention levels of students at the University and in our department have increased considerably. At the graduate level, our department fared very well in a review of all PhD programs at Ohio State; we are among the 12 top-tier graduate programs out of the 160 evaluated.

Finally, I should mention that Sherry Stoneman recently retired. Many of you may know her—she has been the interface between our alumni and the department for nine years. This has been an eventful year for Sherry, as she received the “Above and Beyond Award” by the College of Engineering this fall. We will all miss her helpful attitude in so many areas of department operations.

Best wishes from all our faculty, staff and students.

Stuart L. Cooper
Professor and Chair
coopers@chbmeng.ohio-state.edu
614-247-8015
Lowrie Family Donates $17,000,000 to Ohio State Engineering

University recognizes generosity with first-ever named department.
On February 6, 2009, the Ohio State University announced a commitment of $17 million from Ernestine and William G. Lowrie in support of Chemical and Biomolecular Engineering at Ohio State. The commitment is the largest made by an individual donor to engineering at the University.

The gift will endow construction and support of a new laboratory facility, create the H.C. “Slip” Slider Professorship for an untenured faculty member in Chemical and Biomolecular Engineering, establish a new endowed chair and provide an endowment to support new initiatives in education and research.

“Bill Lowrie’s support will create tremendous opportunities for generations of students,” said Gregory N. Washington, interim dean of engineering. “He has served the College of Engineering in so many ways since he was a student here, and now he is making it possible to serve our students for years to come. We are so thankful for the Lowries and their generous support of our program.”

“At this stage of my life, I find myself in a position where I can help and give back in a meaningful way,” said Lowrie. “I wanted to move on it now; regardless of what is going on in the economy, so that I could see it happen and partially repay the University and the Department of Chemical Engineering for the huge impact they have had on my life and the lives of so many others.”

In recognition of the Lowrie’s gift, the Ohio State University Board of Trustees approved the naming of the William G. Lowrie Department of Chemical and Biomolecular Engineering to be housed in the new Koffolt Laboratories building, which is scheduled for completion in 2014. The building replaces the current Koffolt Laboratories, named in honor of the late, highly regarded former Chemical Engineering Professor and Chair Joseph H. Koffolt.

“Ernie and Bill have long been among the University’s finest friends, and I am deeply grateful to them for their latest gift to advance teaching, learning, and research,” said President E. Gordon Gee. “The Lowrie’s strategic support for our faculty and facilities is a powerful statement about the wisdom of investing in higher education and in the future of Ohio, our nation, and beyond.”

“We are at a point in time where we badly need to replace the chemical engineering facility. Even in this difficult time in the world we can’t just put a stop to everything and hope it all goes away,” said Lowrie. “The progress with the faculty size and stature over the last 25 to 30 years needs to continue, and we need to be able to attract the best. We are stuck by the lack of proper facilities and that detracts from our ability to recruit and retain faculty, graduate students and undergraduate students.”

A native of Painesville, Ohio, Lowrie received his Bachelor’s of Chemical Engineering degree from Ohio State in 1966. He spent his entire 33-year career with Amoco, working his way up through the company in positions of increasing responsibility, including president of Amoco Oil Company in 1990, president of Amoco Production Company in 1992, and president of Amoco from 1995 until 1998, when it merged with BP. He then served as deputy CEO of BP Amoco until 1999.

Along with administrative and managerial contributions to Amoco, Lowrie had a major role in increasing oil production and advancing oil drilling technology. In recognition of his distinguished industrial career, the American Institute of Mining, Metallurgical and Petroleum Engineers awarded him the Charles F. Rand Gold Medal in 2001.

His many contributions to Ohio State have been recognized with the 1979 Texnikoi Outstanding Alumnus Award; a Distinguished Alumnus Award from the College of Engineering; and the Benjamin G. Lamme Meritorious Achievement Medal, the College of Engineering’s highest honor. Lowrie is the only engineering alumnus to receive all three awards. In 2005, the university recognized his years of dedicated service as chair and volunteer to the Ohio State University Foundation with the Everett D. Reese Medal.

Bill Lowrie has also received the 2008 Alumni Medalist award for career achievement, the highest honor accorded by the Ohio State University Alumni Association, given to those who have brought extraordinary credit to the university and significant benefit to humankind. He and Ernestine currently reside in Sheldon, South Carolina.
Lowrie Receives Alumni Medalist Award

On September 26, 2008, William G. Lowrie, BCE ’66, was awarded the Alumni Medalist Award, the single highest honor accorded by the Ohio State University Alumni Association. This award is presented for career achievement to alumni who have gained national or international distinction as outstanding exponents of a chosen field or profession and who have brought extraordinary credit to the University and significant benefit to humankind.

Over the course of a 33-year career with Amoco in Louisiana and Chicago, Lowrie rose from engineer to president and played a major role in increasing oil recovery and advancing drilling technology. He supervised the development of environmental fuels, managed international oil acquisitions, and directed projects leading to technology for producing methane from coal beds. When BP and Amoco came together in 1998 in what was the world’s largest merger, Lowrie became the company’s deputy chief executive before retiring the following year.

Lowrie has received many industry awards, including the Charles F. Rand Gold Medal from the American Institute of Mining, Metallurgical, and Petroleum Engineers. In 1998, Lowrie and his wife established the William G. and Ernestine R. Lowrie Endowment Fund for Chemical Engineering Excellence at Ohio State. In addition, Lowrie is chair of the fundraising national committee for the new Koffolt Laboratories.

Lowrie’s many contributions to Ohio State have been recognized with the 1979 Texnikoi Outstanding Alumnus Award; a Distinguished Alumnus Award from the College of Engineering; and the Benjamin G. Lamme Meritorious Achievement Medal, the College of Engineering’s highest honor. Lowrie is the only engineering alumnus to receive all three awards. In 2005, the university recognized his years of dedicated service with the Everett D. Reese Medal.

Winfield Receives College of Engineering Lamme Medal

Michael D. Winfield, BCE ’62, is the 2008 recipient of the College of Engineering Benjamin G. Lamme Meritorious Achievement Medal.

Winfield earned an MBA from the University of Chicago, and began his career at Universal Oil Products Company, the world leader in providing technology, products and services to the oil refining, petrochemical and gas processing industries. Starting as a development engineer, over the next 35 years he assumed a series of positions of increasing responsibility, including Chief Technical Advisor to UOP’s customers with respect to the commissioning of UOP Process Technology, Manager of New Refinery Projects, Director of Business Development, Vice President of Engineering and Technical Services, Vice President of the Refining and Petrochemical Group, and in 1992 was named President and CEO. He has received patents for improvements in catalytic reforming, hydrocracking and fluid catalytic cracking.

Benjamin G. Lamme, ME 1888, achieved international acclaim as a pioneering inventor and engineer for the Westinghouse Electric and Manufacturing Co. in Pittsburgh. His will provided that a gold medal be presented annually to a technical graduate of his alma mater for “meritorious achievement in advancing engineering.”
Claugus Wins Distinguished Alumnus Award

Thomas Claugus, BCE ’73, is the 2008 recipient of the Chemical and Biomolecular Engineering Distinguished Alumnus Award. Claugus is President of GMT Capital, an Atlanta-based private equity firm. He received an MBA from Harvard Business School, and began working for Rohm and Haas, in positions from production manager to general manager of Rohm and Haas in Mexico; business manager for the construction products and trade sales business for Rohm and Haas in Philadelphia; and European manager for the Polymers Division of Rohm and Haas, based in London. In 1990, Claugus left Rohm and Haas to establish The Partnership, and in 1992, returned to full time investing, reactivating Bay Resource Partners, L.P.

The Distinguished Alumni Awards were established by the faculty of the College of Engineering to recognize distinguished achievement on the part of alumni in the field of engineering or architecture by reason of significant inventions, important research or design, administrative leadership, or genius in production.

Fan Named One of “One Hundred Engineers of the Modern Era”

In celebration of the 100th anniversary of the founding of the American Institute of Chemical Engineers in 2008, AIChE developed lists of individuals who contributed to the profession and society. These lists highlight advances in the profession during the years before World War II (“Foundation Age”) and after (“Modern Era”). Professor L.S. Fan was named one of the “One Hundred Engineers of the Modern Era.”

Fan’s inclusion is based on his wide-ranging contributions in the field of fluidization and powder technology. His research has led to advances in understanding the complex and dynamic fluid and bubble phenomena taking place in fluidized bed reactors and has led to significant process improvements in the chemicals and fuels industries. Fan recently invented the first electrical capacitance volume tomography apparatus, which provides detailed in-situ images of multiphase reactor systems. He also invented a number of processes relating to clean coal energy conversion processes. His chemical looping processes enable powdered coal to be economically converted to hydrogen, chemicals and liquid fuels with possible CO₂ separation.

