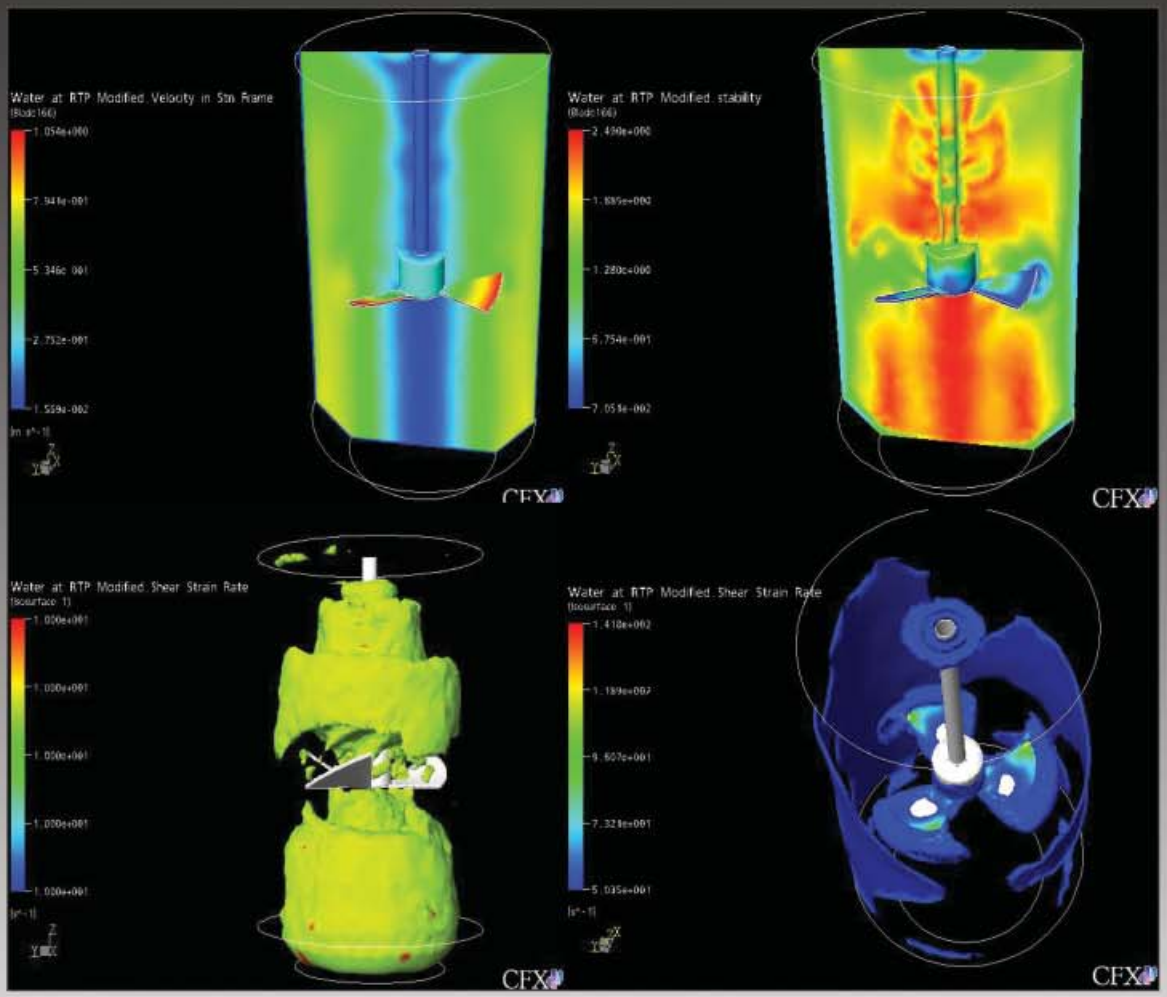
Alumni Newsletter
Volume 22
Fall 2005/Spring 2006

Chemical Engineering



CAIN DEPARTMENT OF
CHEMICAL ENGINEERING

LOUISIANA STATE UNIVERSITY

Letter from the Chair

Dear Friends and Alumni:

One year has passed since the catastrophic events of Hurricanes Katrina and Rita that wreaked havoc on the lives of many of our friends and alumni and their property along the Gulf Coast. We hope that all of you have recovered. We are all well aware that much more remains to be done and our recovery is slow and painful. We want to extend our support and services in whatever we can do to help during these trying times.

Since the last newsletter, we had one retirement from the faculty: Professor Douglas Harrison in fall 2005. Professor Harrison retired after 35 years of dedicated service to the department. Although retired, he still continues to be active in his research and visits the department often. We are also fortunate to have one new faculty as of Fall 2006: Dr. John Flake as an Associate Professor. Dr. Flake received his Ph.D. from Georgia Tech and has several years of industrial experience with IBM and Motorola. We are also on-line to recruit two other assistant professors in the next academic year.

The department is continuing to modernize our undergraduate laboratory under the able leadership of Professor Kerry Dooley and Dr. Harry Toups. Most of the experiments have been modernized and several new ones added. Any of our alumni or friends willing to help with this effort is welcome to get in touch with Professor Dooley.

The Departmental Industrial Advisory committee has been reconstituted and we will be meeting in November this year. Several of you have willingly provided your time and services to be on the committee and I am thankful for your services.

Most important of all are the developments regarding a new building for the department. Our new building is a very high priority for the University, and it is on the Capital Outlay plan. A new committee to be chaired by Ron Cambre will be developing plans for fund raising as part of the LSU Forever Capital Campaign. We have met with the architects who are designing the building and anyone interested in seeing the new plans can drop by the department to see the drawings. A sketch of the building can be viewed on our website. We hope that we will witness an enthusiastic response from our friends and alumni. Any contributions made out to this effort should specify “LSU Foundation: Chemical Engineering Building Fund” so that it will be appropriately credited with the LSU Foundation.

Our alumni and friends have helped us establish several professorships and chairs for the faculty, and scholarships for our students. These efforts have helped us recruit and retain excellent faculty and students to our undergraduate and graduate programs. Our undergraduate curriculum has undergone significant revisions and these can be viewed on our website.

The 3rd alumni reunion was held in April 2006 and was attended by many of you. We would like to visit with more of you during our next annual reunion and you should be receiving our mailing soon. You may update your mailing address and other contact information with us anytime by logging onto our Web site at http://www.che.lsu.edu.

I wish you all the very best for the rest of 2006 and beyond. If you happen to visit Baton Rouge, please stop by the department.

Kalliat T Valsaraj
Department Chair
Charles and Hilda Roddey Distinguished Professor and
Ike East Professor

If you would like to know more about contributing, please contact Kalliat Valsaraj at 225/578-1426 or send an e-mail to valsaraj@lsu.edu.

A Word of Thanks to Our

Volume 22
Fall 2005/Spring 2006

Although financial support has been impressive, departmental expenses continue to rise and further renovations are essential if we are to remain competitive with our counterparts at other universities. We would like to thank the following corporations and individuals for their role in maintaining the outstanding reputation that LSU has achieved throughout the

Private Supporters

Henry and Mary Abbott
Edwin L. Anderson
Robert and Adele Anding
Jan Barlow, Jr.
Lawrence F. Becnel, Jr.
Ram Bhatia
James E. Boone
Joseph Butterworth, Jr.
Gordon and Mary Cain
John and Nadine Cartwright
Armando and Consuelo Corripio
Clarence M. Eidt
Mr. and Mrs. Luke E. Fontenot
Roy Gerard
Mary and Frank R. Groves, Jr.
Mr. and Mrs. Lynn F. Guidry
Keith B. Hall
Clifton Hill
Mr. and Mrs. Jack Hopper
George M. Irwin
Alvin Landry
Randy Lea
Denver T. Loupe
Eugene Luc
Shirley A. Mayhall
Mr. and Mrs. Stephen Melsheimer
Howell Burnett Payne
Charles Roddey
Walter H. and Janice C. Silver
James J. Spivey
Robert and Barbara Westall
David M. Wetzel
Robert Whelove, Jr.
Mr. and Mrs. R. Woodrow Wilson

Corporate Sponsors

Air Products
Albemarle
American Geological Institute
BASF
Borden Melamine Chemical
BP Amoco
Celanese Chemicals
Chevron Texaco
Chevron Oronite Company
ConocoPhillips
The Dow Chemical Company
DuPont
Emerson Process Management
ExxonMobil
Gaylord Chemical Corporation
Honeywell
IMC Global
John H. Carter
Kerr McGee Chemical
Kimberly Clark Corporation
Malcolm Pirnie
Marathon Ashland Petroleum, LLC
McLaughlin Gormley King
PPG Industries, Inc.
Praxair
Rohm and Haas
Shell Oil

On the Cover

This is a Computational Fluid Dynamics (CFD) model of an experimental reactor. It is used to study the effect of coagulation in polymerization processes. Professor Jose Romagnoli is

Chemical Engineering is published for the benefit of the Cain Department of Chemical Engineering's alumni and students. Comments and suggestions should be directed to:

Editorial Staff
Kalliat T. Valsaraj
Chair
Melanie McCandless
Editor

Cain Department of Chemical Engineering
110 Jesse Coates Hall
Louisiana State University
Baton Rouge, LA 70803

New Faculty

Jose Romagnoli - Cain Chair in Chemical Engineering

In August 2005, the department welcomed **Jose A. Romagnoli** as a Gordon A. and Mary Cain Endowed Chair & Professor. He joined LSU following more than 10 years at the University of Sydney in Australia, where he most recently held the position of Chair & Professor of Process Systems Engineering and head of the Chemical Engineering Department (2001-02). Romagnoli received his B.S. from the Universidad Nacional del Sur in Argentina in 1973 and his Ph.D. from the University of Minnesota in 1980, both in chemical engineering. He is a world-renowned expert in process control.

Romagnoli has garnered many awards in his career. He is a recipient of the Centenary Medal of Australia, which is awarded by the Prime Minister for contributions to the field of Chemical Engineering. He is also a fellow of the Australian Academy of Technological Sciences and Engineering. More recently, he was awarded the John Brodie Medal for contributions to Chemical Engineering by the Institute of Chemical Engineers, Australia for 2005. This medal is awarded for the best paper in the discipline of Chemical Engineering and is presented at the annual Chemeca Conference in Australia.

He is the author of the books, "Data processing and reconciliation for chemical process operation" (with M. Sanchez, 2000) and "Introduction to Process Control" (with A. Palazoglu, 2005). He has published more than 200 papers in scientific and professional journals. His research areas of interest encompass all aspects of process systems engineering, with a special focus on: advanced linear and nonlinear process control; advanced modeling architectures for complex processes; data processing and reconciliation; design and synthesis with economic-environmental-operability considerations; intelligent process monitoring; and artificial intelligence.

