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 (BChE ’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 and 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.” Our’s 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 new 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. And we are teaching a third section this 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
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Zhen Wang – Visiting Scholar
Rong Xing – Post Doctoral Researcher
Yang Zhao – Research Associate
Arturas Ziemys – Post Doctoral Researcher

Administrative Staff

Assistant to the Chair & Alumni Liaison
Sherry D. Stoneman

Department Administrator
Lynn Flanagan

Fiscal Associate
Susan Tesfai

Graduate Program Coordinator
Angela Bennett

Human Resources Associate
Bill Cory

Undergraduate Studies Coordinators
Brian Endres
Holly Prouty

Building Coordinator
David Cade

Design Engineer
Leigh Evrard

Laboratory Supervisor
Paul Green

Director, ChBE/MSE Joint Computing Lab
Geoff Hulse

Systems Analyst
Mike Davis

Systems Engineer
Dave Jones

Education Dir. for NSEC and IGERT
Prem Rose Kumar

Administrative Associate, Wright Center for Innovation (WCI) and Center for Advanced Polymer and Composite Engineering (CAPCE)
Martha Leming

Administrative Associate for HR and Fiscal Support, NSEC and IGERT
Layla Mohmmad-Ali

Assistant Editor, OSU Polymer Nanotechnology
Stacy Brannan
WILLIAM G. LOWRIE WINS ALUMNI MEDALIST AWARD

William G. Lowrie was awarded the Alumni Medalist Award on September 26, 2008. This award is given for national or international career achievement and is the single highest honor accorded by The Ohio State University Alumni Association, Inc. It is presented 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. Lowrie received his B.S. in Chemical Engineering in 1966.

Over the course of a 33-year career with Amoco Production Co. in Louisiana, William 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 national committee for renovating and expanding the university's 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.

MIKE WINFIELD WINS COLLEGE OF ENGINEERING LAMME MEDAL

Michael D. Winfield was awarded the College of Engineering Benjamin G. Lamme Meritorious Achievement Medal. Benjamin G. Lamme, ME 1888, achieved international acclaim as a pioneering inventor and engineer for the Westinghouse Electric and Manufacturing Co. in Pittsburgh. For 21 years he served as chief engineer for Westinghouse. Among his 162 patents were new inventions on railway motors, induction motors, converters and the developments pertaining to the first Niagara Falls power system. In his will he provided that a gold medal be presented annually to a technical graduate of his alma mater for “meritorious achievement in advancing engineering.”

Michael Winfield received his Bachelor of Chemical Engineering degree from The Ohio State University in 1962 and earned a Master’s of Business Administration degree from the University of Chicago. Winfield 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.

TOM CLAUGUS WINS DISTINGUISHED ALUMNUS AWARD

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. Nominations are judged by the College Committee on Honorary Degrees and Honors on behalf of the college faculty.

Thomas Claugus is President of GMT Capital, an Atlanta-based private equity firm. He graduated with a Bachelor of Chemical Engineering degree, summa cum laude, from The Ohio State University in 1973. In 1975, he entered Harvard Business School and graduated with a Master of Business Administration degree, with high distinction, in 1977. Claugus worked 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 the trade sales business for Rohm and Haas in Philadelphia; and manager for Europe of the Polymers Division of Rohm and Haas, based in London, England. This position included all polymer business conducted by Rohm and Haas in Africa and Eastern and Western Europe. In 1990, Claugus left Rohm and Haas to establish the Partnership, and in 1992, he returned to full time investing, reactivating Bay Resource Partners, L.P.

**PROFESSOR L.S. FAN NAMED AS ONE OF THE “ONE HUNDRED ENGINEERS OF THE MODERN ERA”**

In celebration of the 100th Anniversary of the founding of the American Institute of Chemical Engineers (AIChE), the Awards and Recognition Subcommittee has developed lists of individuals who contributed to the profession and society in a variety of times and ways. These lists highlight advances in the profession during the years before World War II (“Foundation Age”) and after (“Modern Era”). Professor L.S. Fan has recently been named one of the “One Hundred Engineers of the Modern Era.” This list will be featured in the October issue of CEP and was also spotlighted at the AICHE Annual Meeting from November 16-21 in Philadelphia, PA.

Professor Fan’s inclusion in this list 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. Professor Fan recently invented the first electrical capacitance volume tomography apparatus which provides detailed in-situ images of multiphase reactor systems. He has also invented a number of processes relating to clean coal energy conversion processes. His chemical looping processes economically enable powdered coal to be converted to hydrogen, chemicals and liquid fuels with possible CO2 separation.

**PROFESSOR L.S. FAN WINS AWARD**

Professor Fan has been selected as 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 his outstanding contributions in the development and applications of numerous technical innovations for coal conversion and clean coal technology.

**DR. JESSICA WINTER IS CHOSEN FOR H.C. “SLIP” SLIDER YOUNG FACULTY PROFESSORSHIP IN CHEMICAL AND BIOMOLECULAR ENGINEERING**

Jessica Winter was named to the H.C. “Slip” Slider Young Faculty Professorship in Chemical and Biomolecular Engineering. Jessica joined the faculty 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 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.