Fan Wins Innovation Award

Professor L.S. Fan is the recipient of the 2008 Award for Innovation in Coal Conversion (also known as the Pitt Award) by the International Pittsburgh Coal Conference. This award recognizes Fan’s outstanding contributions in the development and applications of numerous technical innovations for coal conversion and clean coal technology.
Chemical Reaction Networks Can Behave in Unexpected Ways

For many years, Professor Martin Feinberg and his students have explored the mathematics of complex networks of chemical reactions. In nature, one typically has several – and often very many – chemical reactions occurring simultaneously, with reactants both produced and consumed by the various reactions. The governing equations are highly complex, and reaction rate constants appearing in those equations are often known only approximately, if at all. Feinberg’s research has pioneered chemical reaction network theory, which seeks to draw firm theoretical relationships between qualitative aspects of reactor behavior and structure of the underlying network of chemical reactions.

At least in an isothermal setting, most reaction networks – even highly complex ones involving hundreds of species – behave in surprisingly stable ways, regardless of parameter values. In the context of a continuous flow stirred tank reactor (CFSTR), for example, there is typically just one steady state solution of the governing equations, and transient solutions tend toward that steady state. Recent work with graduate student Gheorghe Craciun has gone a long way to explain why this is so. (Craciun is now an Assistant Professor of Mathematics and Biomolecular Chemistry at the University of Wisconsin.)

More generally, Feinberg’s work has been receiving substantial attention in disciplines outside of chemical engineering, notably in biology and mathematics. Recently, for example, he 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. He has given invited mathematics lectures at the Courant Institute (NYU), Fields Institute (Toronto), University of North Carolina, Georgia Tech and Duke University.

Cooper Elected to Governing Board of Council for Chemical Research

Stuart L. Cooper, professor and chair of the Lowrie Department of Chemical and Biomolecular Engineering, has been elected to the Governing Board of the Council for Chemical Research. CCR is an organization that recognizes and facilitates basic research in the chemical sciences and engineering. Its purpose is to benefit society by advancing research in chemistry, chemical engineering and related disciplines through leadership collaboration across discipline, institution and sector boundaries.

Winter Chosen for H.C. “Slip” Slider Young Faculty Professorship

Assistant Professor Jessica Winter has received the H.C. “Slip” Slider Young Faculty Professorship in Chemical and Biomolecular Engineering. Winter joined Ohio State in 2006 after completing her graduate degrees at the University of Texas at Austin. In her postdoctoral work, she examined the application of tissue engineering techniques to neural prosthetic devices at the Center for Innovative Visual Rehabilitation, a collaborative effort between Harvard Medical School and MIT. Her primary research interest is the exploration of the relationship between nanoparticles and biological elements. She directs the Laboratory for Neural Nanoprobes and Prosthetic Devices, where research pursuits are focused on the development of micro- and nanoscale biomaterials that can be used to modulate nerve cells.

The Slider Professorship was established in 2008 by William G. Lowrie, a 1966 Chemical Engineering alumnus, and his wife Ernestine, in appreciation of the late Professor Slider’s teaching and mentoring.

Celebrating the establishment of the H.C. “Slip” Slider Young Faculty Professorship are Interim Dean Gregory Washington, Slider Professor Jessica Winter, Bill Lowrie, Mrs. Jennie Slider, Mrs. Ernie Lowrie and former Dean Bud Baeslack.
Paulaitis Elected Fellow of AIMBE

Professor Michael Paulaitis has been elected a Fellow of the American Institute of Medical and Biological Engineering. AIMBE was founded in 1991 to establish a clear and comprehensive identity for the field of medical and biological engineering, which is the bridge between the principles of engineering science and practice, and the problems and issues of biological and medical science and practice. Fellows in AIMBE are leaders in the field who have distinguished themselves through their contributions in research, industrial practice and education.

Three Graduate Students Win Awards

Chaofang Yue, a member of Dr. Michael Paulaitis’ research group, received a 2008 Travel Award to attend the 100th Annual meeting of the AIChE to present a research paper.

Yun Wu, a member of Dr. Barbara Wyslouzil’s research group, received a 2008 Travel Award to attend the 27th Annual meeting of the American Association for Aerosol Research to present a paper describing her research.

Vikas Khanna, a member of Dr. Bhavik Bakshi’s research group, won a third place poster award for “Environmental Life Cycle Evaluation of Carbon Nanofiber Reinforced Polymer Nanocomposites” at the Gordon Research Conference on Industrial Ecology 2008. He received a Chair’s Travel Grant to attend that conference and also won a Travel Scholarship to attend the Society of Risk Analysis Annual 2008 meeting.
Buckley Named 2008 Goldwater Scholar

Craig Buckley, a junior in chemical and biomolecular engineering, was awarded a Barry M. Goldwater Scholarship. He is among just 321 sophomores and juniors nationally to win the award, which is based on academic merit. The one- and two-year scholarships cover the cost of tuition, fees, books and room and board up to a maximum of $7,500 per year.

Buckley is conducting research with Dr. Jessica Winter and plans to pursue a career in academia. He has worked as an engineering intern at Clippard Instrument Laboratory performing testing and creating 3-D models (using SolidWorks) of a line of flow control valves and related pneumatic products. Buckley is a recipient of Ohio State’s Distinguished Merit Scholarship for National Merit Finalists and received a Sigma Xi undergraduate research fellowship. He plans to perform research in expanding and finding new uses for nanotechnology for biochemistry and biomedical applications.

Stoneman Receives Distinguished Staff Award

Sherry Stoneman, assistant to the chair, won the 2008 "Above and Beyond Award--Classified Staff Recognition." This award is presented annually by the College of Engineering in honor of dedicated service. Stoneman retired in January 2009. She worked at Ohio State for more than 30 years, with nine of those years in Chemical and Biomolecular Engineering.

Sherry Stoneman received the 2008 Distinguished Staff Award from Dean Bud Baeslack.
Undergraduate Program
Cooperative Learning Experiences:
Winter 2008 through Autumn 2008

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. Internship involves one work period with an employer. A work period may last for one quarter or two consecutive quarters. Summer internships are the most popular among students and employers.

Students meet with academic advisors Brian Endres and Holly Prouty to evaluate different schedule arrangements before interviewing, because many employers hire for specific "rotations." For instance, students may work full-time during summer quarter, attend full-time classes in autumn, and return to their employer for full-time work in the winter. Last summer, our department had 61 students at internships and 23 at co-ops (as reported to ECS).

2008 Placement Record for Undergraduates

Chemical and biomolecular engineering continues to have a successful placement rate for our new graduates. Fifty-seven percent of our graduates went directly into industry with their B.S. degrees. About 20% of our students are going on to graduate or professional school, and 36% of our students will stay in the state to pursue their post graduation plans.

A number of our students graduated with Latin Honors, With Distinction or With Honors in Engineering; 29% of our students graduated with some level of Latin Honors.

A student who graduates "With 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 required number of honors courses; participation in community service, leadership and outreach; and participation in "investigational studies," which includes completing a research paper or thesis or a minor. Seven students graduated with Honors in Engineering and two students graduated With Distinction in various disciplines.

Engineering Career Services welcomes 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 are interested in hiring Ohio State students for co-op experiences, internships or for full time placement, contact Rosemary Hill, director of Engineering Career Services at (614) 292-6651, http://career.eng.ohio-state.edu.
2008-2009 Undergraduate Scholarship Information

A total of 149 students were awarded undergraduate scholarships in the chemical and biomolecular engineering program. Most of the scholarships went to current majors, although a small number went to recruit high-ability first year students. A total of $161,000 was awarded to students in the 2008-2009 school year. This year, the department awarded more scholarships but gave out slightly less money than the previous year ($168,000). This has resulted in a lower average award per student than in previous years. Huge increases in enrollment and variability in some endowments have caused these trends.