Because of his expertise in process systems, he is frequently invited to speak at international conferences. During spring 2006, Romagnoli was the invited keynote speaker at ADCHEM-2006, the International Symposium on Advanced Control of Chemical Processes, held in Brazil in April. His presentation was entitled, "On Data Processing and Reconciliation: Trends and the impact of technology." Then, in July, he was the invited speaker at PSE 2006-Escape 16, which was held in Garmicsh-Partenkirchen, Germany. His presentation at this conference was entitled, "Model-centric technologies for support of manufacturing operations."

The department is delighted to have Romagnoli as a member of our department and we are confident he will be a valuable asset as we continue to grow and move forward.

New Assistant Professor - James Henry

The Department is pleased to announce the hiring of **James E. Henry** as an assistant professor and Cain Professor #2. Henry comes to LSU from Texas A&M University, just having received his Ph.D. in chemical engineering in 2005. He received both his B.S. and M.S. from the University of Arkansas. His primary research areas of interest are nano-scale and biomimetic materials for biomedical applications.

His current research projects include:

1) Design and characterization of biomaterials for direct bone growth.
2) Development of an implantable glucose sensor for use in diabetics.
3) Development of a tertiary FRET sensor for the diagnosis of prostate cancer.
4) Investigating beta-amyloid aggregation and binding characteristics for use in treating and diagnosing Alzheimer's disease.
5) Development of gene-therapy delivery vehicles for use in treating skin related conditions.

Thus far, Henry says he has really enjoyed his first year in the department. "It's obviously been a time of adjustment for me going from being a graduate student to a professor, but I've had tremendous support from the faculty and staff in the department. Research is progressing nicely. I feel I have the freedom to develop and implement research ideas without the constant scrutiny of my colleagues. In addition, I have found several people outside the department that are more than willing to collaborate on ideas and share equipment. This has made my transition into this role even easier."

He and his wife, Casey, love the Baton Rouge areas and look forward to spending a long time here. Overall, Henry states he "can't imagine having a better first year on the job."

Douglas Harrison Retires After 35 Years at LSU

After 35 years of service to LSU, **Douglas Harrison** retired from the university following the close of the Fall 2005 semester.

Harrison received both his B.S. and Ph.D. degrees from The University of Texas in Austin in 1961 and 1966, respectively. He began his career at LSU as an assistant professor in 1969 after spending a few years at Monsanto in North Carolina, conducting new product research. During his time at LSU, he served the department and the college in many capacities. From 1976-79 he was the chairman of the department. In 1984, he served as acting director of the Hazardous Waste Research Center while the national search was being conducted for a director. He has also served on various departmental, college, and university committees, including the LSU Graduate Council from 1979-84 and the Faculty Senate from 1997-2000.

Harrison was a highly respected and well liked professor, have received the Dow Chemical Excellence Teaching Award four times, in 1988, 1995, 2000, and 2002 — a feat no one else has accomplished. He is well remembered by many of his former students. In the Fall 2001 issue of our newsletter one of his former students, **David Caillet (B.S., 1974; M.S., 1976; Ph.D., 1980)** was quoted as saying, "Dr. Harrison is a great teacher and a great researcher, a combination that is, in my opinion, becoming increasingly rarer at most universities where research is the main emphasis. I have nothing but praise for Dr. Harrison as both a teacher and a researcher, as I have experience with him in both of those areas." This insight is typical of many of Harrison's former students who respect the "gentle firmness" with which he approached teaching and research.

Harrison maintained an active research program, focusing in the area of noncatalytic gas-solid reactions applied to gas separations.

A farewell dinner was held for Harrison at Ruffino's Italian Restaurant in Baton Rouge. Many came out to pay praise to Harrison including former colleagues **Ed McLaughlin** and **Paul Murrill** as well as a few of his former students.

Professor Appointed to Numerous Environmental Impact Panels

Louis Thibodeaux (B.S., 1962; M.S., 1966; Ph.D., 1968), Jesse Coates Professor of Chemical Engineering, is a world renowned expert in chemodynamics with a record of research in the field of environmental chemodynamics. His textbook, by the same name, was published in 1996 by John Wiley, New York, and has been adopted worldwide by engineering and science departments for use in courses on chemical fate and transport in the natural environment. Because of this exemplary research and distinction, he has garnered various positions on many influential government, university, and private environmental review panels and committees. In the past 12 months, his expertise in the area of chemodynamics has been called upon to serve two post-Katrina environmental impact activities, one committee, and one science advisory board all associated with the U.S. government.

- Consultant to the Enviromental Protection Agencey's (EPA) Science Advisory Board (SAB) — On September 13 the EPA SAB formed a special work group including SAB members and consultants. The objective was to review a sampling and chemical analysis plan for sediments/residues in New Orleans. The plan was developed by US EPA Region 6 in Dallas and was focused on sediments in homes and businesses as well as adjacent yards and parking areas. The Region's stated goal is to use sampling data to assess whether it is safe for owners/renters to return to their properties, and to clean up sediments and residual materials left by the floodwaters. Documents were reviewed and written comments submitted prior to the public conference. Minor levels of contaminants were found since the source of the particles was primarily the clean sediments from Lake Pontchatrain.

- Consultant to the EPA SAB — On October 5 another SAB special work group was formed to review the US EPA Region 4 soil and sediment sampling/analysis plan for the Mississippi Gulf Coast impacted by Katrina. At the request of the Mississippi Department of Environmental Quality the Region 4 investigative branch was to conduct sampling designed to detect releases of hazardous constituents to the environment. The manufacturing facilities investigated were located in the storm surge impacted portions of Hancock, Harrison, and Jackson counties in Mississippi. A total of eight chemical manufacturing and related facilities were targeted. The objective of the investigation was to provide a first look at these facilities and the surrounding areas with respect to the release and dispersion of hazardous materials and chemicals, particularly to residential settings and sediment. The investigation was not intended to provide a comprehensive assessment of potential releases. The results of the sampling effort are not known at this time.

- Member of the Committee on Sediment Dredging at Superfund Megasites by the Chairman of the Division on Earth & Life Studies of the National Academies — The National Research Council (NRC) Committee will conduct as independent evaluation of dredging projects that will look at the expected effectiveness of dredging contaminated sediments assessing EPA's estimated risk benefits considering sites where information is available and develop recommendations that will facilitate scientifically based and timely decision making for megasites in the future. Thibodeaux's current research efforts have been focused on several aspects of the environmental chemodynamics of bed-sediment contaminants in rivers, lakes, and estuaries. These have included the chemical release process associated with the mud-clouds produced during dredging. Thibodeaux's previous work for the NRC has been to Chair one committee and serve as a member of four others. The current appointment will end January 2007.

- Member on a EPA Science Advisory Board — The EPA Science Advisory Board has selected Thibodeaux to be a member of the review panel for the, so called, Estimation Program Interface (EPI) Suite. It is a set of 13 Windows® based models used to estimate the physical and chemical properties as well as the environmental fate of commercial chemical substances that are or will be released. It is the mission of the USEPA's Office of Pollution Prevention and Toxics (OPPT) to evaluate potential risk of these substances. The EPI Suite is being used for implementing the Agency policy on pollution prevention (P2) as well as evaluating new chemicals under EPA's premanufacture notices (PMNs). The EPI Suite is also widely used for predicting physical/chemical properties and environmental fate and transport for chemicals already in commerce.

  The Panel will conduct a review of the EPI Suite providing advice regarding the comprehensiveness and soundness of the supporting science including methods of validation, alternative estimation methods, completeness of software, documentation, and preparation of its current applications. The panel consists of 14 members and its work will continue until the review is complete. The process has started and the first meeting was held in March 2006 in Washington, D.C.

In other news, Thibodeaux was the invited Plenary speaker at the Canadian Society Chemical Engineering annual meeting in Toronto, Canada in October 2005.

Professor Researches Green Propellant

Ever since the Columbia shuttle disaster in February 2003 (as well as other disasters like it), the U.S. military has embarked on a mission to discover a safer, more environmentally-friendly propellant. One of the major concerns following the Columbia tragedy was the potentially devastating affects of the debris on the people and environment in the areas of the wreckage, specifically the hydrazine. Hydrazine is a toxic, flammable liquid used in the shuttle's propellant and it can cause any number of unpleasant physical ailments according to the U.S. EPA.

One alternative to hydrazine is hydrogen peroxide, which has become the main focus of **Ralph Pike**-Horton Professor in Chemical Engineering and Director of the Minerals Processing Research Institute (MPRI). MPRI and Sierra Engineering, Inc. of Carson City, Nevada, were awarded a grant by the U.S. Army Space and Missile Defense Command to study the thermal decomposition of propellant grade hydrogen peroxide. A major advantage to hydrogen peroxide is that it leaves no pollution as it decomposes since it separates into water and oxygen. Another advantage is that is requires less equipment and parts on a rocket as opposed to other propellants. And, it allows the concentration of stabilizers and corrosion inhibitors to be focused on safer handling of the hydrogen peroxide.

Pike, along with his research team, monitor the rate of decomposition of hydrogen peroxide by heating a drop to 2,500 degrees Fahrenheit while suspended from a fiber optic filament. As the hydrogen peroxide begins to decompose from the heat, the team uses a high-tech camera to video the drop at 30 frames per second. In order to then measure the mass of the drop, a computer breaks down each frame and calculates the diameter changes in the drop. As Pike states, "to understand the behavior of one drop is to understand all drops and how it all works."

Sierra Engineering will take Pike's research and will begin building trial models, which will be built at LSU. After extensive testing and assessment, these models will eventually be incorporated into space vehicles and land-based systems.

Faculty News and Awards

F. Carl Knopf (PI) and **Kerry Dooley** (co-PI) have received funding from the National Science Foundation for their proposal, "Integrating a Cogeneration Facility into Engineering Education." Funding will be for one year (2006-07) in the amount of $126,000. Kevin Kelly, an associate professor in the Department of Mechanical Engineering, will serve as co-PI as well.

Dooley also served as a co-PI on a NASA subcontract, "Applied Polymer Technology Extension Cooperative," ($99,800) for the year 2005-06. Paul Russo served as PI for the project with David Spivak and Leslie Butler as co-PIs, all of whom are faculty members in the Department of Chemistry.

Elizabeth Podlaha is a recipient of the 2006 Alumni Association Faculty Excellence Award. This award recognizes faculty members for outstanding teaching, research, and/or service. It consists of a one-time cash award of $1,000, funded by the LSU Alumni Association. Podlaha, along with other faculty award winners, will be honored by the University at a reception on May 9 at the Lod Cook Alumni Center.

Jerry Spivey received the following grants this academic year:

- a grant in the amount of $622,000 funded by Albemarle Corporation and the LSU Board of Regents to support research in the department on the oligomerization of methane to gasoline-range liquids. Spivey will work with Albemarle scientists to develop catalysts that can activate methane and selectively produce these compounds.
- a small grant in the amount of $45,000 from the Department of Energy to continue work on the development of metal foams as catalyst supports for fuel processors. This project continues work he began earlier with colleagues, George Roberts (North Carolina State University) and Jim Goodwin (Clemson University) on these same materials.
- an award to LSU, Hampton University, and Clemson University for the development of attrition-resistant Fischer-Tropsch catalysts. The $200,000 award is for three years and will focus on iron-based catalysts to convert coal-derived syngas to liquid fuels. Spivey will serve as a PI along with Adeyinka Adeyega (Hampton) and Jim Goodwin (Clemson).