MICHAEL PAULAITIS ELECTED FELLOW OF THE AMERICAN INSTITUTE OF MEDICAL AND BIOLOGICAL ENGINEERING

Professor Michael Paulaitis was elected Fellow of the American Institute of Medical and Biological Engineering (AIMBE). The American Institute for Medical and Biological Engineering 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. Based in Washington, DC, AIMBE promotes awareness of the field and its contributions to society in terms of new technologies that improve medical care. Other initiatives involve working with lawmakers, government agencies and other professional groups to promote public policies that further advancements in the field. Fellows in AIMBE are leaders in the field who have distinguished themselves through their contributions in research industrial practice and/or education.

STUART COOPER ELECTED TO GOVERNING BOARD OF COUNCIL FOR CHEMICAL RESEARCH

Stuart L. Cooper, Professor and Chair of the Department of Chemical and Biomolecular Engineering was elected to the Governing Board of the Council For Chemical Research. The Council for Chemical Research (CCR) is an organization which recognizes and facilitates basic research in the chemical sciences and engineering. CCR’s purpose is to benefit society by advancing research in chemistry, chemical engineering and related disciplines through leadership collaboration across discipline, institution and sector boundaries.

CRAIG BUCKLEY NAMED 2008 BARRY M. GOLDWATER SCHOLAR

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

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

THREE GRADUATE STUDENTS WIN AWARDS

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

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

Vikas Khanna, a member of Dr. Bakshi’s research group, won a 3rd place Poster Award for a poster titled "Environmental Life Cycle Evaluation of Carbon Nanofiber Reinforced Polymer Nanocomposites" at the Gordon Research Conference on Industrial Ecology 2008 held in New London, NH in August. He also received a Chair's
Travel Grant for this same conference. Vikas also won a Travel Scholarship to attend the Society of Risk Analysis Annual meeting in December in Boston, MA.

**SHERRY STONEMAN WINS DISTINGUISHED STAFF AWARD**

Sherry Stoneman, the Assistant to the Chair, won the “Above and Beyond Award; Classified Staff Recognition.” This award is given annually by the College of Engineering at the Staff Appreciation Lunch. Sherry will retire at the end of January 2009. She will have worked at OSU for over 30 years, nine of those years in CBE.

Sherry Stoneman is pictured below with Dean Baeslack.
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<td>Undergraduate Honors Research (Thesis Track)</td>
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### 2008-2009 Undergraduate Scholarship Information

A total of 149 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 $161,000 was awarded to students heading into 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 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 merit, however, when a scholarship specifies that a student’s need 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
2008 Scholarship Information

DOW Chemical Company-Dow Outstanding Junior Award
Alexander Haas

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

Todd David Harris Memorial Scholarship
Benjamin Doup
Stephen Necamp
Daniel Valco

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
Evan Smith
Karl LaPointe
Megan Feagles
Kevin Kauffman
Sarah Koop
Scott Shaheen
Kathleen Slattery
Andrea Calamari
Olivia Kindschuh
William Szumski

Harry B. Warner Scholarship
Alexander Hissong
Alexander Vermejan

The Michael D. Winfield Scholarship
Elise Ferguson

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

Milton & Karen Hendricks Scholarship
Nathan Arroyo
Elizabeth Johnson
Charles Lorence

**Smith E. Howland Scholarship**
Yuki Uchida
David Webster

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

**Lubrizol Foundation Scholarship**
Steven Ottobre

**Aldrich Syverson Scholarship**
Adam Granitto
David Schnell
Tanner Williams
Zhi Zheng

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

**H. Richard Unkel Chemical Engineering Class of 1941**
Nathan Eikhoff
Joshua Martin
Eric Sacia
Donald Weaver
Amy Zuo

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

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

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

Harold W. Almen Scholarship
Dimitry Burdjaval
Michael Frangiamore
Thomas Grimme
Jean Johnson
Katherine Kinstedt
Daniel Kromer
Rebecca Murphy
Timothy Regan
Brian Setzler
Matt Tackett
Brittany Valentine
Robert Waters

The George S. Bonn Scholarship
Nariman Alkhatib
Shilp Antani
Chris Bowles
Fawn Bradshaw

Dorothy J. & Herbert L. Fenburr Scholarship
Joseph Braucher
Abigail Brown
Craig Buckley
Sera Elliott
Justin Goode
Michael Heller
Brandon Jonas
Douglas Knapke
James Knight
David Lang
John Larison
Samuel Lentz
Christopher Lewe
James Mekker
Sara Mihaloew
Jeremy Mink
Jessica Rittner
Brittany Stechschulte
David Tarai
John Titone
Kathleen Vermeersch
Qi Wang
Steinn Welch
Jean Wheasler
Henry White
Patrick Wilson
Whitney Wutzler
Thomas Yeh

**William H. Whirl Scholarship**
Melissa Grigger

**The George S. Bonn Scholarship**
Sean Hawkins
Sean Kernan
Jennifer Kirian
Chelsea Liao
Joseph Linsenmeyer
Arup Mallik
Bradley Moore
William Murch
Daniel Savel
Parth Shah
Yuhao Sun

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

**J.R. Boothe Scholarship Fund**
James Westerfield
Jaykumar Grandhi
Tracking ChBE 200 Enrollment

ChBE 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.