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 increased annually. However, since the increase in scholarship support has not been able to keep up with tuition increases, engineering students and their families have had to increase their debt levels to cover additional costs. In the Lowrie Department of Chemical and Biomolecular Engineering, 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 merit; however, when a scholarship specifies that a student's need be considered, both merit and need are taken into account. We thank 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 at the Ohio State Treasurer's web site: http://www.treasurer.ohio-state.edu/endowment/index.html

2008 Scholarship Information

DOW Chemical Company-Dow Outstanding Junior Award
Alexander Haas

Allan I. Gordon Undergraduate Scholarship for Study in Biochemical Engineering
Luke Barbara Michael Yingling Robert Rudd

Todd David Harris Memorial Scholarship
Benjamin Doup Daniel Valco Stephen Necamp

Ronald D. and Jane Hess Harris Fund for Educational Excellence
Alana Pevets Oray Talu

The Howard R. Steele Memorial Scholarship in Chemical Engineering
Kyle Bruggeman Scott Shaheen
Evan Smith Kathleen Slattery
Karl LаМointe Andrea Calamari
Megan Feagles Olivia Kindschuh
Kevin Kauffman William Szumski Sarah Koop

Harry B. Warner Scholarship
Alexander Alexander Hissong Vermejan

The Michael D. Winfield Scholarship
Elise Ferguson

Paul Bates Scholarship
Steven Adams Alexander Ibrahim Bamba Sarmiento
Justin Mason Carol Udoh Japheth Pritchett

Milton and Karen Hendricks Scholarship
Nathan Arroyo Charles Lorence Elizabeth Johnson

Smith E. Howland Scholarship
Yuki Uchida David Webster

Webster B. Kay Scholarship in Chemical Engineering
Amanda Janasov Stephanie Lau Robert Kappers

Lubrizol Foundation Scholarship
Steven Ottobre

Aldrich Syverson Scholarship
Graham Granitto Tanner Williams
David Schnell Zhi Zheng

Fred H. Winterkamp Memorial Scholarship
Nicholas Cotton Mark Politz
Alexander Haas Derek Reichel
Cory Noyes Laurin Turowski

H. Richard Unkel Chemical Engineering Class of 1941
Nathan Eikhoff Robert Waters
Joshua Martin Donald Weaver
Eric Sacia

David H. George Chemical Engineering Scholarship
Jacob Huggins Leslie Vanderkolk
Brenna McNamee Steven Lim
Benjamin Pierson Kunal Parikh
Christina Elias Jessica Tufts
Ashley Hriblit Sara Vinson
Nicholas Koenig

William R. and Doris M. Harris Scholarship in Chemical Engineering
Samuel Bayham Richard
Stephen Berling McConnell
William Brigode Jason Porter
Annemarie Fox Kevin Sutton
John Groman Christopher
Michael Hartman Thurber
Jennifer Kovach

Raymond D. Hammond Chemical Engineering Scholarship
Anthony Justin Reed
Constantino Leslie Shumaker
Daniel Garrison Justin Spitzer
Cathryn Marshall Lindsay
Halle Murray Volpenhein

Harold W. Almen Scholarship
Dimitry Burjadlov Daniel Kromer
Michael Rebecca Murphy
Frangiamore Timothy Regan
Thomas Grimme Brian Setzler
Jean Johnson Matt Tackett
Katherine Brittany Valentine
Kinstedt Robert Waters
The George S. Bonn Scholarship
Nariman Alkhatib  Michael Heller
Shilp Antani  Brandon Jonas
Chris Bowles  Douglas Knapke
Fawn Bradshaw  James Knight
Sean Hawkins  David Lang
Sean Kernan  John Larison
Jennifer Kirian  Samuel Lentz
Chelsea Liao  Christopher Lewe
Joseph  James Mekker
Linsenmeyer  Sara Mihaloeuw
Arup Mallik  Jeremy Mink
Bradley Moore  Jessica Rittner
William Murch  Brittany
Daniel Savel  Stechschulte
Parth Shah  David Tarai
Yuhao Sun  John Titone
Dorothy J.  Kathleen
& Herbert  Vermersch
L. Fenburr  Qi Wang
Scholarship  Steinn Welch
Joseph Braucher  Jean Wheasler
Abigail Brown  Henry White
Craig Buckley  Patrick Wilson
Serra Elliott  Whitney Wutzler
Justin Goode  Thomas Yeh

William H. Whirl Scholarship
Melissa Grigger

The Samuel S. and Grace Hook Johnston Memorial Chemical Engineering Scholarship Fund
Leeza Thompson

J.R. Boothe Scholarship Fund
James Westerfield  Jaykumar Grandhi

2008 Graduating Class

Unit Ops, Summer 2008

ChBE 200 Enrollment
Graduate Program
Graduate Program Ranking

The latest *U.S. News and World Report* rankings of engineering graduate programs placed the Lowrie Department of Chemical and Biomolecular Engineering at #27. The College of Engineering was ranked #29 in the nation. While the college rankings are based in good part on objective measures such as research funding, number of PhD graduates, number of publications, etc., the departmental rankings are based on subjective surveys of deans of engineering and industrial executives. In 2009, we expect the National Research Council to publish a listing of departmental rankings that will be more quantitatively based. We have submitted our data for the NRC exercise and are guardedly optimistic that our department will receive a higher ranking from that analysis compared to the *U.S. News* survey. In any case, these findings in the table are good news for the Department.

### Faculty Productivity

The following table, relating to faculty research and our PhD program, reinforces that our faculty are highly productive. Since 2004, we have averaged a graduation rate of 13.8 PhD students per year and a ratio of .81 PhD degrees per faculty member. It is significant that in 2005 and 2006, we were fifth in the nation in the graduation of chemical engineering doctoral students. This is noteworthy as the leading departments in this category typically have more faculty numbers than Ohio State.

<table>
<thead>
<tr>
<th>Ohio State College of Engineering</th>
<th>2006</th>
<th>2007</th>
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### Faculty Productivity Table

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Faculty</th>
<th>Publications</th>
<th>Publications per Faculty</th>
<th>Books or Book Chapters</th>
<th>Patents Issued</th>
<th>Total Ph.D. Students</th>
<th>Ph.D. Students/Faculty</th>
<th>Ph.D. Degrees Granted</th>
<th>Ph.D. Degrees/Faculty</th>
<th>Research Expenditures*</th>
<th>Research Exp/Faculty</th>
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* Data from the Ohio State University Foundation
Graduate Program Seminar Series

Winter 2008

01/03 **John Corn**, Lecturer, Chemical and Biomolecular Engineering, Ohio State University, "A Focus on Safety Awareness"

01/10 **Lydia Maria Contreras**, Department of Chemical and Biomolecular Engineering, Cornell University, "Understanding and Tuning Protein Translocation through the Ribosome"

01/17 **Arthi Jayaraman**, Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign, "A Theoretical Study of Structure and Assembly of Dense Solutions and Melts of Polymer Tethered Nanoparticles"

01/24 **Rodney O. Fox**, Herbert L. Stiles Professor, Department of Chemical and Biological Engineering, Iowa State University, "CFD Modeling of Chemical Reactors: Current Capabilities and Future Directions"

01/31 **Greg Beaucage**, Professor, Chemical and Materials Engineering, University of Cincinnati, "Topology in Understanding of Biological, Macromolecular and Nano-structures"

02/14 **Shashi Murthy**, Assistant Professor, Department of Chemical Engineering, Northeastern University, "Microfluidic Cell Separation: Applications & Challenges in Tissue Engineering"

02/21 **Pam Kreeger**, Postdoctoral Fellow, Massachusetts Institute of Technology, "Quantitative Systems Analysis of RAS Mutations: Effects on Cell Signaling Networks and Death Responses to Inflammatory Cytokines"

03/06 **Michelle Dawson**, Postdoctoral Research Fellow, Edwin L. Steele Laboratory, Massachusetts General Hospital and Harvard Medical School, "Biomedical Applications of Quantitative Microscopy Techniques"

03/27 **Troy Vogel**, Graduate Student, Department of Chemical and Biomolecular Engineering, Billie Wang, Graduate Student, Materials Science and Engineering, "NSF's GK-12 Program"

04/10 **Johann Gasteiger**, Compter-Chemie-Centrum, University of Erlangen-Nuremberg, Germany, "Chemoinformatics – Making Chemistry More Efficient"

04/17 **Jed Macosko**, Assistant Professor of Biophysics, Wake Forest University, "Lab-on-Bead Microfluidic Processing of Encoded Chemical Libraries: Drug Discovery at the Nanoscopic Level"

04/24 **Sean C. Garrick** Associate Professor, Mechanical Engineering, University of Minnesota, "Modeling & Simulation of Turbulent Reacting Multiphase Flows: From the Nanoscale to Microscale"

05/01 **Carol Hall**, Lowrie Lecture I, Camille Dreyfus Distinguished University Professor, Department of Chemical and Biomolecular Engineering, "Thermodynamic and Kinetic Origins of Alzheimer's and Related Diseases: a Chemical Engineer's Perspective"