Faculty Publications and Presentations

Kerry Dooley has been involved in the following presentations and proceedings in the past year:

- **K.M. Dooley** (speaker), **A.K. Bhat**, A.D. Roy and **C.P. Plaisance**, "Ketones from Acid/Aldehyde Condensation Using Metal/CeO_2 Catalysts," 19th North American Meetings, Catalysis Society, Philadelphia, Pennsylvania, 2005.
- J.A. Muss, R.C. Farmer, **R.W. Pike** (speaker), **C.E. O'Quin** and **K.M. Dooley**, "Decomposition Kinetics for Hydrogen Peroxide," JANNAF 40th CS/28APS/22nd PSHS/ 4th MMS Joint Meeting, Charleston, South Carolina, 2005.
- **K.M. Dooley** (speaker), "Craft for Macromolecular Creativity - IGERT at LSU," NSF Southeast IGERT Conference, Chapel Hill, North Carolina, 2005.
- **K.M. Dooley** (speaker), **H.J. Toups** and **D.B. Mowrey**, "Better Integration of Process Design/Control Principles in Engineering Labs," 2005 AIChE Annual Meetings, Cincinnati, Ohio.
- **A.G. Bussard** (presenter) and **K.M. Dooley**, "Heterogeneous catalyzed polymer hydrogenation in an oscillating microreactor," 2006 ACS Annual Meeting, Atlanta, Georgia.

Carl Knopf and **Yogesh Waghmare** (Ph.D. student under his direction) published two papers in the March 2006 issue of AIChE Journal and presented two papers at the AIChE meeting in Orlando, Florida in April 2006.

Elizabeth Podlaha and members of her research team have co-authored a book chapter in the newly released, "Nanomaterials Handbook" (edited by Yury Gogotsi). The chapter is entitled, "Electrochemical Deposition of Nanostructured Metals." Her co-authors include current Ph.D. students-**Yutong Li**, **Alonso Lozano Morales**, **Despina Davis**; former students-**Qiang Huang (Ph.D., 2004)**, **Amrit Panda (Ph.D., 2003)**, and **Zhanhu Guo (Ph.D., 2005)**; and a former post-doctoral assistant, Jianqi Zhang.

Kalliat Valsaraj was an invited speaker at the University of California, Irvine, NSF Environmental Molecular Sciences Institute (EMSI) on atmospheric research in January 2006. His presentation was entitled, "The interactions of gas-phase organic species at the environmental air-water interface."

Professors Co-author Paper on Hurricane Katrina Floodwaters

Louis Thibodeaux and **Kalliat Valsaraj** were co-authors of an article titled, "Chemical and Microbiological Parameters in New Orleans Floodwater Following Hurricane Katrina." The article was published in the American Chemical Society's (ACS) premier journal *Environmental Science and Technology* on chemistry and chemodynamics of New Orleans floodwaters.

Within one week of Hurricane Katrina, a team of LSU researchers in the Departments of Civil & Environmental Engineering and Chemical Engineering were sampling and testing the so-called "toxic soup" waters as seen on national television. In the final analysis the waters were relatively clean chemically with only one metal, Pb, indicating slightly elevated levels. The water sampling also captured the floating oil sheen, which was shown in many live televised images.

Expected to contain elevated benzene and ethylbenzene concentrations because of its suspected gasoline source, the levels were in fact very low. Chemodynamic model calculations indicate that the vaporization half-life of these constituents is of the order of 10 mmoles or less.

In the final analysis the waters were not unlike the chemistry observed in typical storm waters. It was slightly yellow in color with elevated salt content. However, the elevated pathogens counted made it non potable and unsafe for human contact.

The full article, which was one of the most accessed in 2005 on ACS's website, can be found on the Internet at: http://pubs.acs.org/cgi-bin/sample.cgi/esthag/asap/pdf/es0518631.pdf.

3rd Annaul ChE Alumni Reunion

The 3rd Annual Chemical Engineering Alumni Reunion was held on April 1, 2006, outside of the Chemical Engineering Building. This year's menu featured bar-be-que chicken and brisket provided by Bayou Bistro's catering (located in Brusly, Louisiana). Alumni enjoyed visiting with each other as well as professors - both current and emeritus. Attendees were able to view the detailed plans for the new chemical engineering facility as well as tour our existing facilities.

We would like to thank those of you who were able to attend this year's festivities. The faculty and staff enjoyed visiting with you and your families. We hope to see more of you at the next reunion in 2007, which will coincide with the department's centennial celebration.

The following alumni were in attendance:

Nicholas Ashley (B.S., 2004)
Jennifer Bailey (B.S., 2003)
Matthew Balhoff (B.S., 1996; Ph.D., 2005)
Cheri Buehring (B.S., 1983)
Ken Buehring (B.S., 1983)
Armando Corripio (B.S., 1963; M.S., 1967; Ph.D., 1970)
Connie Fabre (B.S., 1986)
Jerry Forest (B.S., 1984)
Sam Guercio (B.S., 2004)
Robert Hamsen (B.S., 1950; Ph.D., 1955)
Louis Harb (B.S., 2002)
Vennetta Hayes (B.S., 1998)
Jim Huff (B.S., 1977)
Sharon Hulgan (B.S., 1994)
Todd Marcello (B.S., 1993)
Keith Mayeux (B.S., 2003)
Paul Murrill (M.S., 1962; Ph.D., 1963)
Kenneth Riley (B.S., 1963; M.S., 1965; Ph.D., 1967)
Omkar Shertwade (B.S., 2003)
James Spivey (Ph.D., 1980)
Michael Spivey (B.S., 1970)
Jennifer Stacey (B.S., 2004)
Louis Thibodeaux (B.S., 1962; M.S., 1966; Ph.D., 1968)

Department News

In the October 31, 2005 issue of *Chemical and Engineering News*, our department is ranked #23 in "Schools Spending Most on Chemical Engineering R&D" for 2003. This is the first time that we have cracked the top 25 nationally among peer chemical engineering departments. Just as notable is the fact that we moved up 15 places from our 38th ranking in 2002.

In other news, chemical engineering is tops in salary offers for graduating seniors. According to a quarterly survey published by the National Association of Colleges & Employers' (NACE), the average starting salaries for most majors has increased with chemical engineering topping the list at $55,900. For chemical engineering, this represents a 4.2% increase over academic year 2004-05. The survey also notes that employers are planning to hire more college grads this year compared to last academic year. (The preceding is from an article titled, "Most lucrative college degrees," posted on CNNMoney.com on February 13, 2006.)

New Chemical Engineering Scholarship for Undergraduate Students Established

Mr. Ram N. Bhatia, a retiree from the ExxonMobil Corporation, has donated funds to establish the Ram N. Bhatia Scholarship in Chemical Engineering at LSU. First preference for the scholarship will be given to undergraduate students who are citizens of India.

Mr. Bhatia's contribution, along with the ExxonMobil matching funds, will provide an endowment of $20,000. He may contribute additional funds and can opt to convert this fund to a professorship in the future.

This is not the first instance of generosity Mr. Bhatia has shown towards LSU. He previously established a scholarship in the LSU Department of Kinesiology in the name of Judy Bhatia, his late wife. He has also made a building donation to the LSU Lod Cook Alumni Center in Mrs. Bhatia's name. In addition, the Remal Das and Lachmi Devi Bhatia Memorial Professorship was funded in 1997 by Mr. Bhatia in the LSU Manship School of Mass Communication in memory of his parents.

Mr. Bhatia was born in India and came to the United States in 1966. He is a chemical engineer, retired from ExxonMobil in 2002 after working in several positions worldwide for over 34 years. He is a co-inventor for six patented chemical processes.

The department is deeply grateful for the generosity that Mr. Bhatia has shown in establishing this scholarship for our students. We thank him wholeheartedly for his support for our department and the University.

AIChE Centennial Celebration

The American Institute of Chemical Engineers will be celebrating its 100th anniversary in 2008. As part this centennial celebration, the institute is compiling interview-based mini-histories of outstanding living chemical engineers. The institute has asked chemical engineering departments across the country to participate in this endeavor by providing mini-histories for 2 individuals associated with their departments. The individuals chosen can be current, retired, or Emeritus faculty or graduates of the department that have a distinguished record as an educator, researcher, or administrator in the academic world. The other selection should be from industry/government with a distinguished record as an inventor or innovator, leading a major corporation, a major donor to the school, or other traits.

The ChE faculty chose **Armando Corripio (B.S., 1963; M.S., 1967; Ph.D., 1970)** and **Paul Murrill (M.S., 1962; Ph.D. 1963)** as those to represent LSU's Department of Chemical Engineering. Both are graduates of the department who have served on the faculty as well. Corripio served on the faculty for 37 years until his retirement in 2005. During that time, he became one of our most popular and beloved teachers ever and was an excellent researcher as well publishing a widely used textbook with Carlos A. Smith, *Principles and Practice of Automatic Process Control*. While Corripio devoted his career to teaching and research, Murrill chose the administrative route, serving as Chairman for the department then on up to Provost and Chancellor of LSU. He left the university in 1981 to provide his immense talents and expertise to the industrial sector serving as Chairman and CEO of Gulf States Utilities Company (now Entergy), until his retirement in 1991.

The department congratulates both of these outstanding individuals on their service to the department, the University, and to the profession of chemical engineering.

New Building

ChE Building Fundraising Drive Accelerates

The College of Engineering is playing a lead role in FOREVER LSU, the University's largest and most ambitious capital campaign, kicked off in New York City in June. The College's campaign priorities include the fundraising drive for the construction of the new Chemical Engineering Building.

Ron Cambre (B.S.,1960), who has already made a most generous gift to start the Building fundraising drive, is chairing the Chemical Engineering Campaign Steering Committee. The Committee's charge is to raise a significant amount of private funds from alumni and industry, in order to accelerate the timetable of the building's construction. Cambre will also serve as Vice Chair of the College's Campaign Steering Committee, which is chaired by former ExxonMobil Executive Vice President Harry Longwell (BS, PE, 1964). Joining Cambre on the ChE Committee will be **George Daniels (B.S., 1963)**, **Dwight Fontaine (B.S.,1970; M.S., 1973)** and **Al Lopez (B.S., 1963; M.S., 1965; Ph.D., 1968)**.

For information about how to support the ChE Building fundraising drive, please contact Harriet Pooler, Associate Director of Development, College of Engineering. Harriet is a new development officer, hired to advance the fundraising efforts of the Department of Chemical Engineering. She can be reached at 225-578-8738 (direct line) or by email, hpoole1@lsu.edu.

— Cathleen Dodge
Director of Development
College of Engineering

Crab Boil

The annual departmental crab boil was held on October 7, 2005. The crab boil is hosted by the graduate students each fall as a welcome to new students and new faculty. The weather was perfect, the food was good, and everyone who attended had a great time.