Female and Ethnic Minority Trends in Total Department Enrollment

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Students</th>
<th>Women</th>
<th>Ethnic Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>305</td>
<td>8</td>
<td>29</td>
</tr>
<tr>
<td>2006</td>
<td>336</td>
<td>9</td>
<td>23</td>
</tr>
<tr>
<td>2007</td>
<td>428</td>
<td>6</td>
<td>38</td>
</tr>
<tr>
<td>2008</td>
<td>486</td>
<td>9</td>
<td>42</td>
</tr>
<tr>
<td>2009</td>
<td>591</td>
<td>19</td>
<td>52</td>
</tr>
</tbody>
</table>
Undergraduate Enrollment
(number of students)

School Year
(Data Taken In Winter Quarter Each Year; New Majors Begin Au/Wi)

Undergraduate Enrollment
(number of students)

Pre-Majors
Majors
Total

School Year
2005 2006 2007 2008 2009

Number of B.S. Degrees Per Year
Shows Total Students, Number Granted to Women and Number Granted to Ethnic Minorities

Chem. E Total
Women
Ethnic Min

Number of B.S. Degrees Per Year
Shows Total Students, Number Granted to Women and Number Granted to Ethnic Minorities

Chem. E Total
Women
Ethnic Min
Graduate Program Ranking

The latest U.S. News and World report of rankings of graduate programs in engineering became available in early April. We are pleased to report that our department is ranked 27th. The College of Engineering was ranked at 29th in the nation. A four year summary of college departments as ranked in this survey is shown above.

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 much 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 US News survey. In any case the data in the table is good news for the Department.

### Engineering Specialties

<table>
<thead>
<tr>
<th>Specialties</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ohio State College of Engineering</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td>29</td>
</tr>
<tr>
<td>Aerospace</td>
<td>20</td>
<td>19</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>Biomedical</td>
<td>Nr</td>
<td>Nr</td>
<td>Nr</td>
<td>Nr</td>
</tr>
<tr>
<td><strong>Chemical</strong></td>
<td><strong>32</strong></td>
<td><strong>32</strong></td>
<td><strong>26</strong></td>
<td><strong>27</strong></td>
</tr>
<tr>
<td>Civil</td>
<td>34</td>
<td>39</td>
<td>36</td>
<td>38</td>
</tr>
<tr>
<td>Computer Engineering</td>
<td>21</td>
<td>21</td>
<td>23</td>
<td>29</td>
</tr>
<tr>
<td>Electrical</td>
<td>24</td>
<td>19</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>Environmental/Env. Health</td>
<td>nr</td>
<td>37</td>
<td>44</td>
<td>39</td>
</tr>
<tr>
<td>Industrial/Manufacturing</td>
<td>18</td>
<td>17</td>
<td>19</td>
<td>18</td>
</tr>
<tr>
<td>Materials</td>
<td>17</td>
<td>14</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Mechanical</td>
<td>23</td>
<td>20</td>
<td>21</td>
<td>20</td>
</tr>
<tr>
<td>Nuclear</td>
<td>15</td>
<td>14</td>
<td>Nr</td>
<td>Nr</td>
</tr>
</tbody>
</table>

### Faculty Productivity

The data in the following table relating to faculty research and our Ph.D. program reinforce the data in showing that our faculty are highly productive. Since 2004 we have averaged a graduation rate of 13.8 Ph.D. students each year and a ratio of .81 Ph.D. degrees per faculty member. It is significant that in 2005 and 2006 we were 5th in the nation in the graduation of Chemical Engineering doctoral students. This is noteworthy as the leading departments in this category have faculty numbers which are typically double ours at Ohio State.

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Faculty</td>
<td>14</td>
<td>15</td>
<td>17</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>Publications</td>
<td>75</td>
<td>76</td>
<td>73</td>
<td>89</td>
<td>78</td>
</tr>
<tr>
<td>Publications per Faculty</td>
<td>5.35</td>
<td>5.06</td>
<td>4.29</td>
<td>5.23</td>
<td>4.58</td>
</tr>
<tr>
<td>Books or Book Chapters</td>
<td>5</td>
<td>9</td>
<td>18</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>Patents Issued</td>
<td>8</td>
<td>5</td>
<td>9</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Total Ph.D. Students</td>
<td>88</td>
<td>83</td>
<td>77</td>
<td>96</td>
<td>95</td>
</tr>
<tr>
<td>Ph.D. Students/Faculty</td>
<td>6.29</td>
<td>5.53</td>
<td>4.53</td>
<td>5.65</td>
<td>5.58</td>
</tr>
<tr>
<td>Ph.D. Degrees Granted</td>
<td>7</td>
<td>19</td>
<td>21</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Ph.D. Degrees/Faculty</td>
<td>0.5</td>
<td>1.27</td>
<td>1.24</td>
<td>0.65</td>
<td>0.65</td>
</tr>
<tr>
<td>Research Expenditures*</td>
<td>4,499,000</td>
<td>5,121,000</td>
<td>9,032,000</td>
<td>12,249,000</td>
<td>12,462,000</td>
</tr>
<tr>
<td>Research Exp/Faculty</td>
<td>321,360</td>
<td>341,400</td>
<td>531,290</td>
<td>720,530</td>
<td>733,060</td>
</tr>
</tbody>
</table>
## 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”