05/02 **Carol Hall**, Lowrie Lecture II, Camille Dreyfus Distinguished University Professor, Department of Chemical and Biomolecular Engineering, "Confessions of an Ordinary Teacher—-Dealing with the Big Fish"

05/15 **Kristi S. Anseth**, Tison Professor, Department of Chemical and Biological Engineering and the Howard Hughes Medical Institute, University of Colorado at Boulder, "Swell Gels: Materials-based Regulation of Cell Function"

05/22 **Lisa Brannon-Peppas**, Research Professor, Department of Biomedical Engineering and College of Pharmacy, The University of Texas at Austin, "Targeted Nanoparticulate Systems in Cancer and Atherosclerosis"

05/29 **Shaffiq Jaffer**, Mixing Specialist, Procter & Gamble, "The Design and Application of Static Mixers in the Chemical Process Industry"

Spring 2008

09/25 **Omolola Eniola Adefeso**, Assistant Professor, Chemical and Biomedical Engineering, University of Michigan, "Inflammation, Blood Flow Dynamics and Vascular-Targeted Drug Delivery"


10/09 **Bin Chen**, Assistant Professor, Department of Chemistry, Louisiana State University, "Towards Understanding the Nucleation Mechanism for Multi-Component Systems: An Atomistic Approach"

10/16 **Jan Lerou**, Velocys, Inc., "Microchannel Reactor Architecture Enables Greener Processes"
Graduate Student and Post-Doctoral Awards

Elizabeth Biddinger: First Place, Best Poster Award, Annual Symposium of the Tri-State Catalysis Society.


Megan Cavanaugh, Orin Hemminger, and Brian Henslee (ThermoBuffer): Third Place, 2008 Fisher College of Business Deloitte Business Plan Competition, for their innovative new technology that addresses the basic problem of temperature control in containers for food and liquids of maintaining the temperature in the optimum flavor range.

Dr. Jun-Ki Choi: First Place in the research poster competition at the International Input-Output Conference, for “A Framework for Assessing the Biocomplexity of Materials Use,” with Prof. Tim Haab, environmental economist, Ohio State.

Jeff Ellis: Third Place in the Hayes Graduate Research Forum.

Wu Ge: Sigma Xi Research Award.


Hua Song: Second Place, 2008 Fuel Cell Symposium Poster Competition.

Yuan Wen: Travel subsidy from BIOT and Ray Travel Award from CGS to attend the American Chemical Society national meeting.

Yun Wu: 2008 Travel Award to attend the 27th Annual meeting of the America Association for Aerosol Research.

Chaofang Yue: 2008 Travel Award to attend the 100th annual meeting of the AIChE.

Lingzhi Zhang: First Place Best Poster Award at the Annual Symposium of the Tri-State Catalysis Society.

Research Expenditures

For the past three years, our research expenditures (data from the Ohio State Research Foundation) have been outstanding, especially since they are based on the efforts of 17 faculty. On a per-capita basis, expenditures were $565K per faculty member in FY2006 and $733K in FY2008. Our faculty are among the most productive at Ohio State and near the top of all Chemical Engineering departments in the nation.
Lowrie Lectures

The 2008 Lowrie Lectures were held on May 1-2, with this year’s lecturer being Dr. Carol K. Hall, the Camille Dreyfus Distinguished University Professor of Chemical and Biomolecular Engineering at North Carolina State University. She received her B.A. in physics from Cornell University and her PhD in physics at the State University of New York at Stony Brook. After postdoctoral training in the chemistry department at Cornell and a brief period as an economic modeler at Bell Laboratories, she joined the chemical engineering department at Princeton University in 1977 as one of the first women to be appointed to a chemical engineering faculty in the U.S. In 1985, she joined the chemical engineering department at North Carolina State University.

Hall’s research focuses on applying statistical thermodynamics and molecular-level computer simulation to topics of chemical, biological or engineering interest involving macromolecules or complex fluids. Current research activities include modeling of polymer adsorption on heterogeneous surfaces; self assembly of dipolar colloidal particles; self assembly of nanoparticles for the delivery of cancer drugs; solid-fluid phase equilibria; hybridization of DNA on microarrays; and the formation of fibrils and other molecular aggregates of peptides and proteins. She is the author of 190 publications, is a Fellow of the American Physical Society and was elected to the National Academy of Engineering in 2005.

Lecture I:
Thermodynamic and Kinetic Origins of Alzheimer’s and Related Diseases: A Chemical Engineer’s Perspective

The pathological hallmark of more than 20 neurodegenerative diseases, like Alzheimer’s, Parkinson’s and the prion diseases, is the presence within the brain of plaques containing ordered protein aggregates called fibrils. It is not yet known why these structures form in some individuals and not in others, or whether the plaques are toxic or nature’s way of sequestering toxic species. Hall described current thinking on the scientific underpinnings for this phenomenon, and her computational efforts to contribute to our knowledge of how and why proteins assemble into fibrils.

Lecture II:
Confessions of an Ordinary Teacher: Dealing with the Big Fish

Professor Hall described the evolution of her attitude toward undergraduate teaching and its parallels with her attitude toward life: high points, low points, lessons learned and the big fish.
1936 - Joseph G. Mravec
1937 - Louis E. Ruidisch
1939 - Carl D. Fischer, Dillard W. Kuhlman
1940 - Charles Boardman III, Loren F. Grandey
1941 - Thomas F. Lavery, David Thomas
1942 - Donald S. Arnold, R. Richard Midlam, Randal E. Bailey
1943 - Halvor S. Christianson, Marvin Harrett, Leonard A. Harris, James R. Randall, Roy E. Schneider, Vernon C. Seguin, Carlyle E. Shoemaker, Hong Ton Yee
1944 - Wallace L. Bostwick, Clarence A. Haverly, Jr., Edward W. Powell
1946 - Kenneth A. Brandstetter
1947 - Robert P. Cahn, William K. Fell, Thurman L. Graves, Robert H. Hill, Herbert G. Krane, J. Bruce Martin, Bryce H. McMullen, Donald F. Stauffer
1949 - Paul E. Bates, Gordon G. Cross, J. Howard Kerstetter, Jr., Donald R. Roberts, Glen D. Schaaf, Roland I. Spencer
1952 - James F. Froning, Donald E. Haupt, Richard Hazelton, C. Richard Heil, Charles J. Schmitz, David G. Stephan
1953 - Robert A. Bates, G. Clyde Bazell, Roger L. Briggs, David E. Buskirk
1954 - Gilbert E. Raines
1955 - John R. Blunden, Wendell B. Hammond, Jr., Phillip J. McAteer
1956 - Robert A. Cody, Herbert H. Fanning, Lloyd G. Jones
1957 - Walter R. Andrews, Jr., A. Leo Carter, Walter A. Flack, Jon D. Helms, Sung Ho Hong
1961 - Paul R. Bigley, Richard B. Cooper, Edward R. Corino, Ronald L. Follmer, Theodore J. Hanson, Ronald D. Harris, David E. Hazlebeck, Donald I. King, David A. Parker, Larry E. Woodworth
1962 - David E. Bidstrup, James C. Opatrnny, C. David Osbun, Dean Snider, Michael D. Winfield
1964 - Alkis Constantinides, Michael B. Cutlip, William R. Ferris, James B. Sapp
1965 - Oliver L. Davies, Frederick H. Flor, Jr., John P. Gegner, Gerald A. Morth, Frederick J. Rerko, Michael C. Royer, William A. Smith, John A. Weaver
1966 - James G. Arnold, William F. Deerhake, Thomas E. Fitz, Sr., William G. Lowrie, John W. Mitchell
1968 - Ronald R. Remick, John M. Salladay, Doug Smith
1970 - Bradford F. Dunn, David R. Grove, Micheal S. Lerch, David M. Muller, Rosa Uy
1971 - Kerry G. Hertenstein, Jeffrey L. Kosch, Armen Tergevorkian

1972 - Ron Ransom

1973 - John C. Bost, Thomas E. Claugus, David A. Dargan, Norman F. Lucas, Jr., Johnny O. Wright

1974 - Mark E. Forry, Steve Irwin, George L. Ott, Michael A. Patterson, Michael J. Pederson

1975 - John T. Erikson

1977 - Douglas J. Hallenberg, Thomas M. Jones, Kenneth A. Yunker


1979 - Kevin R. Cole, Darice Ann Davis, Karen T. Murphy, David J. Wasela, Tad K. Williams