2005-06 Departmental Distinguished Seminar Series

H. Henry Lamb, Ph.D.
Department of Chemical and Biomolecular Engineering, North Carolina State University
October 14, 2005

Nanoscience of Catalysis: Probing the Chemistry and Physics of Supported Pt Using InSitu X-ray Absorption Spectroscopy

Professor Lamb's seminar focused on supported Pt catalysis. He explained that supported Pt catalysis was ubiquitous in chemical technology, viz, petroleum refining, fine chemical synthesis and air pollution abatement. Fundamental understanding of the catalysis properties of suported Pt requires knowledge of the chemistry and physics of Pt nanoparticles (clusters) that are only 1-2 nm in size. Moreover, since catalysis is a dynamic pheonmenon, it is necessary to probe the catalysis in situ under high-temperature, high-pressure reaction condistions. X-ray absorption spectroscopy can be applied in situ to elucidate the average size, electronic structure, and chemisorptive properties of supported Pt clusters. This seminar will focus on the geometric and electronic structures of Pt supported on various metal oxide supports, the interaction of supported Pt clusters with chemisorbed hydrogen, and the behavior of supported Pt clusters under NO and NO + O2 atmosphers as it relates to Nox storage-reduction catalysis. Professor Lamb's visited was hosted by **Jerry Spivey**.

Nicholas Hernjak, Ph.D.
Center for Cell Analysis and Modeling, University of Connecticut Health Center
October 20, 2005

Modeling and Analysis of Intracellular Calcium Signaling Events in Cerebellar Purkinje Cell Spines

Hernjak discussed how long-term depression (LTD) of cerebellar Purkinje cell spines is an important form of synaptic plasicity (a common cellular basis for learning) that is involved in motor learning tasks such as the vestibular-ocular reflex, eye-blink conditioning, and motor coordination. LTD is a lasting decrease in the activity of the synapses between spines on the Purkinje cell dendrites and axons of neighboring granular cells. It has been shown that induction of LTD requires coincident activation of both the parallel fiber (PF) and climbing fiber (CF) inputs of a Purkinje cell. Interestingly, coincident activation of these inputs results in an increase in dendritic spine cytosolic calcium concentration that is significatnly more than the sum of the calcium responses obtained by exciting the PF and CF separately. It is hypothesized that this supralinear calcium response is the mechanism by which the cell detects the coincident activation of teh PF and CF and is the first step in teh mechanism leading to LTD. In this work, dynamic models of a Purkinje spoine are used to identify the precise mechanisms that lead to the onset of the supralinear calcium spke and to investigate the significannc of certain unique characteristics of teh Purkinje cell to this process. The modleing is performed using the Virtual Cell biological modeling framework (http://vcell.org) and includes explicit considertaion of hte roles of a number of calcium buffering species, species diffusion rates, and geometical factors. The modle reproduces the experimentally observed supralinear calcium responses and demonstrates that certain unique biochemical dn geomtrical characteristics of the Purkinje cell's calcium signaling network play necessary roles in generating and localizing the calcium spike. Nonlinear systems analysis is also used to place the biologically-relevant results in the context of known nonlinear phenomena. Hernjak's visit was hosted by **Kerry Dooley**.

Ahmet Palazoglu, Ph.D.
Department of Chemical Engineering and Materials Science, University of California-Davis
October 28, 2005

From Reactors to Proteins: A Journey in Control

Palazoglu explained how an exothermic chemical reaction taking place in a fixed-bed reactor often leads to complex temperature and concentration profiles across the catalyst bed. As product quality and catalyst performance depend critically on how these variables evolve temporally and spatially, it becomes necessary to find ways to influence such profiles through external simulation, such as imposing a cooling regime around the bed. This constitutes the premise for the formulation of an optimal control problem. The determination of such an optimal control(cooling) policy is facilitated by a dynamic model of the process and we use a mathematical invariance condition to calculate it. The simulation of protein folding dynamics can be viewed from a similar vantage point. As the protein molecule folds into its native configuration to perform its function, it goes through a series of critical steps, forming a number of secondary structures via short and long term interactions among its residues. Dynamic simulations provide key information about this folding process and can be crucial in our understanding of diseases such as Alzheimers. The optimal control concepts can be utilized in simulating the motion of proteins and we will demonstrate the use of a course-grained model in following the folding of the Villen headpiece. Palazoglu's visit was hosted by **Jose Romagnoli**.

Jeff Kelber
Department of Chemistry, University of North Texas
November 11, 2005

Cooperative Surface Reactions at Ordered Alumina Surfaces: What Ultra-High Vacuum Does Not Tell Us about the Real World

Kelber discussed how the interactions of alumina surfaces with H2O and other gas phase species are of broad importance for a multitude of technological applications. He explained that over the last three decades, surface science has made rapid progress in understanding individual molecule-surface interactions under ultra-high vacuum (UHV;P<10-8 Torr). Results [1-3] in his laboratory, however, demonstrates that H2O undergoes previously unsuspected cooperative reactions at the surfaces of ordered alumina thin films at 300K. These reactions occur at PH2O~10-5-10-1 Torr; a pressure range of direct relevance to catalysis, microelectronics processing, and MEMS manufacturing. Under these conditions, the average coverage of H2O <<1, so cooperative reactions involving two or more H2O molecules are not expected. The reactions are apparently initiated at surface defect sites, and result in the loss of all long-range order without the irreversible formation of a surface hydroxide phase, as occurs for PH2O >> 1 Torr. The sensitivity of the thin film to H2O exposures depends on oxide/metal interfacial interactions, with Al2O3/Ni3Al(110) films (incommensurate interface) losing all long range order at H2O exposures where Al2O3/Ni3Al(111) film (commensurate interface) exhibits little effect. Kelber went on to state that other data [4] strongly suggest that such interactions result in the formation of iterstitial atomic hydrogen in the transitional phase films. Recent studies indicate that, in addition to H2O, NH3 and CH3OH show such effects, whereas O2 does not, suggesting the importance of hydrogen bonding to such interactions. The data indicate that alumina and possibly other oxide surfaces are extremely dynamic when in contact with certain adsorbates at intermediate pressures (roughly, 10-7 Torr -1 Torr) and that this technologically relevant pressure range constitutes a reaction environment distinct from either UHV or ambient conditions, dominated by defect chemistry. Kelber discussed the results in light of a model that explained how defect sites might catalyze cooperative, hydrogen bonding processes that envelope the entire surface. Kelber's visit was hosted by **Gregory Griffin**.

John C. Flake, Ph.D.
Motorola Semiconductor Product Division (Freescale)
November 17, 2005

Nanoscale Device Processing & Soft Fabrication Techniques

Building devices at the nanoscale is challenging because of fundamental physical or material limits and the practical limits of "top-down" fabrication methods. My research focuses on developing new materials and processes to fabricate nanodevices and soft or "bottom-up" techniques that enable self-fabrication.

Nanoscale devices face several low dimensional and quantum effects that were not apparent at the micron scale. Consider the increased effective resistance of CMOS Cu interconnects that arises from electron scattering at interfaces and grain boundaries. One research focus is to explore the limits of copper interconnect fabrication and performance. Fabrication limits are explored via direct copper electrodeposition on barriers with optimization of superconformal electrodeposition processes. Further, optimization of interconnect microstructures and interfaces is needed to mitigate electron scattering and electromigration.

New soft-fabrication techniques also have tremendous promise to overcome traditional top-down fabrication limits (such as sub 100mm optical lithography). Soft techniques take advantage of molecular behavior at surfaces to selectively mask or passivate surfaces, tether nanostructures, or act as catalyst. Examples of soft techniques include: imprint or contact printing, tethering of silicon nanowires, chemical and electrochemical grafting, self-forming silicides and self-doping junctions. These low temperature and low cost processes are particularly attractive for plastic electronics, photovoltaic's, and displays. My research in this area focuses on the fabrication of silicon thin film transistors (TFTs) using low-cost , soft techniques such as electroless metallization and contact printing of self-assembled monolayers on metals. The ultimate vision for soft processes is to replace top-down methods, enabling novel multilevel nanoscale processors, biological & chemical sensors and photovoltaic devices. Flake's visit was hosted by **Gregory Griffin**.

Yoram Cohen, Ph.D.
Chemical and Biomolecular Engineering Department and Water Technology Research Center, University of California-Los Angeles
December 5, 2005

Membrane Surfaces: Selectivity Enhancement, Fouling Reduction and Mineral Scale Formation

Developments of polymeric and ceramic membranes, primarily over the last two decades, have advanced the use of ultrafiltration (UF), nanofiltration (NF), reverse osmosis (RO) and pervaporation applications in water treatment, industrial separation processes, and pollution prevention applications. Chemical and colloidal fouling as well as mineral salt scaling of membranes are major problems that can severely limit membrane effectiveness and lead to increased process costs. In order to develop robust and efficient large-scale membrane separation processes membranes, it is crucial to understand and quantify membrane surface impact on fouling, permeate flux and selectivity.

A promising approach to increasing membrane performance, while mitigating fouling, is the structuring of membrane surfaces at the nano- and molecular levels. Of special interest are tethered polymer-modified (TPM) surfaces that consist of a single molecular layer of terminally-and covalently anchored polymer chains. Such membranes, when based on a stable membrane support, can function even when the tethered polymer phase is swollen by the permeate or feed streams. In order to tailor-design such TPM surfaces, kinetic models of surface graft polymerization were developed to enable the optimization of surface chain density and size with respect to the desired membrane application. The application of TPM surfaces to create selective pervaporation membranes will be presented to demonstrate the role of surface chain spacing and size relative to the membrane pore. Examples of fouling-resistant NF/UF membranes with TPM surfaces will also be discussed for protein filtration and treatment of oil-in-water microemulsions. In these latter applications, grafted chain deformation can affect membrane permeability and solute rejection as illustrated by computational models and permeability studies.

Membrane scaling due to mineral salt crystallization is another fouling problem that limits the performance of p4imarily reverse osmosis (RO) and nanofiltration (NF) membranes. Understanding the impact of surface properties on heterogeneous mineral salt crystallization is paramount to predicting process performance as well as developing effective scale mitigation strategies. Accordingly, our studies have focused on direct measurements of surface crystallization with the goal of quantifying membrane surface scaling propensity, impact of surface chemistry and roughness on surface characterization and identifying membrane module and operating conditions that affect membrane scaling. Finally, the technical and economic feasibility of surface scale mitigation for high product water recovery desalting of brackish water will be discussed. Cohen's visit was hosted by **Louis Thibodeaux**.