### Spring 2008

**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, Tisone 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”

Autumn 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”


10/23 Anne Plant, Leader, Cell and Tissue Measurements Group, Biochemical Science Division, National Institute of Standards and Technology, “Morphology and Mechanics in Control of Cell Proliferation”

10/30 Fredrick C. Michel Jr., Associate Professor of Biosystems Engineering, Department of Food, Agricultural and Biological Engineering, OSU-OARDC, Wooster, OH, “Pretreatment and Processes for Ethanol Production from Switchgrass, Straws, Waste Paper, Wheat Middlings and Russian Dandelion Roots”

11/04 David Wood, Department of Chemical Engineering, Princeton University, “New Technologies from Engineered Self-Modifying Proteins”

11/06 Yangchuan Xing, Associate Professor, Department of Chemical & Biological Engineering, Missouri University of Science & Technology, “Carbon Nanotubes as PEM Fuel Cell Catalyst Support”

12/4 Ah-Hyung Alissa Park, Assistant Professor, Department of Earth and Environmental Engineering, Department of Chemical Engineering, Columbia University, “Enabling Sustainable Fossil Fuel Energy Conversion Systems: Carbon Mineral Sequestration and Utilization of Solid Byproducts”

Graduate Student and Post-Doctoral Awards

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

Megan Cavanaugh, Orin Hemminger, and Brian Henslee (ThermoBuffer): Entered the 2008 Deloitte Business Plan Competition through the Fisher College of Business, Center for Entrepreneurship. They came in third place for their innovative new technology that addresses the basic problem of temperature control in containers for food and liquids, maintaining the temperature in the optimum flavor range. http://entrepreneurship.osu.edu/

Dr. Jun-Ki Choi: First Place Award in the research poster competition at the International Input-Output Conference held at Selville, Spain from July 9-11, 2008. The poster was titled “A Framework for Assessing the Biocomplexity of Materials Use” and was a collaboration with Prof. Tim Haab, an environmental economist at OSU.

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

Wu Ge: Sigma Xi Research Award.


Hua Song: Won Second Place during the 2008 Fuel Cell Symposium Poster Competition held in May.

Yuan Wen: Received a travel subsidy from BIOT of the American Chemical Society for their national meeting during the summer of 2008. Won a Ray Travel Award from the CGS at OSU for travel to the AIChE national meeting.

Yun Wu: Received a 2008 Travel Award to attend the 27th Annual meeting of the America Association for Aerosol Research in October 2008 in Orlando, Florida.

Chaofang Yue: Received a 2008 Travel Award to attend the 100th annual meeting of the AIChe this fall to present a research paper.

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

**Graduate Student Fellowships**

**University Fellowships**
Pathak, Harshad
Phalak, Nihar
Singh, Prateik
Zhao, Lin

**Presidential Fellowships**
Ge, Wu
Zhang, An
Research Expenditures

This year we are showing our research expenditures that were extracted from the OSU Research Foundation database. For the past three years our research expenditures have been phenomenal considering that they are based on the efforts of 17 faculty. On a per-capita basis this comes to something like $565K per faculty member in fiscal year 2006 to $715K per faculty member in fiscal year 2008. This places us at or near the most productive faculty in all of Ohio State and near the top of all Chemical Engineering departments in the nation.

Graduate Degrees Granted

Winter Quarter 2008

Master of Science
Shikha Kantilal Gandhi  Advisor
Michael E. Paulaitis
Somnath Sinha  Barbara E. Wyslouzil
Yun Wu  Barbara E. Wyslouzil
An Zhang  Shang-Tian Yang
Doctor of Philosophy
He Bai                Advisor
Zhihua Guo            W.S. Winston Ho
Liying Yang           David L. Tomasko, L. James Lee

Spring Quarter 2008

Master of Science
Lingzhi Zhang         Advisor
Lingzhi Zhang         Umit Ozkan

Doctor of Philosophy
Ruben Dario Godoy Silva        Advisor
Ying Xion               Jeffrey J. Chalmers

Summer Quarter 2008

Master of Science
Jonathan Douglas Kowalski   Advisor
Nour Mohammad Younes        Kurt Koelling

Doctor of Philosophy
Chee Guan Koh              Advisor
Somnath Sinha              L. James Lee
Lingzhi Zhang              Barbara Wyslouzil
Lingzhi Zhang              Umit Ozkan

Autumn Quarter 2008

Doctor of Philosophy
Tiffany Mayanna Schofield Wilson  Advisor
Matthew Phillip Woods       L. James Lee
Yi Zhang                   Umit Ozkan

Doctor of Philosophy
L. James Lee              Advisor
Bhavik Bakshi


Cooper, Stuart L., 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.