1980 - Frederick T. Clark, Bruce R. DeBruin, Fred D. Ehrman, Joseph F. Ennis, Matthew J. Galosi, Mark A. George, David G. Vutetakis

1981 - Nancy Coultrip Dawes, Sunil Satija, James A. Telljohann

1982 - Alex W. Kawczak

1983 - Tracy Flora Begland, Thomas D. Burns, Mark D. Dieringer, Carolyn Marie Lin, Scott E. Lugibihl, Keith R. Nowak

1984 - John A. Bohlmann, Mark S. Bitto, Randall Lonsbrough

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

1986 - Bipender S. Jindal

1987 - Jeffrey D. Adams, Denise Davis Burcham, Karen S. Johnson, Martin D. Legg, D. Brian Noe

1988 - Amy Schmidt Doty, Joseph F. Ennis, M. Alison Jabbour

1989 - Stuart F. Doty

1990 - Craig M. Kehres, James V. Lombardi

1992 - Pamela Jean Archer, Julie Vander Meer Soehlin, Scott A. Joehlin

1993 - Frank E. Seipel

1994 - Matthew J. De Witt

1996 - Mark E. Buzek, Bradley D. McDonel, Jack R. Reese II

1997 - Paul D. Cowan, Theresa Ann Dziewaikoski

1998 - David M. Bressler, Michael T. Timko

1999 - Matthew F. Ehlerding

2000 - Regis P. Geisler III, Justin Mackender

2002 - Jun Luo

2003 - Derrick A. Butler, Chanel McSheene David, Aaron P. Grist

2004 - Madeline Marie Allen, Angela N.D. Carlson, Lori Ann Engelhardt, Shelley Buchholz Glimcher, Erica Nicole Jones, Marisa A. LaPalomento, C.J. Roebuck

2005 - Garrett E. Pavlovicz

2007 - Robin Ng


Alumni Reunion Attendees
Mike Adams, Paula Adams, Dick Arnold, Richard and Jane Beals, Victor Crainich, Gordon and Florence Cross, Mike Culp and Martha Stratton, Norval Davis, Dale Draudt, Walter and Eleanor Flack, Stephen L. Grant, Jack Hammond, Ron and Jane Harris, Barry Hartley, Jeanne Herbkersman Johnson, Richard and Dorothy Kistler, Bill and Ernie Lowrie, Valdos and Mara Stark Petritis, Dean and Kay Snider, Lawrence and Donna Steele, Neil and Elizabeth Stuber, Mike and Arlene Winfield, Larry and JoAnn Woodworth.
2008 Chemical and Biomolecular Engineering Advisory Board Meeting

Meeting topics included a department overview by Stuart Cooper; a report by Dave Tomasko on the Honors and Scholars Program followed by a brief discussion on how to generate more interest in the Chemical Engineering Program, especially among women; a discussion of the Academic Program Review by Stuart Cooper; and a discussion by Jim Rathman and Dave Tomasko about undergraduate issues within the Strategic Plan: enhance the undergraduate learning experience; evaluate addition of a second or combined degree (biomolecular); enliven students’ sense of community and commitment to CBE; and increase diversity, maintain a high number of undergraduate majors, and increase enrollment of non-majors in CBE courses.

Kurt Koelling addressed the group regarding Graduate Program issues relating to the Strategic Plan, noting that quality and productivity for chemical engineering at Ohio State compares favorably with other top ten schools. Goals for the graduate program are to raise the number of minorities and domestic students; increase the Department’s ranking, which is very important in attracting students; and improve interactions between students to provide a sense of community and loyalty within the student population.

Student AIChE members Sandy Abraham and Kristen Hendrix reported on the student organization, noting that strengths of the organization were the CHEM E Car, the Corporate Fall Meetings, and the Beat the Coop competition. Items in need of attention are interaction with faculty members, development of “soft” skills (interviewing, etc.), ties to the local chapter and graduate school options. The chapter is making an effort to get more students involved in the organization; suggestions from Board members were to increase activities to attract students, hold receptions after the 750 class speakers and invite faculty for an informal evening of conversation.

Board Member suggestions included that the Strategic Plan needed specific timeframes for goals; the Department needs to better define its focus and strategy; the AIChE student organization could be utilized in development of a greater community within the Department; and that the fundraising drive needs attention so people are aware of the needs and funding opportunities to support construction of a new building.

National Committee for the Renovation and Expansion of Koffolt Laboratory

Fall 2008 Meeting

Attendees included (l to r): Paul Kienholz, Ron Harris, Larry Woodworth, Karen Hendricks, Jack Hammond, Mike Winfield, Kerry Hertenstein, John Weaver, Bill Lowrie and Cindy Bishop.
Faculty

Bhavik Bakshi


Books and Book Chapters

Refereed Papers


Current Projects and Grants


$175,000 - Bakshi, Bhavik R. 2005-2010 Matching funds from OSU Transportation Research Endowment Program (TREP).

$12,000 - Bakshi, Bhavik R. 2006-2010 Supplementary funds from NSF Research Experience for Undergraduate Program.


Robert S. Brodkey

Jeffery Chalmers

Referred Papers


Ying, Jing, Nal, Niladri, Williams, P.S., Mayorga, Maritza, Penn, Marc, Chalmers, J. J. “Quantitative Intracellular Magnetic Nanoparticle Uptake Measured by Live Cell Magnetophoresis.”


Current Projects and Grants


$716,118 - Chalmers, Jeffrey J. (sub-contract from CCF) 2/1/2008-1/30/2013 Magnetic Cell Sorting and Analysis. NIH.

$300,000 - Chalmers, Jeffrey J. (sub-contract from CCF) 2/1/2004-1/31/2008 Cell Selection by Magnetic Flow Sorting. NIH-NCI, RO1 CA62349.


Current Projects and Grants


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.

Refereed Papers

Elected to Governing Board of the Council for Chemical Research

Current Projects and Grants
$46,375 - Cooper, Stuart L. 2005-2008 Center for Affordable Nanoengineering of Polymer Biomedical Devices, National Science Foundation, Sponsorship of 1 Ph.D. Student, PI: James Lee.
Liang-Shih Fan

Distinguished University Professor and C. John Easton Professor in Engineering, Ph.D., West Virginia University, 1975. Clean Coal Technologies, Fluidization, Multiphase Flow, Particulate Reaction Engineering, and Particle Technology.

Norman Li Lectureship, Wayne State University (2008).

Elected Distinguished Research Chair – highest honorific visiting appointment, National Taiwan University (2008-2010).

Elected Albert Einstein Chair Professorship – highest honorific visiting appointment, Chinese Academy of Science (2008).

Ohio State University Faculty Award for Distinguished University Service (2008).

Elected Shell Chair Professor – Department of Chemical Engineering, Tsinghua University (2008).


Named to “One Hundred Engineers in the Modern Era” list by the AIChE, Centennial Celebration of the AIChE (2008).

AIChE Particle Technology Forum’s Particle Technology Forum Award for Lifetime Achievement (2008).

National Taiwan University Distinguished Alumnus Award (2008).

Books and Book Chapters

Refereed Papers


Patents

Current Projects and Grants
$3,000,000 - Fan, Liang-Shih 2009-2011 Coal Direct Chemical Looping Retrofit for Pulverized Coal-Fired Plants with In-situ CO2 Capture, Department of Energy.


$408,801 - Fan, Liang-Shih, Rizzoni, Giorgio 2008-2010 Carbon Negative Chemical Looping Process for Hydrogen or Liquid Fuel Synthesis Using Refuse Derived Fuel, Biomass and/or Ohio Coal, Ohio Department of Development.


$159,996 - Fan, Liang-Shih 2008-2010 Chemical looping Combustion, Ohio Coal Development Office.


$100,000 - Fan, Liang-Shih 2008-2009 Development of 3-D Electrical Capacitance Volume Tomography (3-D ECVT), Department of Energy.


$1,564,206 - Fan, Liang-Shih 2007-2010 High Purity Hydrogen Production with In-situ Carbon Dioxide and Sulfur Capture in a Single Stage Reactor, Department of Energy.

Martin Feinberg


Invited Plenary Lecturer, Workshop on Synthetic Biology, University of Groningen, Netherlands, 2008.

Invited Lecturer at special session on the current state of process design; and Invited Lecturer at special session commemorating Rutherford Aris, AIChE Centennial, Philadelphia, 2008.


Current Projects and Grants


$381,826* - Feinberg, Martin 2008-2013 Collaborative Research: Multistability in Biological Networks, National Institutes of Health - General Medical Sciences.