Christopher Kitchens, Ph.D.
School of Chemical and Biomolecular Engineering, Georgia Institute of Technology
February 16, 2006

Gas eXpanded Liquids: Properties and Applications

Gas expanded liquids (GXLs) are a new class of tunable solvents which take advantage of the solvent strength of conventional organic liquids combined with the attractive properties of supercritical fluids. GXLs take advantage of the high solubility of gaseous CO2 in organic solvents resulting in a highly tunable solvent, at sub-critical pressures. We have implemented various experimental methods, including phase behavior, spectroscopy, and molecular dynamics, to determine detailed properties of GXLs as a versatile solvent media. Further we have applied our finding to a number of applications:

1. A tunable reaction media for homogeneous catalysis that is designed for facile separation of the product and catalyst recycle.

2. Recovery of value added chemicals from forest products biomass.

3. Metallic nanoparticle processing for efficient size-selective fractionation and defect free deposition.

Each of these applications exploits the tunable nature of GXLs, providing significant improvements over conventional processes, in terms of process economics, green chemistry, and scientific potential. Kitchens' visit was hosted by **Gregory Griffin**.

Byron McCaughey, Ph.D.
Chemical and Biomolecular Engineering, University of Illinois at Urbana-Champaign
February 23, 2006

Self-healing and self-sensing polymer composites

Lifetime and reliability of current plastics is severely limited by material fatigue and internal cracks. The ability to effectively detect and heal these cracks will greatly improve material performance in commercial and industrial applications ranging from structural plastics to microelectronics. Recently, White et al. has reported the synthesis of self-healing epoxy composites containing monomer microcapsules and embedded catalyst particles. To effectively detect damage as it occurs, expensive and time consuming techniques such as ultrasound, electrical resistance, infra-red thermography, and low energy radiography have been utilized. To improve upon these systems, future research will synthesize a series of polymer composites containing 1) microcapsules filled with healing agents capable of catalyst-free polymerization or 2) a dispersion of chromatic microcrystalline polydiacetylene (PDA) within the composite for crack detection.

The first project will design single component or catalyst free self-healing composites. This composite healing system is based on the encapsulation of highly reactive monomers and curing agents into 50 to 500 ?m polymer capsules. Current routes under consideration for encapsulation are solvent displacement from pre-formed microcapsules, polymer coacervation around healing agent emulsion droplets, physical encapsulation by coaxial jets, and physical or chemical passivation.

The second project will incorporate novel polydiacetylene (PDA) nanoparticles within a structural polymer matrix to provide a simple and cost-effective method of detecting damage. During deformation of a plastic matrix, stress is transferred to incorporated PDA particles that undergo an irreversible transition from blue to fluorescent red. This transition is due to changes in delocalization along the conjugated backbone. McCaughey's visit was hosted by **Gregory Griffin**.

Michael Janik, Ph.D.
Department of Chemical Engineering, University of Virginia
March 2, 2006

Density Functional Theory Studies of Acid Catalysis and Electrocatalysis

The ability to link the function of catalytic materials to their atomic level structure guides the rational design of new catalysts. Quantum-chemical methods, such as density functional theory (DFT), can be used to determine atomic structures, reaction energies and activation barriers directly from first-principles, thus enabling the creation of structure-function relationships. The application of DFT methods to the study of heteropolyacid catalysts and the electrocatalysis of methanol oxidation at the anode of a direct methanol fuel cell will be discussed.

Heteropolyacids (HPAs), or polyoxometalates, of the Keggin structure (HnXM12O40) have the ability to act as acid and redox catalysts, and their catalytic properties can be tuned by altering the molecular composition. The correlation between different measurements of acid strength and the barriers to carbenium-ion formation were examined to provide perspective on designing an effective solid acid catalyst for the alkylation of isobutane and butene. The application of DFT methods was extended to modeling the electrocatalytic reaction occurring at the anode of a direct methanol fuel cell. The energetics of CO oxidation were explored employing a DFT-based method of simulating the potential drop across the electrochemical double-layer at the solution/electrode interface. This method allows explicit examination of the effects of solution and an applied potential on reaction energies and activation barriers. Once the key factors which impact anode performance are identified, a simpler model examining only gas-phase reaction energetics over the metal surface is employed for rapid screening of catalyst materials. Initial results of this screening will be discussed. Janik's visit was hosted by **Gregory Griffin**.

David A. Berry
National Energy Technology Laboratory, U.S. Department of Energy
March 3, 2006

Fuel Processing of Hydrocarbon Fuels For High-Temperature Fuel Cells and the DOE Solid State Energy Conversion Alliance (SECA) Fuel Cell Development Program

Because of their high conversion efficiencies and environmental friendliness, fuel cells are being pursued for a variety of power generation applications. The Department of Energy has embarked on a multi-year program called SECA to develop high temperature solid state fuel cells that could be mass manufactured in core modules for many of these applications. However, these fuel cells operate on hydrogen or hydrogen-rich fuel gas, which must practically be derived from conventional hydrocarbon fuels. This requires the use of reforming technologies such as partial oxidation, auto thermal, or steam reforming. Thermal integration of the fuel processor and fuel cell is a very important consideration and can impact both overall electrical conversion efficiencies and operating characteristics of the system. In addition, technology barrier issues, principally carbon deposition and sulfur poisoning, for catalytic processes involving both the reformer and fuel cell must be overcome to ensure the commercial reality of these technologies. Berry's visit was hosted by **Jerry Spivey**.

Randy Peterson
Homesite Company, Baton Rouge, Louisiana
March 10, 2006

Giants on the River

Peterson is the author of the well-known book, *Giants on the River*, which details the history of the Louisiana petrochemical industry. In his seminar, he discussed the history as well as the current issues affecting the local petrochemical industry brought on by the recent hurricanes. Peterson's visit was hosted by **Kalliat Valsaraj**.

Robert Vacha
Institute of Organic Chemistry and Biochemistry, Prague, Czech Republic
March 21, 2006

Institute of Organic Chemistry and Biochemistry, Prague, Czech Republic

Free energy profiles associated with moving atmospheric gases, radicals and polycyclic aromatic hydrocarbons across the air water interface were calculated as potentials of mean force by classical molecular dynamics simulations. With the employed forcefield the experimental hydration free energies are satisfactory reproduced. The main finding is that both hydrophobic gases (nitrogen, oxygen, and ozone) as well hydrophilic species (hydroxyl radical, hydroperoxy radical, hydrogen peroxide, or PAHs) have free energy minimum at the air/water interface. As a consequence it is inferred that atmospheric gases, with the exception of water vapor, exhibit enhanced concentrations at surface of aqueous aerosols. This has important implications for understanding heterogeneous chemical processes it the troposphere, particularly oxidation of PAHs. Vacha's visit was hosted by **Kalliat Valsaraj**.

John Fetzer, Ph.D.
Traveling Guest Lecturer of the American Chemical Society
April 7, 2006

The Large Polycyclic Aromatic Hydrocarbons: Chemistry and Analysis

Polycyclic aromatic hydrocarbons (PAH) are an almost ubiquitous class of compounds. The presentation will focus on many of the general aspects of their chemistry, analysis, and occurrence. The focus will shift from an important industrial issue that led into many new discoveries to the organic synthesis, chromatographic and spectral behaviors, occurrences, and chemistry of PAH.

Dr. John C. Fetzer, formerly of Chevron Research in Richmond, California, is a recognized expert in the analysis of PAH and petroleum-related materials. He has served as the president of the International Society on *Polycyclic Aromatic Compounds*, is the topical editor for analytical chemistry for the journal *Polycyclic Aromatic Compounds*, and has served or is serving on the editorial advisory boards for the *Journal of Chromatography*, *Analytical Chemistry*, and *Analytical and Bioanalytical Chemistry*. He has published over 140 technical and review articles, holds three US patents on PAH chemistry and analysis, and is the author of *The Chemistry and Analysis of the Large (C>=24C) Polycyclic Aromatic Hydrocarbons* (Wiley-Interscience, 2000). Fetzer's visit was hosted by **Judy Wornat**.

Robert Beitle, Ph.D.
Green Chemical Process Design and Development, University of Arkansas
April 21, 2006

Bioseparation in the post genomic/proteomic era

Separating and purifying a desired product from intracellular materials, fermentation broth, or cell culture supernatant is a crucial and challenging component of commercial biochemical engineering since recovery usually comprises a major part of the production cost. With sufficient proteome information available now we are able to modify the host cell to further increase efficiencies during bioseparation not by enhancing target protein properties, but by altering the nature of the contaminating protein pool. This seminar will provide a perspective on our past and ongoing work, and will illustrate the interplay between protein identification, metabolism, mutation, and the use of E. coli mutants with a minimized contaminant pool. Beitle's visit was hosted by **James Henry**.

Student News

Alan Bussard recently presented his work at the Excellence in Graduate Polymer Research Symposium at the ACS National Meeting in Atlanta. This work is also published as a preprint: A.G. Bussard and K.M. Dooley, "Heterogeneous catalyzed polymer hydrogenation in an oscillating microreactor," Polymer Prepr. (ACS Div. Polymer Chem.), 47(1), 22 23 (2006). Bussard is a Ph.D. student conducting research under the supervision of **Kerry Dooley**.

Shiju Thomas presented two posters at the 30th International Symposium on Combustion, held at the University of Illinois at Oxidation of Catechol [*ortho*-Dihydroxybenzene]" and "Oxidation of Catechol: Characterization of Decomposition Products". Thomas is a Ph.D. student researching under the supervision of **Judy Wornat**.

Jiao Yang has published four papers in the past year:

- J. Yang, B.J. McCoy and G. Madras, "Cluster Kinetics and Thermodynamics during Spinodal Decomposition," *Journal of Chemical Physics*, In Press
- J. Yang, B.J. McCoy and G. Madras, "Nonisothermal Polymer Crystallization Kinetics," *Journal of Physics Chemistry B*, 109, 18550 (2005)
- J. Yang, B.J. McCoy and G. Madras, "Temperature Effects for Isothermal Polymer Crystallization," *Journal of Chemical Physics*, 122, 244905 (2005)
- J. Yang, B.J. McCoy and G. Madras, Distribution Kinetics of Polymer Crystallization and Avrami Equation," *Journal of Chemical Physics*, 122, 064901 (2005)

He also has one in progress: J. Yang, B.J. McCoy and G. Madras, "The Application of Distribution Kinetics on the Crystallization of Polymer Blends," *Journal of Physical Chemistry*. Yang is a Ph.D. student conducting research under the supervision of **Martin Hjortso**.

Qingzhong Yuan recently submitted a paper: Q.Z. Yuan, K.T. Valsaraj, D.D. Reible, and C.S. Willson. (2006), "Sediment and contaminant release during gas ebullition," *Environmental Toxicology and Chemistry*, submitted. Yuan is a Ph.D. student researching under the supervision of **Kalliat Valsaraj**.

Talks at the Spring 2006 Electrochemical Society Meeting, May 9-12, 2006:

Yutong Li, Ruili Fan, M. Moldovan, P. Young, W. Wang, and **E. J. Podlaha**, "Electrodeposition of a Co/Cu Multilayered Microdevice," 209th Meeting of The Electrochemical Society, Denver, California, May 20, 2006.