Fan, Liang-Shih, 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.


Koelling, Kurt W., Professor, Ph.D., Princeton University, 1992. Advanced Polymer Processing, Microfluidics, Bubble and Drop Dynamics, Rheology of Complex Fluids, Biocompatible Polymers, Nanocomposite Foams, Gas-assisted and Thin-wall Injection Molding, Two-phase and Interfacial Flows of Viscoelastic Fluids, Shear and Extensional

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

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

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

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

Paulaitis, Michael E., Professor, Ph.D., Illinois. 1976. Molecular Simulations and Modeling of Weak Protein-Protein Interactions; Role Of Hydration in Biological March 5-9, 2007.

Tomasko, David L., Professor, Ph.D., UIUC, 1992. Molecular Molecular Thermodynamics, Supercritical Fluid Processing, Polymer Processing.

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

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

Yang, Shang-Tian, Professor, Ph.D., Purdue, 1984. Bioprocess Engineering, Biochemical Engineering, Tissue Engineering, Metabolic Engineering.

AWARDS AND HONORS

Bakshi, Bhavik


Fan, Liang-Shih

Norman Li Lectureship, Wayne State University (2008).

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

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

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

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


Named as one of the “One Hundred Engineers in the Modern Era” by the AIChE in Centennial Celebration of the AIChE (2008).

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

National Taiwan University Distinguished Alumnus Award (2008).

Feinberg, Martin


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

Invited Lecturer at special session on the current state of process design, AIChE Centennial, Philadelphia, November, 2008.

Invited Lecturer at special session commemorating Rutherford Aris, AIChE Centennial, Philadelphia, November, 2008.

Ho, W.S. Winston

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


**Lee, L. James**

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

**Palmer, Andre F.**

NOBCChE recipient of The Lloyd N. Ferguson Young Scientist Award (2008).

**Tomasko, David**

Inducted as an Honorary Member into Sphinx Senior Honorary at Ohio State.

**Jessica O. Winter**

ACS Progress/Dreyfus Lectureship Award.


**Barbara Wyslouzil**

Special Activities

Lowrie Lectures

The 2008 Lowrie Lecturer, Professor Carol K. Hall, is 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 Ph.D. in Physics from 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 over 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 twenty 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. Dr. 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.

2008 Advisory Board Meeting

The Advisory Board Meeting was held on March 13, 2008. Participants included Rich Brandon, Terry Chern, Ron Harris, Bruce Martin, Karen Murphy, Nancy Dawes, Ron Harris, Bob Tatterson, Drew Weber, Stuart Cooper, L.S. Fan, Barbara Wyslouzil, Jack Zakin, Bob Brodkey, John Corn, Marty Feinberg, Dave Tomasko, Kurt Koelling, Mike Paulaitis, Isamu Kusaka, Jessica Winter, Andre Palmer, Bhavik Bakshi and Jim Rathman

The meeting began with a Continental Breakfast at 8:30 and a welcome by Stuart Cooper at 9:00. After member introductions Stuart distributed a handout and presented a Department Overview to the group.

Dave Tomasko then spoke about the Honors and Scholars Program. He distributed a handout with Honors and Research graphs and information. There followed a brief discussion on how to generate more interest in the Chemical Engineering Program, especially among women.
Stuart distributed handouts and began discussion of the Academic Program Review and noted that the Review was mandated by the Provost’s Office. The Review was carried out by three individuals from outside the University whose report was made available to the Committee before the meeting.

After the break, Jim Rathman and Dave Tomasko spoke to the group about Undergraduate Issues within the Strategic Plan. Major goals were listed as: 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.

After lunch, Kurt Koelling addressed the group regarding Graduate Program issues relating to the Strategic Plan. He noted that quality and productivity for Chemical Engineering at OSU compares very favorably with other top ten schools. The goals for the graduate program would be to raise the number of minorities and domestic students and increase the Department’s ranking, which is very important in attracting students. It was also felt that interaction between students needs to be improved to provide a sense of community and loyalty within the student population.

Barbara Wyslouzil introduced Sandy Abraham, last year’s President, and Kristen Hendrix, current President, of the student AIChE organization. They noted strengths of the organization were the CHEM E Car, the Corporate Fall Meetings, and the Beat the Coop competition. Items they felt were not addressed were interaction with faculty members, development of “soft” skills (interviewing, etc.), ties to the local chapter and graduate school options. They also noted they were making an effort to get more students involved in the organization. Some suggestions from Board members were to increase activities to attract students, have a reception after the 750 class speakers and inviting faculty for an informal evening of conversation. It was also suggested that the organization could poll their members to see what types of questions they would like addressed and these questions could be prepared for the Advisory Board to address.