* This is the Ohio State portion of a larger grant of $1,570,600 for collaborative research among four institutions: Princeton University, Rutgers University, the University of Wisconsin, and The Ohio State University.

W.S. Winston Ho


Inaugural Innovators Award, Ohio State College of Engineering, 2008.


Chairman of the Board, Chinese-American Chemical Society, 2008.

Books and Book Chapters


Refereed Papers


Patents


Current Projects and Grants


$150,000 - Ho, W.S. Winston 08/01/2006-07/31/2009 National Science Foundation, Carbon Dioxide-Selective Membranes, OSURF Project No. 60008308.

$12,000 - Ho, W.S. Winston 06/15/2008-07/31/2009 National Science Foundation, REU Supplement for Current Grant NSF CBET-0625758, Carbon Dioxide-Selective Membranes, OSURF Project No. 60017278.


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

Refereed Papers


Current Projects and Grants
$400,000 - Tomasko, David, Koelling, Kurt, Kusaka, I., Lee, L.J. 2006-2009 Scalable Nanomanufacturing of High-Performance Nanocomposite Foams, National Science Foundation.

$1,000,000 - Koelling, Kurt, Myers, Stephen 2005-2008 Ohio Bioproducts Innovation Center, State of Ohio.


Isamu Kusaka
Associate Professor, Ph.D., Caltech, 1998. Thermodynamics and Statistical Mechanics.


$400,000.00 - Tomasko, David, Koelling, Kurt, Kusaka, I., Lee, L.J. 2006-2009 Scalable Nanomanufacturing of High-Performance Polymer Foams, National Science Foundation.

L. James Lee
Professor, Ph.D., University of Minnesota, 1979. Polymer and Composite Engineering, Nanobiotechnology, BioMEMS, Microfluidics, BioMEMS/NEMS.

Malcolm E. Pruitt Award, Council of Chemical Research Engineering/Technology Award, Society of Plastics Engineers

Books and Book Chapters


Refereed Papers


Patents


Current Projects and Grants
$12,900,000 - Lee, L. James (PI) 2004-2009 Nanoscale Science and Engineering Center for Affordable Nanoeengineering of Polymer Biomedical Devices, National Science Foundation.

$22,489,845 - Lee, L. James (PI) 2005-2008 Center for Multifunctional Polymer Nanomaterials and Devices, Ohio Department of Development Third Frontier Program.

$360,000 - Lee, L. James (co-PI) 2006-2008 Evaluating the Impacts of Nanomanufacturing via Thermodynamic and Life Cycle Analysis, EPA.
$400,000 - Lee, L. James (co-PI) 2006-2009 Scalable Nanomanufacturing of High Performance Polymer Foams, National Science Foundation.

$8,000,000 - Lee, L. James (PI) 2007-2010 Commercialization of High-Performance Nano-Tailored Structural Composites for Energy and Survivability Applications, Ohio Department of Development Third Frontier Program.

$1,250,000 - Lee, L. James (PI) 2007-2011 Subcontract from International Cardiovascular Innovation Center at Cleveland Clinic, Ohio Department of Development Third Frontier Program.


$8,000,000 - Lee, L. James (PI) 2007-2010 Commercialization of High-Performance Nano-Tailored Structural Composites for Energy and Survivability Applications, Ohio Department of Development Third Frontier Program.


$125,000 - Lee, L. James (PI) 2007-2008 Nanoparticles Reinforced Polymeric Composites and Foams, Industry (Ashland Chemical, Bell Helicopter, BioLOC, Cook Composites & Polymers, Owens Corning).

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

**Umit Ozkan**

Professor, Ph.D., Iowa State University, 1984. Heterogeneous catalysis and its applications in energy and the environment.

**Books and Book Chapters**


**Refereed Papers**


**Current Projects and Grants**

$4,950,000 - Ozkan, Umit S. 2003-2009 Wright Center of Innovation for Fuel Cells (Co-PI with Drs. Rizzoni, Verweij, Lannuti, Fan and Ho; Prof. Ozkan’s portion: $775,830) Ohio Department of Development.


$160,000 - Ozkan, Umit S. 2008-2010 Novel Cathode Electrocatalysts For Reduced Temperature Coal-Gas SOFC Systems, Ohio Coal Development Office.


Andre F. Palmer

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

Lloyd N. Ferguson Young Scientist Award, NOBCChE, 2008.

Referred Papers


Current Projects and Grants


Current Projects and Grants


Michael Paulaitis

Professor, Ph.D., Illinois. 1976. Molecular Simulations and Modeling of Weak Protein-Protein Interactions; Role Of Hydration in Biological Organization and Self-Assembly Phenomena.

Elected Fellow of the American Institute of Medical and Biological Engineering

Referred Papers


Current Projects and Grants

$587,256 - M. Paulaitis 2001-2009 Collaborative Research: The Thermodynamics of Protein Separations, NSF

$440,148 - M. Paulaitis 2006-2009 Profiling of Influenza-Specific Immune Responses in the Elderly, NIH

James Rathman


Referred Papers


Current Projects and Grants

Jessica O. Winter
Assistant Professor, Ph.D., University of Texas at Austin, 2004.
Bionanotechnology, Drug Delivery, Tissue Engineering, Neural Prostheses

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.

$50,000  - Tomasko, David (Co-PI) 2008-2009 Edheads Interactive Website to Teach Engineering Design to Middle School Girls, Motorola Foundation Innovation Generation Grant, PI: S. G. Wheatley.


$12,000,000  - Tomasko, David (Co-PI) 2004-2009 Track 2, GK-12, Optimization and Institutionalization of the Science Fellows Supporting Teachers (SFST) Program, National Science Foundation, PI: I.J. Lee, Co-PIs: G. McKenzie, K. Irving.

$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.

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


Books and Book Chapters

Refereed Papers


Refereed Papers

Current Projects and Grants

$50,000 - Tomasko, David (Co-PI) 2008-2009 Edheads Interactive Website to Teach Engineering Design to Middle School Girls, Motorola Foundation Innovation Generation Grant, PI: S. G. Wheatley.


$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.


**Current Projects and Grants**

$519,000 - Wyslouzil, Barbara E. 2005-2009 The Formation Rates and Structure of Nanodroplets, National Science Foundation.


**Patents**


**Current Projects and Grants**


$279,797 - Yang, Shang-Tian 2005-2008 Production of Galacto-oligosaccharides (GOS) from Whey Lactose, Dairy Management Inc.


$131,179 - Yang, Shang-Tian 2007-2008 Microfluidic CD Biochips for Enzyme-Linked Immunosorbent Assays, National Science Foundation, STTR Phase II, BioLOC.


$1,000,000 - Yang, Shang-Tian 2008-2010 Engineering Clostridia for Economic Production of Biobutanol as a Biofuel, Ohio Department of Development Third Frontier Advanced Energy Program.

$215,144 - Yang, Shang-Tian 2008-2010 Production of Fumaric Acid and Ethanol From Soybean Meal, United Soybean Board.


**Jacques L. Zakin**


**Refereed Papers**


**Current Projects and Grants**


### Winter 2008

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<thead>
<tr>
<th>#</th>
<th>Course</th>
<th>Instructor</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>47</td>
<td>200</td>
<td>Dr. Kurt Koelling</td>
<td>Chemical Processes &amp; Calculations I</td>
</tr>
<tr>
<td>72</td>
<td>201</td>
<td>Dr. Jessica Winter</td>
<td>Chemical Processes &amp; Calculations II</td>
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<td>Dr. Andre Palmer</td>
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<td>1</td>
<td>489</td>
<td>Dr. James Rathman</td>
<td>Professional Practice in Industry</td>
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<td>16</td>
<td>508</td>
<td>Dr. James Rathman</td>
<td>Thermodynamics I</td>
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<tr>
<td>69</td>
<td>509</td>
<td>Dr. Isamu Kusaka</td>
<td>Thermodynamics II</td>
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<td>22</td>
<td>521</td>
<td>John Clay (Adjunct)</td>
<td>Transport Phenomena II</td>
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<td>87</td>
<td>522</td>
<td>Dr. S.T. Yang</td>
<td>Transport Phenomena III</td>
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<td>&amp; Dr. Michael Elsass (Adjunct)</td>
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<td>18</td>
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<td>John Corn</td>
<td>Unit Operations Lab</td>
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<td>694</td>
<td>John Corn</td>
<td>Group Studies</td>
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<td>694C</td>
<td>Dr. L. James Lee</td>
<td>Group Studies</td>
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<td>715</td>
<td>Dr. L.S. Fan</td>
<td>Particle Technology</td>
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<td>764</td>
<td>Dr. Bhavik Bakshi</td>
<td>Process Design</td>
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<td>769</td>
<td>Dr. S. Lee</td>
<td>Biomedical Nanotechnology</td>
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<td>771</td>
<td>Dr. Barbara Wyslouzil</td>
<td>Air Pollution</td>
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<td>Undergraduate Honors Research</td>
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### Spring 2008