Alonso Lozano and **E.J. Podlaha**, "A Demonstration of Electrodeposited Nanocomposites using a Rotating Cylinder Hull Cell," 209th Meeting of The Electrochemical Society, Denver, California, May 10, 2006.

Mayank Gupta and **E.J. Podlaha**, "Electrodeposition of CuNiW Multilayers for Fabrication of Nanomolds," 209th Meeting of The Electrochemical Society, Denver, California, May 10, 2006.

AIChE News

2005-06 Officers

President: Don Morris
Vice-President: Jasmine Ghorashi
Treasurer: Laura Harvey
Secretary: Adele Zenide
Junior Representative: Judith Udeke
Sophomore Representative: Adebola Coker
Fund-raising Chair: James Michiels
Social Chair: Courtney Doolittle
Dictator: Chris Boudreaux
Web Administrator: Matthew Stephens

During the 2005-06 academic year, the LSU AIChE Student Chapter participated in Super Science Saturday (SSS), which is an annual event held on LSU's campus and is geared towards elementary school children. The student chapter also attended the 2006 Southern Regional Conference in Starkville, Mississippi.

At the conference **Don Morris** won first place in his session and second place overall for his research presentation, receiving cash awards of $600 and $450, respectively. The title of Morris' presentation was "Modeling Fluid Flow in Fractured Porous Media." According to Morris, his research deals with the building of a computer algorithm, which can simulate on the pore scale low Reynolds number flow through a fractured media such as a packed oil well fracture using basic fluid mechanics.

Morris states that this kind of algorithm is noteworthy because it can do this with uneven boundary conditions and heterogeneity in packing. This is important because once it is completed it can give an actual picture of the fluid dynamics in any porous media or packed system. In addition, it has not been done before and may go a long way in determining the important factors in flow in these systems. Morris has been conducting his research under **Karsten Thompson**, as part of his senior research project.

The student chapter also fared well in the ChemE Car poster competition, where the LSU team took third place.

The LSU AIChE Student Chapter is supported through fundraising and donations. **James Henry** currently serves as faculty adviser.

Student Highlights

Ph.D. Student Receives Two Travel Awards to Attend International Symposium

The Department would like to congratulate **Michelle Somers**, a Ph.D. student under the direction of **Mary Wornat**. Michelle has received two travel awards to attend the 31st Combustion Symposium which will be held in Heidelberg, Germany in August 2006. Michelle will be presenting a paper entitled "The Formation of Polycyclic Aromatic Hydrocarbons from the Supercritical Pyrolysis of 1-Methylnaphthalene" at the symposium. The first travel award is from the Combustion Institute, itself, in the amount of $700. The second, larger award is the *James E. Peters Fellowship*, from the Central States Section of the Combustion Institute. The fellowship is a competition for students who will be presenting work at the 31st Combustion Symposium.

In order to apply for the fellowship, a student submits his/her paper, along with reviews and rebuttal as well as a letter of recommendation from the student's research advisor. Only one student is selected for the fellowship, which is in the amount of $1,500. The winner of the fellowship was announced at the Central States meeting, which was held in Cleveland, Ohio in May 2006.

The paper authored by Michelle, **Jennifer W. McClaine**, and Wornat has been accepted by the 31st International Combustion Symposium and Michelle will present the paper in Heidelberg. Afterwards, it will be published in Proceedings of the Combustion Institute 31 (2006).

Unlike most scientific research conferences, the International Combustion Symposium requires submission of a full journal-style article 8 months prior to the meeting, and these papers are fully peer-reviewed, with acceptance rates lower than most journals. This year only 42 % of the 1000 papers submitted were accepted, and only a minority of these are from graduate students. Therefore, congratulations are thus in order to Michelle for this stellar achievement.

Two Graduate Students Receive Prestigious Research Grant

The Department would like to congratulate both **Alan Bussard** and **Rohit Mishra** as both are recipients of the 2006-2008 Coates Research Grant. The Coates Research Grant is a two-year award of $5,000 per year, with second year funding contingent upon successful progress, documented in an annual report. Only four of these awards can be active at any one time.

Alan's research focuses on understanding the relationship between the structure and composition of heterogeneous catalysts and their performance in novel reactors for the purposes of macromolecular hydrogenations. He is pursuing his Ph.D. under the direction of **Kerry Dooley**.

The objective of Rohit's research is to electrodeposit rare earth-transition metal alloy thin films and nanostructures. These alloys have unique magnetic properties and find application in magnetic, magneto-optical, and sensing devices. For the first time, these alloys were deposited as nanowires and nanotubes and his continued study will address the electrodeposition mechanism as well as its properties. Rohit is pursuing his Ph.D. under the direction of **Elizabeth Podlaha**.

These research grants are funded by the Charles E. Coates Memorial Fund, which was set up to support promising doctoral research by superior graduate students in the disciplines of chemical engineering, chemistry, or physics. Four types of awards are given through the Coates Memorial Fund: outstanding dissertation awards, conference travel awards, research travel grants, and the scholar research grants (described above).

Undergraduate Receives Numerous Honors

Ryan David Fontenot, who graduated in May, garnered many awards and honors during his time at LSU including Chancellor's Alumni Scholar, Dow Outstanding Junior, Chancellor's Research Aide, Sophomore Honors Distinction, and Mortar Board Top 10 Freshmen. He was selected as the College of Engineering's Outstanding Junior in 2005 and was named the college's Oustanding Senior for 2006. In addition, he was a member of several organizations, including Tau Beta Pi, Gamma Beta Phi, Omicron Delta Kappa, Phi Kappa Phi, Golden Key, American Institute of Chemical Engineers, Union Programming Council, and LSU Honors College Advocates.

Therefore, it is no surprise that Ryan is the recipient of the department's Jesse Coates Award for 2006. This award is given to the graduating senior exhibiting outstanding professional, campus, and community activities and is decided by a vote of the faculty. The award is given in the form of an engraved LSU watch and is funded by an endowment that was set up by the friends of Professor Coates upon his retirement.

Among the activities that set Ryan above was his involvement in a very selective project organized by Shell Oil called the Gourami Business Challenge. Each summer, executives from Shell Oil gather exceptional collegiate scholars (this year 46) from universities across the nation to take part in the week-long challenge in which the students are formed into five teams with the task of solving complex, real-world challenges from the energy sector.

Student Awards

Nicholas Ashley, a Ph.D. student conducting his research under co-advisers **Kalliat Valsaraj** and **Louis Thibodeaux**, is a 2006 recipient of a Donald W. Clayton Award from the College of Engineering. This award is presented to engineering students who are pursuing a Ph.D. and also intend to enter academia upon graduation. It is a 3-year award, which provides a supplement of $10,000 the first year, $15,000 the second year, and $20,000 the third year. In addition, Nick is the recipient of the 2006 Seip Award, which is given to the student who scores the highest on the department's Ph.D. Qualifying Exam. Nick is also the 2006 recipient of the Horton Award, given to the LSU B.S. student entering our graduate program with the highest GPA. It is a $500 lump sum award named in honor of former Chairman Paul M. Horton.

John L. Burdick is the 2006 winner of the National AIChE Othmer Award, which is given to the person completing the sophomore year with the highest GPA. The award includes a certificate and a copy of Perry's Handbook.

Alan Bussard, a graduate assistant for **Kerry Dooley**, won a prize for his poster, "Heterogeneous catalyzed polymer hydrogenation in an extruding reactor," at the 2006 Spring Symposium of the Southwest Catalysis Society. The $300 prize was sponsored by ExxonMobil Process Research.

Matthew Coenen, a senior in chemical engineering and a native of Rayville, Louisiana, became LSU's first U.S. national champion of the millennium by capturing the 200-meter breaststroke at the U.S. Spring National Championships. The championships were held at the beginning of April at the Weyerhaeuser King Aquatic Center. Coenen was LSU's top breaststroker this season.

Despina Davis, a Ph.D. student of **Elizabeth Podlaha**, received a 2nd place award for the Sigma Xi Technical Writing competition.

Yutong Li, a Ph.D. student of **Elizabeth Podlaha**, received a travel award from the Electrochemical Society to present his research results at the 209th Meeting of the Electrochemical Society.

Hongfei Lin, a 2005 Ph.D. graduate of **Kalliat Valsaraj**, received the Best Ph.D. Dissertation Award from the local Baton Rouge AIChE section. The award, a certificate and a $100 check, was presented at the Coates Award Banquet on May 18, 2006. Lin's dissertation was titled, "Photocatalysis in a Novel Semiconducting Optical Fiber Monolithic Reactor for Wastewater Treatment."

James Michiels, a senior in chemical engineering, is one the winners of the Southwest Chemical Association Scholarship for 2006. This is a one-time, $5,000 award, and was presented to James at an award banquet held in August in Houston.

Alonso Lozano Morales, a Ph.D. graduate assistant for **Elizabeth Podlaha**, received a student travel grant from the Electrochemical Society to attend the 208th Meeting of The Electrochemical Society (ECS) held in October 2005. His presentation was entitled, "Metal Matrix Nanocomposites as Thin Films and Microstructures from Basic Electrolytes,". The co-authors were **Jill Fitzergald (B.S., 2004)** and Lozano's advisor, Podlaha.

Jorge Ona, a Ph.D. graduate assistant for **Judy Wornat**, received the Erich Clar Award for the best student presentation at the International Society of Polycyclic Aromatic Hydrocarbons conference held in Toronto, Canada, in August of 2005. The presentation dealt with a reaction scheme that was proposed back in June 2005 to explain the formation of products during the supercritical pyrolysis of methylcyclohexane.

Two undergraduate students received an AIChE Minority Scholarship for 2005-06. **Anino Adokpaye** and **Judith A. Udeke** were two of only eight students nationally to receive the scholarship this year. The scholarship is given to students based on their academic records and participation in AIChE student and professional activities. We congratulate both of them on this exemplary achievement.

The following graduate students were awarded the Coates Travel Award during the academic year 2005-06:

Lisa Brenskelle, a Ph.D. student for **Martin Hjortso**, presented the following paper at the 2005 AIChE Annual Meeting held in Cincinnati, Ohio, in November 2005: "Cluster-kinetics of pressure-induced glass formation."

Young-Pyo Jeon, a Ph.D. graduate assistant for **Martin Hjorsto**, also presented a paper at the 2005 AIChE meeting. His dissertation research is in the area of distribution dynamics of complex systems.

Yutong Li, a Ph.D. graduate assistant for **Elizabeth Podlaha**, presented at the 208th Meeting of The Electrochemical Society (ECS) held in Los Angeles in October. His oral presentation was entitled, "Electrodeposition of Co/Cu Multilayered Thin Films and Micro-posts."

Rohit Mishra, another Ph.D. graduate assistant for Podlaha, presented a poster at the ECS meeting entitled, "Fabrication of Rare Earth-Transition Metal Alloy Nanowires and Nanotubes."

Jiao Yang, another Ph.D. graduate assistant for **Hjortso**, presented at the 2005 AIChE meeting as well. His dissertation research deals with the kinetics of polymer crystallization.