A brief overall discussion followed with several members stating the meeting was very successful. It was suggested that the Strategic Plan needed a specific timeframe for the goals set and that some of the goals lacked specificity. The Department needs to better define its focus and strategy. It was also suggested that the AIChE student organization could be utilized in development of a greater community within the Department. It was also noted that the fund raising drive needs attention so that people are aware of the needs and funding opportunities to support the construction of a new building.
ALUMNI DONORS IN 2008

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

1948
Richard A. Arnold
Franklin M. Ernest
Lee B. Fosdick
Dick F. Hoffman
Robert E. Kraus
R. Ted Scharenberg
George R. Secrist
Robert M. Tarr

1949
Paul E. Bates
Gordon G. Cross
J. Howard Kerstetter, Jr.
Donald R. Roberts
Glen D. Schaaf
Roland I. Spencer

1950
Walter E. Donham
Walter T. George
Jean Maurer Scharenberg
Richard L. Scott
Ralph E. Sieber

1951
Charles L. Dornbusch
Richard N. Eilerman
John R. Parkinson
Norbert F. Reinert
Verne R. Rinehart
David B. Speed
Robert A. Strang
Robert B. Weiser

1952
James F. Froning
Donald E. Haupt
Richard Hazleton
C. Richard Heil
Charles J. Schmitz
David G. Stephan

1953
Lee W. Addie
James O. Albery
Sun W. Chun
James R. Godwin
G. Clyde Bazell
Roger L. Briggs
David E. Buskirk
Donald E. Findlay
Robert T. Hewitt
Wilfred C. Ling
Donald A. MacDougal
Manoj K.D. Sanghvi
James L. Wilson

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

1958
Edward H. Bollinger
Charles N. Carpenter
John J. Connelly
James R. Facem
Barry C. Hartley
Dan M. Hayes, Jr.
Werner S. Lichtenstein
Valdis E. Petritis
Richard M. Smith
James W. Stark
Lawrence R. Steele

1959
Lee W. Addie
James O. Albery
Sun W. Chun
James R. Godwin
Ronald M. Kovach
James W. Lacksonen
James H. Laughlin
Darryl J. Von Lehnden
Gerald A. Wilcox

1960
Virgil L. Anderson
Carl Brooks, Jr.
Guy A. Crossley
Edgar W. Fasig, Jr.
William D. Gieseke
Donal T. Grube
Orville W. Gruebmeyer, Jr.
George M. Hauswirth
Gordon R. Howard
Warren E. McAdams
Lee R. Stewart
Irwin Weinstock
Russell L. Wilt

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. Opatrny
C. David Osbun
Dean Snider
Michael D. Winfield

1963
Nelson W. Barnhill
Gary L. Beeler
Myers G. Hammond
Robert P. Kasper
Kay Logan Snider

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

1967
John W. Bradshaw
C. Douglas Dunlap
Keith A. Dunnigan
Dennis W. Hurley
Wilma Diskant Jancuk
Graham F. Painter, Jr.

1968
Ronald R. Remick
John M. Salladay
Doug Smith

1969
James F. Dietz
Smith E. Howland
Robert D. Litt
M. Anandha Rao
Steven E. Russell
John W. Toussant

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

1975
John T. Erikson

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

1978
Douglas T. Brown
Janet Lyons Inkrott
Rad V. Scott III
Elizabeth Ann Stuber
Neil P. Stuber
Paul W. Vance, Jr.
Thomas E. Winkler

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  
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 Dziewatkoski

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. Griset

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

FOCBE  
Cheryl Homer Ball  
Betty Bartels Bates  
Samira Kanaan Beckwith  
Karen S. Beeler  
Lavada M. Bigley  
Martha Farringer Bradshaw  
Martha Alice Briggs  
Robert S. Brodkey  
Janet Grandey Brown  
Sharon Redman Clark  
Stuart L. Cooper  
Mark E. Dawes  
Patricia C. Dietz  
Beverly J. Dornbusch  
Liang-Shih Fan  
Martin R. Feinberg  
Lynn D. Flanagan  
Marilyn Elizabeth George  
Doris Whitman Harris  
Bradley M. Hewitt  
Mary Ellen Hewitt  
W.S. Winston Ho  
Lois D. Holliday  
Jeanne Baker Howard  
Christine Hudale Howland  
Kang Hsu  
Kenneth E. Inkrott  
Marilyn Parmiter Jones  
Marianna Fuller Kraus  
Isamu Kusaka  
L. James Lee  
Ernestine R. Lowrie
Sue Barnhill Mitchell
Nancy Kerr Morsh
Ruth E. Mravec
Erdal Ozkan
Umit Ozkan
Amy Reynolds Pressly
Nona Toops Raines
Michelle M. Ransom
Susan Lucas Royer

Janis Connell Seguin
Karen Wheeler Smith
Muriel Edwards Stauffer
Betty Hranko Stewart
Sherry Diane Stoneman
David L. Tomasko
Betty French Unkel
Shu-Huan Weng
Marlene Hoy Wilcox

Susan Herbert Williams
Arlene Romanowski Winfield
Adam Winter
Jessica Winter
Jo Ann Woodworth
Jacques L. Zain
Laura Zakin
Elinor Golden Zind