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<tr>
<th>Course</th>
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<th>Course Title</th>
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<tr>
<td>42</td>
<td>Dr. Jack Zakin</td>
<td>Chemical Processes &amp; Calculations II</td>
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<tr>
<td>86</td>
<td>Dr. Martin Feinberg</td>
<td>Transport Phenomena I</td>
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<td>Professional Practice in Industry</td>
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<td>15</td>
<td>Dr. Michael Paulaitis</td>
<td>Thermodynamics II</td>
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<td>166</td>
<td>Dr. David Tomasko</td>
<td>Unit Operations</td>
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<tr>
<td>85</td>
<td>Dr. Umit Ozkan</td>
<td>Kinetics</td>
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<tr>
<td>3</td>
<td>John Corn</td>
<td>Unit Operations Lab</td>
</tr>
<tr>
<td>9</td>
<td>Dr. James Rathman</td>
<td>Group Studies</td>
</tr>
<tr>
<td>17</td>
<td>Dr. Jessica Winter</td>
<td>Cellular Nanotechnology</td>
</tr>
<tr>
<td>83</td>
<td>Dr. Stuart Cooper</td>
<td>Profession of Chemical &amp; Biomolecular Engineering</td>
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### Summer 2008

<table>
<thead>
<tr>
<th>Course</th>
<th>Instructor</th>
<th>Course Title</th>
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<tr>
<td>7</td>
<td>John Corn</td>
<td>Unit Operations Lab</td>
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<tr>
<td>22</td>
<td>Dr. S.T. Yang</td>
<td>Biotechnology &amp; Bioprocessing</td>
</tr>
<tr>
<td>10</td>
<td>Various</td>
<td>Undergraduate Research</td>
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<tr>
<td>3</td>
<td>H783</td>
<td>Undergraduate Honors Research</td>
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<td>(Thesis Track)</td>
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### Autumn 2008

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<th>Course</th>
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<th>Course Title</th>
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<tr>
<td>104</td>
<td>Dr. David Tomasko</td>
<td>Chemical Processes &amp; Calculations I</td>
</tr>
<tr>
<td></td>
<td>&amp; Dr. James Rathman</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Dr. Andre Palmer</td>
<td>Transport Phenomena I</td>
</tr>
<tr>
<td>7</td>
<td>Dr. James Rathman</td>
<td>Professional Practice in Industry</td>
</tr>
<tr>
<td>97</td>
<td>Dr. Michael Paulaitis</td>
<td>Thermodynamics I</td>
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<tr>
<td>18</td>
<td>Dr. James Winter</td>
<td>Cellular Nanotechnology</td>
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<tr>
<td>36</td>
<td>Various</td>
<td>Undergraduate Research</td>
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<td>5</td>
<td>H783</td>
<td>Undergraduate Honors Research</td>
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<td>(Thesis Track)</td>
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</table>
Appendix B: Undergraduate Co-ops and Internships

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

American Electric Power (AEP): Amanda Janasov
Anheuser Busch: Stephen Necamp
Appleton Papers: Brandon Collins
Arcelor Mittal: Annemarie Fox
Battelle Memorial Institute: Jessica Rittner
Bettis Laboratory: James Knight
Boehringer Ingelheim – Roxane Laboratories: Xia Sun
BP: Joseph Lollini, Brittany Niles, Christopher Thurber
Cargill: Nariman Alkhathib, Shilp Antani, Cory Johnston
Camp Dresser & McKee (CDM): Jeffrey Hollinshead, Zachary Murmane, Samantha Spano
CH2M HILL: Johnathan Johnson
Cincinnati Thermal Spray Inc.: Andrew Mittermiller
Cornerstone Research Group: Edward Aprahamian, Mariko Berg, James Knight, John Larison
Crown Equipment Corp.: Cory Schwartz
Cummins Engine Co. Inc.: Chelsea Liao
Diamond Innovations: Mackenzie Hicks, Matthew Kanitz
Dominion: Amy Zhao
Dow Chemical: Barrett Richter, Kevin Sutton, David Tarai, Leexa Thompson, Carol Udoh
Dow Corning Corp.: Jessica Rittner
Ecolab Inc: Michelle Koegler, Cory Noyes
Emerson Climate Technologies: Wai-Meng Lei, Nishit Shah
Entrotech: Chris Bowles, William Brigode, Laura Fisher, Andrew Moore, Steven Ottobre, Emily Smith, Hazel Wicks
ExxonMobil: Steve Schwab
FMC Technologies: Brian Knollman
Genentech, Inc.: Stephen Rosegger
General Electric: Ryan Bradstreet, Justin Goode, Robert Kappers, Katie Reinaker, Sehar Sheikh
General Mills: Abigail Brown, Carol Udoh, Lindsay Volpenhein
Glatfelter: Adam Brandt, Alexander Haas, Caleb Kingsley
Gas Technology Institute (GTI): Benjamin Doup
Harvard University, Research Internship: Christina Elias
Honda: Trenton Mueller, Nathan Reed
International Specialty Products (ISP): Jacob Bethel
Institute of Transportation Engineers (ITE): Adam Clifford
Kenexis Consulting Corp: Brett Grygo, Osama Hassen, David Webster
Minster Machine Co.: Matthew McGowan
Nestle, USA: Brett Grygo, Jennifer Kirian
NexTech Materials: Jacob Bethel
Nucor Steel: Justin Spitzer
Oak Ridge National Laboratory: Whitney Wutzler
Ohio State University, Research Internship: Dimitry Burdjalov
Ohmart/VEGA: Arthur Lee
Omegadyne: Thomas Grimme, Mackenzie Hicks
OMNOVA Solutions Inc.: Danielle Hartley
Owens Corning: Michael Frangiamore, Daniel Garrison, Daniel Kromer
PPG Industries Inc.: Oray Talu
Procter & Gamble: Andrea Breitenbach, Elise Ferguson, Tad Grubbs, Elizabeth Johnson, Rebecca Murphy, Alana Pevets, Japheth Pritchett, Allyson Senefeld-Naber, Evan Smith, Cuning Song, Laura Werner, Tanner Williams
RoviSys Co.: Daniel Hickey
SABIC Innovative Plastics: Darren Wendel
Scotts Company: Thomas Czechowski, Mark Foster, Adam Granitto, Sara Mihalow
Shell Oil Company: Katherine Wilson
Sherwin-Williams Co.: Katherine Kolakowski
TEC Institute: Jeffrey Maclean
Thogus Products Co.: Charles Lorence
Toyota: Stephanie Lau
Tsong Cherng: Luke Barbara
Univenture: John Meister, Robert Waters
Veyance Technologies Inc.: Nathan Eikhoff, Michael Turner
Whirlpool Corp.: Robert Hoelzle, Parth Shah
Worthington Industries: Matthew Bierbower
Wright Patterson Air Force Base: Paul Gardner
## Appendix C: 2008 BS Graduates

### Autumn 2007 Graduates (December 2007)

<table>
<thead>
<tr>
<th>Name</th>
<th>Status/Status Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jamie Gomoll</td>
<td>Hired by Accenture, Ohio</td>
</tr>
<tr>
<td>Andria Hahn</td>
<td>Plans outside of Chemical Engineering</td>
</tr>
<tr>
<td>Kevin Haase</td>
<td>Hired by Procter and Gamble, Ohio</td>
</tr>
<tr>
<td>Yuen Hann Kwok</td>
<td>Seeking Employment</td>
</tr>
<tr>
<td>Shannon Sullivan</td>
<td>Hired by Honeywell, IL</td>
</tr>
<tr>
<td>Joshua Supplee</td>
<td>Pursuing an MS in Mechanical Engineering, Ohio State University</td>
</tr>
<tr>
<td>Alissa Wanner</td>
<td>Pursuing Further Education; Institution unknown</td>
</tr>
<tr>
<td>Dwight Wiltheiss</td>
<td>Hired by Chemical Abstracts</td>
</tr>
<tr>
<td>Brian Fraley</td>
<td>Graduated Cum Laude, With Honors in Engineering, With Distinction in Chemical Engineering, Ohio State University</td>
</tr>
</tbody>
</table>