Wenli Zhang, a Ph.D. graduate assistant for **Karsten Thompson**, presented two papers at the AIChE meeting in 2005. The oral presentations were titled as follows: "Multiscale modeling of melt infiltration in random fibrous materials" and "Analysis of local and global structure during densification of non-spherical particulate materials."

2005-06 Scholarship Recipients

O. Dewitt Duncan Scholarship
John L. Bundrick
William E. Geier
Landon M. Marchand
Omkar A. Namjoshi
Alexander E. Sideris
Luke J. Stein
William B. Thomas

Gerard Family Undergraduate Scholarlship
Yen Kim Tina Hoang
Denis Marken
James B. Michaels III
Judith A. Udeke
Andrew P. Wale
Nadine Yougoubare

I.H. Gottlieb Memorial Scholarship
Christopher Hymel

Clara & Frank Groves, Sr. Undergraduate Scholarship
Jennifer M. Armstrong

R.L. Hartman Scholarship
Christopher H. Boudreaux
Eric M. Dixon
Timothy D. Krimmel

Paul M. Horton Undergraduate Scholarship
Daniel A. Fortier
Richard C. Green

BP Amoco Scholarship
Matthew K. Desmond

Chevron/Texaco Chemical Engineering Scholarship
Matthew E. McCaughey

Summer 2005 Commencement

Bachelor of Science in Chemical Engineering
Denis Ernesto Escobar
John Michael Holden III
Charles Anthony Staton

Master of Science in Chemical Engineering
Melanie Krystle Harris
Andre' Claude Marquette
Craig Patrick Plaisance

Doctor of Philosophy in Chemical Engineering
Matthew Thomas Balhoff

Fall 2005 Commencement

Bachelor of Science in Chemical Engineering
Cortney Kim Amundson
Creshaundra Shavan Burns
Elizabeth Ashley Deshotel
Daniel Joseph Doody
William Edward Geier
Ivan Lloyd Henry
Christopher David Hymel
Erica Del Carmen Mapel
Marty Dustin Nichols
Jennifer Marie Vicknair (*Cum Laude*)
Andrew Patrick Wale

Master of Science in Chemical Engineering
Adedeji Ebenezer Agboola

Doctor of Philosophy in Chemical Engineering
Zhanhu Guo

Spring 2005 Commencement

Bachelor of Science in Chemical Engineering

Justin Laine Achord
Jennifer Michelle Armstrong (*Summa Cum Laude*)
Michelle Anne Blakeney
Travis Charles Boudreaux
Timothy Paul Brignac
Louis Davis Burton
Garon WAyne Cadby
Christopher Daniel Carrington
Jeremy Michael Cash
Chase Nicholas Chicola
Sarah Kaye Christian
Mark Daniel Cox
Kurt Paul Davis
Karan Rajkumar Dawra (*Cum Laude*)
Courtney Grace Doolittle
Ryan David Fontenot (*Summa Cum Laude*)
Jennifer Ryan Friday
Gabriel Hartman Gattle
Lindsey Marie Gaunt
Yasaman S. Ghorashi

Master of Science in Chemical Engineering

Marilou Montevirgin Nabatilan

Jordan John Guidry
Gregory Nolan Hercules
Brandon Jose Iglesias
Roshaunda Latrice Jackson
Brady Louis Littleton
Matthew Edward McCaughey (*Magna Cum Laude*)
Eric Ryan Merritt
Jennifer Lynn Montz
Donald Charles Morris (*Cum Laude*)
Ashely McCarn Parker
Scott James Piglia
Mathew Dennis Rowe
Alexander Edward Sideris
William Brandon Thomas
Mark Bradley Ulicsni
Utkarsh Ramesh Vasaiwala
Reid Michael Williams
Natalie Miller Wood
Nadine Claude Youghoubare
Adele Zenide

Departmental Awards given at commencement reception:

Jennifer Armstrong (pictured below with Wetzel and Valsaraj) - American Institute of Chemists Award and High GPA Junior Year
Ryan Fontenot - High GPA Senior
Matthew Stephens - High GPA Sophomore

The following students received the Senior Award, which is given to students who complete their studies within four years without dropping a course - **Jennifer Armstrong, Ryan Fontenot, Lindsay Gaunt, Ashley McCarn, Matthew McCaughey, Natalie Miller, Scott Piglia, Mathew Rowe, and Mark Ulicsni**.

Alumni News

Alumnus Inducted into Hall of Distinction

Joseph "Guy" Thibodaux, Jr. was one of two LSU engineering alumni to be inducted to the College of Engineering Hall of Distinction at the 27th annual awards banquet held on April 6 at the LSU Faculty Club. Thibodaux, who served as chief of the Propulsion and Power Division at NASA Manned Spacecraft Center/Lyndon B. Johnson Space Center, is a world renowned expert in all forms of propulsion used in both manned and unmanned spacecraft. He was inducted along with Adam "Ted" Bourgoyne, president of Bourgoyne Enterprises, Inc. — a petroleum engineering graduate.

Thibodaux received his B.S. in chemical engineering in 1942. Upon graduation, he served as an Army officer in North and Central Burma during World War II, building roads, airports, and bridges. Then, in 1946, he began his federal career with the National Advisory Committee for Aeronautics (NACA), the predecessor of the National Aeronautics and Space Administration (NASA). Working at the Aeronautical Memorial Laboratory, Langley Field, Virginia as a propulsion engineer in the Pilotless Aircraft Research Division, his early work consisted of modifying, redesigning, and adapting military rockets to meet performance requirements of the various aerodynamic research programs using free-flying rocket propelled models. Within three years, he was promoted to Head of the Model Propulsion Section.

With the new position came complete responsibility for procurement, design, development, test, and application of all solid and liquid propellant rockets used at Langley Research Center as well as the launch station in Wallops Island, Virginia. In 1954, he designed and operated a small solid propellant manufacturing facility at Langley Research Center where he developed and patented high performance spherical rockets and isotensoid filament wound rocket designs. Derivatives of these were used in various NACA and NASA programs. In 1957, he conceived of and collaborated with colleagues on studies of an all solid propellant rocket vehicle, which would be used to launch satellites. This was later developed as the Scout launch vehicle.

Then in 1958, Thibodaux was selected as part of an elite group of 12 to work out the transition from NACA to NASA. He planned NASA's first programs dealing with rocket propulsion, sold those programs to upper management and Congress, and obtained authorization and funding to conduct them. NACA officially became NASA in September 1958. That same year, the Space Task Group was established to develop the program for the country's first venture into manned space flight. The Director of the Langley Research Center assigned Thibodaux to serve as the consultant to the Director of the Space Task Group, which was the predecessor of the Manned Spacecraft Center for propulsion matters. During this time, Thibodaux was instrumental in modifying the design of the Mercury Launch Escape Motor to overcome a critical instability problem detected during development. In addition, he made major contributions in the design of the rocket propulsion systems for both the Apollo and Gemini spacecraft.

Thibodaux was appointed chief of the Propulsion and Power Division for the Manned Spacecraft Center (now the Johnson Space Center) in 1964. The systems that were developed under his direction performed flawlessly on Apollo space flight missions and during flights to the Skylab space station.

During his long career with NASA, Thibodaux had interfaces with every NASA Center, aerospace contractor, rocket manufacturer as well as foreign scientists and engineers representing more than a half a dozen countries. Thibodaux stated during his induction speech that he is "blessed to have had the opportunity to participate in man's adventure in landing on the moon and exploring the universe." He has many fond memories from his career with NACA and, later, NASA as well as his time at LSU. It was at LSU that he met one of his life-long friends, Max Faget. Thibodaux and Faget were friends and roommates while at LSU (Faget was studying mechanical engineering) and they kept in touch during the war. It was while job hunting after the war with Faget that they made the trip to Langley where they met with Paul Purser (another LSU engineering graduate), who hired both Thibodaux and Faget.

Department Benefits from Sizable Donation

The department is deeply appreciative of the generous gift from **Earnest "Dare" Campbell** and his wife Janie, who donated $75,000 to the LSU Foundation in order to establish a charitable remainder annuity trust dedicated to chemical engineering. Campbell earned his chemical engineering degree from LSU in 1949 after serving in the Army Air Corps in World War II. He went to work at Dow Chemical Company following graduation and is now retired.

Alumnus Honored by American Chemical Society

In September 2005, **Kenneth L. Riley (B.S., 1963; M.S., 1965; Ph.D., 1967)** was one of 18 research chemists recognized by the ACS as a "Hero of Chemistry" at the ACS national meeting in Washington, D.C.

The "Hereos of Chemistry" award honors "chemical innovators whose work has led to the welfare and progress of humanity" in a significant way over the past decade. The individuals are nominated by their companies, and the winners are chosen by an ACS panel "in recognition of industrial work that has led to the successful development and commercial sale of a technological product." This year's winners are comprised of multidisciplinary teams from six national companies: Colgate-Palmolive, ExxonMobil and Albemarle, IBM, Johnson & Johnson Pharmaceutical Research & Development, and Novartis.

ExxonMobil and Albemarle Team: (front row, from left) Bruce R. Cook, Steve Mayo, John P. Greeley, and Mark Lapinski; (back row, from left) F. Emil Jacobs, Craig A. McKnight, **Kenneth L. Riley**, and Jeffrey L. Kaufman.

Riley is one of the eight members of the ExxonMobil and Albemarle team. They developed SCANfining and second-generation SCANfining II. These catalytic processes significantly lower the amount of sulfur in gasoline. When used in conjunction with advanced treatment of vehicle exhaust emissions, the processes aim to improve overall air quality. This is a very attractive prospect since government mandates are requiring even lower vehicle emissions and lower sulfur fuels. SCANfining "uses a novel, highly selective catalyst in a conventional hydrotreating process configuration to achieve increased hydrodesulfurization while minimizing alkene saturation and hydrogen consumption. In this way, SCANfining reduces octane loss by up to 80% versus tradtional hydrotreating processes." (*Chemical & Engineering News*, September 26, 2005, Vol. 83, No. 39, pp. 48-51)

The department congratulates Riley, as well as all of the other awardees, on receiving this prestigious award.

ChE Alum Winner of Business Award

Jim Huff (B.S., 1977) and his wife Nan were the 2005 winners of the 2nd annual "New Venture Business Plan Competition." The Huffs are the founders and owners of *Hurricane Chemical*. Together they have created a patented process of applying a preservative agent to sugarcane immediately after it is cut, rather than applying the preservatives at the sugar mill as is most commonly done. According to the Huffs, the process of applying the chemical agent in the field decreases the rate of spoilage by more than 50 percent, thereby increasing sugar yield for farmers. The product has been field tested and product demand has already been generated among numerous Louisiana mills.

The "New Venture Business Plan Competition" is sponsored by the E.J. Ourso College of Business and the Business Report. The winners are announced at the annual Top 100 Private Companies Luncheon of the Baton Rouge Business Report's Louisiana Business and Technology Expo.