Donations

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<td>2008</td>
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Appendix A - Publications and Patents

Bakshi, Bhavik

Books and Book Chapters


Refereed Papers


Chalmers, Jeff

Refereed Papers


**Cooper, Stuart L.**

Refereed Papers


**Fan, Liang-Shih**

Books and Book Chapters


Refereed Papers


**Patents**


**Feinberg, Martin**


**Ho, W.S. Winston**
Books and Book Chapters


Refereed Papers


Patents


Lee, L. James

Books and Book Chapters


Refereed Papers


Patents


Ozkan, Umit

Books and Book Chapters


Refereed Papers


**Palmer, Andre**

**Refereed Papers**


**Paulaitis, Michael**

**Refereed Papers**

**Rathman, James**

Refereed Papers


**Tomasko, David**

Refereed Papers


**Winter, Jessica**

Refereed Papers


**Wyslouzil, Barbara**

Books and Book Chapters

Refereed Papers


Yang, Shang-Tian

Refereed Papers


Patents


Zakin, Jacques L.

Refereed Papers

## Appendix B – Current Projects and Grants

### Current Projects and Grants

<table>
<thead>
<tr>
<th>Amount</th>
<th>PI/Co-PI</th>
<th>Start - End</th>
<th>Description</th>
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<tr>
<td>$175,000</td>
<td>Bakshi, Bhavik R.</td>
<td>2005-2010</td>
<td>Matching funds from OSU Transportation Research Endowment Program (TREP).</td>
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<td>$12,000</td>
<td>Bakshi, Bhavik R.</td>
<td>2006-2010</td>
<td>Supplementary funds from NSF Research Experience for Undergraduate Program.</td>
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<td>$120,000</td>
<td>Fiksel, Joseph</td>
<td>Jan-Dec 2009</td>
<td>Life Cycle Assessment of Powdered Rubber, Holcim Inc. (co-PI: Bhavik R. Bakshi).</td>
</tr>
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<td>$300,000</td>
<td>Bakshi, Bhavik R. (co-PI William J. Mitsch)</td>
<td>2009-2011</td>
<td>Toward Integration of Industrial Ecology and Ecological Engineering, National Science Foundation.</td>
</tr>
<tr>
<td>$100,000</td>
<td>Bakshi, Bhavik R.</td>
<td>2008-2010</td>
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Comparative Study of Thermodynamics Based Life Cycle Assessment of Nano-Materials with Conventional Technologies, Environmental Protection Agency.


$33,810 Chalmers, Jeffrey J. (sub-contract) 7/1/2008-12/31/2011 CCLI: Educational materials to enhance chemical engineering curricula with applications in biological engineering, NSF Division Undergraduate Education.


$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.


$152,000/yr Caliguiri, M. 7/01/1977-11/31/2010
OSU Comprehensive Cancer Center Support Grant, National Cancer Institute, 5 P30 CA16058-26.

$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.

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

$300,000  Fan, Liang-Shih, PI  2009-2011

$408,801  Fan, Liang-Shih PI, 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, PI  2008-2010
Hydrogen Production from Syngas Using Novel Metal Oxide Composite Particles, Ohio Coal Development Office.

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

$400,000  Fan, Liang-Shih, PI  2008-2009
Phase 1 SCL Process - Fabricated Equipment, Ohio Coal Development Office.

$238,339  Fan, Liang-Shih, PI  2008-2011
Development and Implementation of 3-D, High Speed Capacitance Tomography for Imaging Large-Scale, Cold-Flow Circulating Fluidized Bed, Department of Energy.

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

$211,870  Fan, Liang-Shih, PI, Zakin, Jacques.  2007-2009
Enhanced Coal to Liquid Technology Using Calcium Looping Process, Ohio Coal Development Office.

$160,000  Fan, Liang-Shih, PI  2007-2009
Integrated Fuel Cell with Chemical Looping, Ohio Coal Development Office.

$150,000  Fan, Liang-Shih, PI  2007-2009

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

$2,595,776  Fan, Liang-Shih, PI  2006-2008
Demonstration of Reactive CO₂ Separation Process Using Tailored Nanoporous Calcium Sorbent, Ohio Coal Development Office.

$499,934  Feinberg, Martin  2004-2009
Quantitative Systems Biology: Understanding Bistability in Complex Enzyme -Driven Reaction Networks, National Science Foundation.

$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.

$580,635  Ho, W.S. Winston  01/01/2004-07/10/2008
Ohio Department of Development, Wright Capital Funds for Fuel Cells, OSURF Project No. 747312 and 747450.

$619,980  Ho, W.S. Winston  07/15/2005-12/31/2008
Office of Naval Research, Development of High-Flux Water Desalination Membranes, OSURF Project No. 60004446.

$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.

$636,089  Ho, W.S. Winston  10/01/2006-12/31/2008
Shell Hydrogen LLC, CO₂-Selective Membranes for Purification of Natural and Synthesis Gases, OSURF Project No. 60012862.