### Winter 2008 Graduates (March 2008)

<table>
<thead>
<tr>
<th>Name</th>
<th>Status/Status Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pamela Daniel</td>
<td>Hired by Arkema Group, KY</td>
</tr>
<tr>
<td>Todd Myers</td>
<td>Graduated Magna Cum Laude, Hired by DuPont, WV</td>
</tr>
<tr>
<td>Eric Riethman</td>
<td>Graduated Magna Cum Laude, Military Commitment, U.S. Air Force</td>
</tr>
<tr>
<td>Paul Kender</td>
<td>Hired by Kenexis Consulting Corp., OH</td>
</tr>
<tr>
<td>Daniel Lundy</td>
<td>Pursuing a MS in Chemical Engineering, Ohio State University</td>
</tr>
<tr>
<td>Jessica Mason</td>
<td>Seeking Employment</td>
</tr>
<tr>
<td>Kimberly Miller</td>
<td>Graduated Magna Cum Laude, With Distinction in Chemical Engineering, Pursuing a MS in Chemical Engineering, Ohio State University</td>
</tr>
<tr>
<td>Paul Kender</td>
<td>Hired by Kenexis Consulting Corp., OH</td>
</tr>
<tr>
<td>Daniel Lundy</td>
<td>Pursuing a MS in Chemical Engineering, Ohio State University</td>
</tr>
<tr>
<td>Jessica Mason</td>
<td>Seeking Employment</td>
</tr>
<tr>
<td>Kimberly Miller</td>
<td>Graduated Magna Cum Laude, With Distinction in Chemical Engineering, Pursuing a MS in Chemical Engineering, Ohio State University</td>
</tr>
</tbody>
</table>

### Spring 2008 Graduates (June 2008)

<table>
<thead>
<tr>
<th>Name</th>
<th>Status/Status Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandra Abraham</td>
<td>Plans outside of Chemical Engineering</td>
</tr>
<tr>
<td>Bushra Birjis</td>
<td>Hired by Marathon Petroleum, LLC, MI</td>
</tr>
<tr>
<td>Andrea Breitenbach</td>
<td>Hired by Procter &amp; Gamble, OH</td>
</tr>
<tr>
<td>Brandon Bright</td>
<td>Hired by HDR, Inc., OH</td>
</tr>
<tr>
<td>Michael Brink</td>
<td>Graduated With Honors in Engineering, Pursuing an MS in Nuclear Engineering, Ohio State University</td>
</tr>
<tr>
<td>Molly Campbell</td>
<td>Hired by Scotts Company, OH</td>
</tr>
<tr>
<td>Gregory Cobb</td>
<td>Seeking Employment</td>
</tr>
<tr>
<td>Ryan Cobb</td>
<td>Graduated Summa Cum Laude, Pursuing a PhD in Chemical Engineering, University of Illinois, Urbana-Champaign</td>
</tr>
<tr>
<td>Bradley Cox</td>
<td>Graduated Cum Laude, Hired by ExxonMobil, VA</td>
</tr>
<tr>
<td>Elizabeth Curry</td>
<td>Seeking Employment</td>
</tr>
<tr>
<td>Adugna Demisse</td>
<td>Hired by Honeywell, IL</td>
</tr>
<tr>
<td>Anthony Duong</td>
<td>Graduated With Honors in Engineering, Pursuing an MS in Chemical Engineering, Ohio State University</td>
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<td>Brian Fraley</td>
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</tbody>
</table>

### Summer 2008 Graduates (August 2008)

<table>
<thead>
<tr>
<th>Name</th>
<th>Status/Status Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rachel Crichton</td>
<td>Seeking Employment</td>
</tr>
<tr>
<td>Stephanie Depalma</td>
<td>Hired by Deceuninck North America, OH</td>
</tr>
<tr>
<td>Erik Eastin</td>
<td>Hired by PPG Industries, Inc., PA</td>
</tr>
<tr>
<td>Osama Hassen</td>
<td>Hired by Arcelor Mittal, OH</td>
</tr>
<tr>
<td>Amanda Jensen</td>
<td>Graduated Cum Laude, With Honors in Engineering, Hired by Unilever, NJ</td>
</tr>
<tr>
<td>Stephanie Lau</td>
<td>Hired by ELTECH Gruppo De Nora, OH</td>
</tr>
<tr>
<td>Stacy Law</td>
<td>Hired by Pilot Chemical Company, OH</td>
</tr>
<tr>
<td>Arup Mallik</td>
<td>Graduated Magna Cum Laude, With Honors in Engineering, Hired by ExxonMobil, VA</td>
</tr>
<tr>
<td>Allyson Naber</td>
<td>Hired by Procter &amp; Gamble, OH</td>
</tr>
<tr>
<td>Anand Patel</td>
<td>Graduated Magna Cum Laude, Seeking Employment</td>
</tr>
<tr>
<td>Jeffrey Skinner</td>
<td>Graduated Summa Cum Laude, Hired by Shell Oil Co., LA</td>
</tr>
<tr>
<td>Brittany Valentine</td>
<td>Graduated Cum Laude, Hired by Shell Oil Co., TX</td>
</tr>
<tr>
<td>Andrew Williams</td>
<td>Graduated With Honors in Engineering, Hired by Honeywell, IL</td>
</tr>
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### Autumn 2008 Graduates (December 2008)

<table>
<thead>
<tr>
<th>Name</th>
<th>Status/Status Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matthew Ehrman</td>
<td>Graduated Cum Laude, With Honors in Engineering, Hired by Procter &amp; Gamble, MD</td>
</tr>
<tr>
<td>Rachel Crichton</td>
<td>Seeking Employment</td>
</tr>
<tr>
<td>Bryan Gebhart</td>
<td>Seeking Employment</td>
</tr>
<tr>
<td>Jeffrey Maclean</td>
<td>Seeking Employment</td>
</tr>
<tr>
<td>Laura Werner</td>
<td>Hired by ExxonMobil, TX</td>
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### Winter 2008 Graduates (March 2008)

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<tr>
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<td>Graduated Magna Cum Laude, Seeking Employment</td>
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<tr>
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</tr>
<tr>
<td>Brittany Valentine</td>
<td>Graduated Cum Laude, Hired by Shell Oil Co., TX</td>
</tr>
<tr>
<td>Andrew Williams</td>
<td>Graduated With Honors in Engineering, Hired by Honeywell, IL</td>
</tr>
</tbody>
</table>
# Appendix D: Department Faculty and Staff

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

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

## Associate Professors
- Isamu Kusaka
- Andre Palmer

## Assistant Professor
- Jessica Winter

## Instructor
- John Corn

## Post Doctoral and Research Associates
- Houssam Alosta: Post Doctoral Researcher
- Anil Baral: Post Doctoral Researcher
- Cheng-yi Chang: Research Associate
- Jun-Ki Choi: Post Doctoral Researcher
- Sharon Gundersen: Post Doctoral Researcher
- Wei-Chin Huang: Visiting Scholar
- Xuesong Jiang: Post Doctoral Researcher
- Songgeng Li: Senior Research Associate
- Qussai Marashdeh: Post Doctoral Researcher
- Burcu Mirkelamoglu: Post Doctoral Researcher
- Gang Ruan: Post Doctoral Researcher
- Guoyong Sun: Post Doctoral Researcher
- Bing Tan: Post Doctoral Researcher
- Shinobu Tanimura: Post Doctoral Researcher
- Shuang Veng: Visiting Scholar
- Zhen Wang: Visiting Scholar
- Rong Xing: Post Doctoral Researcher
- Yang Zhao: Research Associate

## Administrative Staff
- Angela Bennett: Graduate Program Coordinator
- Heather Engel: Assistant Editor, OSU Polymer Nanotechnology
- David Cade: Building Coordinator
- Bill Cory: Human Resources Associate
- Mike Davis: Systems Analyst
- Brian Endres: Undergraduate Studies Coordinator
- Leigh Evrard: Design Engineer
- Lynn Flanagan: Department Administrator
- Paul Green: Laboratory Supervisor
- Geoff Hulse: Director, ChBE/MSE Joint Computing Lab
- Dave Jones: Systems Engineer
- Prem Rose Kumar: Education Dir. for NSEC and IGERT
- Martha Leming: Administrative Associate, Wright Center for Innovation (WCI) and Center for Advanced Polymer and Composite Engineering (CAPCE)
- Layla Mohmmad-Ali: Administrative Associate for HR and Fiscal Support, NSEC and IGERT
- Holly Prouty: Undergraduate Academic Advisor
- Sherry D. Stoneman: Assistant to the Chair & Alumni Liaison
- Susan Tesfai: Fiscal Associate