Two Alumni Receive Recognition for Generosity

Ron Cambre (B.S., 1960), and his wife Gail, were two of 13 individuals honored by the LSU Foundation with a President's Award for Lifetime Support of LSU at the 46th Annual meeting in November 2005.

Robert J. Bujol (B.S., 1943) was honored by the LSU Alumni Association. He was one of 12 individuals to receive the Purple & Gold Award in 2005, which recognizes generous individuals who donate their time, energy, and resources to the Alumni Association to continue its mission to provide support to the University in various ways. Bujol was honored for his major gifts given to the Lod Cook Alumni Center, the LSU War Memorial, the Cook Conference Center and Hotel. In addition, he has endowed a departmental professorship and donates his time as a Lod Cook Alumni Center docent.

Alumnus Bequeaths Funds to College

Malcolm C. Lowe, Jr., a 1942 chemical engineering graduate and former member of the LSU Tiger Band, left a $450,000 bequest to the department. A portion of the bequest ($250,000) will be used to fund one of the major research labs in the new Chemical Engineering Building, which will be named for Malcolm C. and Gene Perdue Lowe, Jr. In addition, a small portion will be used to complete funding of the Malcolm C. and Gene Perdue Lowe, Jr. Professorship in Chemical Engineering.

Mr. Lowe, who passed away in 2005, was always a generous supporter of the department and the university. We are deeply grateful for all that he has done and extend our belated condolences to his family.

Alumni Updates

If you would like for us to print news of your latest achievements, please complete the short form at the back of this issue and return it to us. Or send us an e-mail at gradcoor@lsu.edu. We would love to hear from you!

1940s

Charles A. Overstreet (B.S., 1941) retired in 1985 from Stearns-Roger in Denver, Colorado. He currently resides in Casselberry, Florida.

1950s

Horacio Baena (B.S., 1957) is a consulting engineer for the pulp and paper industry and lives in Colombia. He has 6 children-5 girls and 1 boy-living in Spain, Denmark, New York, and Bogota, Colombia. He also has 6 grandchildren-5 girls and 1 boy-residing in Spain (4) and in New York (2). He has the fondest memories from his school days while at LSU and of the wonderful people he met (professors, classmates, etc.). He says the education he received has played a most important role in his life.

Ezra Jasper Westbrook (M.S., 1955) is CEO and consulting principal of Applied Consulting Technologies where he coordinates an associated team of independent consultants to process industries. He is married with one adult child and two grandchildren.

1960s

Gary Guelfo (B.S., 1964) retired from BASF Corporation in August 2002. At present, he is enjoying his hobbies, fishing and target shooting, as well as "Fix It" projects around the house.

Floyd L. Pfeffer (B.S., 1969) is employed as a chemical engineer for Dow Chemical in Port Lavaca, Texas.

1970s

Carl D. Engel (Ph.D., 1971) is vice president and chief technology officer for Qualis Corporation located in Huntsville, Alabama.

Rafael Luis Espinoza (Ph.D., 1975) has served as a project engineer at Induperu in Peru as well as an assistant professor in the Petrochemical Engineering Department at the National University of Engineering, Peru. He has served as senior chief research officer at the CSIR in Pretoria, South Africa (1980-86); section leader for Fischer-Tropsch Process Development at Sasol, Sasolburg, South Africa (1986); a manager for basic catalysis research at Sasol (1989); as a Sasol's research fellow (1999); and, most recently, as director of Fischer-Tropsch R&D at ConocoPhillips in Ponca City, Oklahoma (2000-05). He currently has a consulting practice-Rafael Espinoza Consulting.

Jim Huff (B.S., 1977) co-owner with his wife, Jan, of Hurricane Chemical.

Jean-Paul Merle (B.S., 1969; M.S., 1979) retired in December 2004. His career spanned eight and a half years in the sugar industry in Hawaii and twenty-five and a half years in sugar refining in California.

Rod Mehdi Rezvani (B.S., 1977) lives in Houston and works for Halliburton Drilling Services. He is a member of the Society of Petroleum Engineers. He is married with two kids, one of which is an LSU petroleum engineer.

Phil Westmoreland (M.S., 1974) has been a professor of chemical engineering at the University of Massachusetts-Amherst since 1986, working in experimental and computational kinetics. He and his wife has a son at Cornell University and a daughter in the 9th grade.

1980s

Nhuan (John) P. Nghiem (Ph.D., 1982) is a senior scientist in fermentation services for Martek Biosciences Corporation and is an adjunct professor in the Department of Agricultural & Biological Engineering at Clemson University. He still enjoys watching LSU football on television, especially when the Tigers win!

Florine Yvette Williams Vincik (B.S., 1987) is currently employed by Syngenta as a senior staff engineer in process engineering. Her focus is mainly in HCN production and batch herbicide and insecticide manufacture. Her interests are family (a husband and two children, ages 9 and 6), travel, and low-pressure canning of anything (but mostly Louisiana-grown fruits).

1990s

Hertanto Adidharma (Ph.D., 1999) joined the Department of Chemical and Petroleum Engineering at the University of Wyoming as an assistant professor in the fall of 2005.

Jamal N. Al-Saeedi (M.S., 1995) is an assistant professor in the Chemical Engineering Department of the College of Technological Studies in Kuwait.

Keith L. Ball (B.S., 1999) has been employed by Hercules Inc. since graduation. His current position is operations manager at their Missouri Chemical Works plant in Louisiana, Missouri. The plant produces Formaldehyde, Pentaerithritol, Synthetic Lubricants, and Nitroform ureaform. He and his wife, Teresa, have two children and live in the St. Louis area.

Steve Barrow (B.S., 1998) is an improvement engineer with Dow Chemical in Plaquemine. He received his MBA in May 2005 from LSU through the Professional MBA program. He and his wife, Rachael, welcomed their second child (Joshua Andrew) in January 2006, joining big sister-Lydia Elizabeth.

Johnny Boey (M.S., 1998) started his own internet sales company in 2003, after being an engineer for 4 years.

Catherine Gauthier Coats (B.S., 1995) has been with Halliburton Energy Services (Oil Field, Gulf of Mexico and Land) for over 10 years now (started in 1995). She works in Production Enhancement/Sand Control and received her license in petroleum engineering. She lives in Metairie with her husband of over 10 years, Ronald Coats, Jr. (LSU Biochemistry, 1994) and their two daughters-Rose (6 years) and Lily (7 months).

Sarah Beth Couvillon (B.S., 1994) has put her chemical engineering degree to work in the environmental field.

Rebekah Phillips Dotter (B.S., 1998) is currently back in Baton Rouge, working as a process engineer for Jacobs Engineering. She spent the last seven and a half years in Georgia working for Merck and Company, Inc. as a project and maintenance engineer.

Thomas D. Gildersleeve (B.S., 1996) graduated from LSU Law School in 2002 after initially working as a polyolefins process engineer. He is practicing environmental law with Taylor, Porter, Brooks & Phillips in Baton Rouge.

Philip Hadaway (B.S., 1995) is currently working for Shell International Exploration and Production in New Orleans as a senior process engineer. He lives in Luling, Louisiana with his wife of two years. His main work scope is the development of deepwater heavy oil fields.

Martin Poole (M.S., 1993) is a process design manager at the Valero Texas City Refinery. He is also the past Chair of the Fuels and Petrochemicals Division of the American Institute of Chemical Engineers.

Rakshay R. Shah (B.S., 1997) currently is a global business analyst for the Polyurethanes Business at the Dow Chemical Company. He has been working for Dow Chemical since graduating in May 1997. He has held various production and project positions in ehtylene manufacturing at Dow's Freeport, Texas, and Plaquemine, Louisiana, sites. He finished a part-time MBA at LSU in May 2003 and switched over to the business side of the chemical industry about four years ago.

Adrian Sherrill (B.S., 1996) is a first-year student at the Lewis and Clark School of Law in Portland, Oregon.

2000s

Chip Aloisio (B.S., 2002) is currently employed as an account manager by Champion Technologies in Lafayette, Louisiana.

Jennifer Bailey (B.S., 2003) is an improvement engineer at Dow Chemical in Plaquemine.

Laura Stromer Blanchard (B.S., 2004) is currently employed by PPG Industries in Lake Charles, Louisiana. She is married to Jared Blanchard, who is an electrical engineer with Entergy. She just had a baby girl, Lillian Elizabeth, in May 2005.

Benjamin Caire (B.S., 2005) is working as a production engineer in the Chlorpyridines Department at Dow's Pittsburg, California site.

Louis O. Chemin, III (B.S., 2000) is currently an Anesthesiology Resident at Emory University Health Sciences Center in Atlanta, Georgia. Geaux Tigers!

Stephen Cox (B.S., 2005) is a process engineer for ExxonMobil in Chalmette, Louisiana, despite the hurricanes.

Daniel Fontenot (B.S., 2002) works for Dow Louisiana Operations in Pressure Relief Design.

Warren Hachet (B.S., 2003) is currently employed with the Dow Chemical Company in Hahnville, Louisiana as a run plant engineer.

Damon Hall (B.S., 2004) works in the Process Engineering Department at Dow Chemicals in Plaquemine. He is currently a member of the Process Relief Design Team. He is also employed by Ford, Bacon, and Davis.

Trent M. Hebert (B.S., 2001) is currently working for Nalco, selling and managing water treatment accounts at various facilities in south Louisiana.

Rujun Li (Ph.D., 2003) is working at Corning Inc. in Corning, New York as a research scientist.

Scott Pollins (B.S., 2002) is a process engineer for Jacobs Engineering in Baton Rouge.

Suresh Raja (M.S., 2003) received his Ph.D. in Engineering Science in December of 2005. He is currently a post-doctoral fellow at Colorado State University in the Department of Atmospheric Science.

Kriangsak Vallopchotipong (B.S., 2002) works for York International as a service engineer. He currently resides in Thailand.

In Memoriam

We were saddened to learn of the passing of the following alumni. We extend our belated condolences to their families and friends.

James Camille Aucoin (B.S., 1938)

Terry Baxter (B.S., 1980)

Jerry Thomas Boliew (B.S., 1961)

Benjamin Boussert (B.S., 1999)

Charles "Charley" Bradford Hunt (M.S., 1964)

Malcolm C. Lowe, Jr. (B.S., 1942)

Billy Wayne Magee, Sr. (B.S., 1963)

Kenneth C. Reibert (B.S., 1974; M.S., 1976; Ph.D., 1982)

Leroy V. Robbins, Jr. (B.S. 1935)

REMEMBER TO CHECK OUR WEB SITE, WWW.CHE.LSU.EDU FOR THE MOST RECENT DEPARTMENTAL NEWS AND EVENTS.

LET US KNOW WHAT YOU'RE UP TO BY SIGNING OUR ALUMNI GUESTBOOK.

LSU COLLEGE OF ENGINEERING
Cain Department of Chemical Engineering
Louisiana State University

Baton Rouge, LA 70803

Non-Profit Org.
U.S. Postage
PAID
Permit No. 733
Baton Rouge, LA