$639,696  Ho, W.S. Winston  02/12/2008-02/11/2011
Office of Naval Research, Advanced Membranes for Reformate Hydrogen Sulfide Clean-up, OSURF Project No. 60014815.

Office of Naval Research, CO Conversion and Clean-up via CO₂-Selective Membrane with Water-Gas-Shift Reaction, OSURF Project No. 60014814.

$95,040  Ho, W.S. Winston  10/01/2005-11/30/2008
National Science Foundation, Molecular Engineering of Microdevices,
IGERT Project sponsoring 1 Ph.D. Student, with L. James Lee (PI), OSURF Project No. 60009625.

$177,487  **Ho, W.S. Winston**  09/01/2004-08/31/2009
National Science Foundation, Center for Affordable Nanoengineering of Polymer Biomedical Devices, NSEC Project sponsoring 1 Ph.D. Student, with L. James Lee (PI), OSURF Project No. 60009015.

$50,000  **Kusaka, Isamu**  2006-2008
Towards a Theory of Bubble Nucleation in Viscous and Viscoelastic Fluids, National Science Foundation.

$400,000.00  Tomasko, David, Koelling, Kurt, **Kusaka, Isamu**, and Lee, L. James
Scalable Nanomanufacturing of High-Performance Polymer Foams, National Science Foundation.

$173,687.00  **Kusaka, Isamu**  2005-2009
CANPBD: Molecular Theory of CO$_2$-based Nanoscale Polymer Processing, (A sub-award of NSEC) National Science Foundation.

$12,900,000  **Lee, L. James** (PI)  2004-2009
Nanoscale Science and Engineering Center for Affordable Nanoengineering 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.

$387,516  **Lee, L. James** (PI)  2007-2009
Novel Micro/Nanofluidic Electroporation Devices for DNA and
<table>
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<tr>
<th>Year Range</th>
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<tr>
<td>2008-2013</td>
<td>Lee, L. James (co-PI)</td>
<td>Targeted Lipopolypexes for Oligonucleotide Delivery to AML, National Institute of Health (NCI).</td>
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<tr>
<td>2003-2009</td>
<td>Ozkan, Umit S.</td>
<td>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.</td>
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<td>2007-2010</td>
<td>Ozkan, Umit S.</td>
<td>GRS - Catalytic Activity of Nitrogen-containing Functional Groups Supported on</td>
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Carbon Structures for Cathodic Oxygen Reduction Reaction for PEM Fuel Cells, National Science Foundation.

$480,000  **Ozkan, Umit S.**  2007-2010

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

$160,000  **Ozkan, Umit S.**  2008-2010

$1,875,000  **Palmer, Andre**  2006-2011

$598,500  **Palmer, Andre**  2006-2009

NIRT: Robust Manufacturing Protocol for Particulate-like Nanoporous Micro-devices (NMDs) for Biomedical and Biochemical Applications (Manufacturing Processes at the Nanoscale).

$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.

$400,000  **Tomasko, David (PI)**  2006-2009

$1,982,000  **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: S. Olesik, Co-PIs: G. McKenzie, K. Irving.

$12,000,000  **Tomasko, David (Co-PI)**  2004-2009

$129,737 Jessica Winter 6/15/2007-6/14/2008

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

$90,000 Wyslouzil, Barbara E. 2007-2009

$ 90,000 Yang, Shang-Tian 2006-2008
Production of Organic Acids and Esters from Plant Biomass by Extractive Fermentation and Enzymatic Esterification, The Consortium for Plant Biotechnology Research, Inc. (DOE.)

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

$ 50,000 Yang, Shang-Tian 2006-2008
A Fermentation-Ultrafiltration Process for Xanthan Gum Production from Waste Sugars, Midwest Advanced Food Manufacturing Alliances.

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

$ 29,000 Yang, Shang-Tian 2007-2008
A Fermentation-Catalytic Hydrogenation Process for the Production of Butanol from Biomass, Marubeni Corporation.

$300,000 Yang, Shang-Tian 2007-2008

$108,000 Yang, Shang-Tian 2007-2009
An Integrated Fermentation-Ultrafiltration Process for the Production of Xanthan Gum from Whey Lactose, Bioprocessing Innovative Company, Inc., USDA SBIR Phase II.

$185,500 Yang, Shang-Tian 2008-2009
Metabolic Engineering of C. Tyrobutyricum and C. Acetobutylicum for Butanol and Hydrogen Production, Nagarjuna (India).

$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.

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<td>$215,144</td>
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<td>Production of Fumaric Acid and Ethanol From Soybean Meal, United Soybean Board.</td>
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<td>$ 65,550</td>
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<td>Engineering clostrittrial fermentation for biobutanol production, National Science Foundation, STTR Phase I, Bioprocessing Innovative Company, Inc.</td>
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<td>$48,361</td>
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<td>NSF Travel Grant for 3rd Chemical Engineering Conference for Collaborative Research in Eastern Mediterranean, RF 744357.</td>
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<td>Dreyfus Foundation Proposal for Undergraduate Research Studies, RF 742348.</td>
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