Chairman's Corner

Greetings from Gainesville:

Since assuming the role of department chair this January, I have been extremely impressed with the quality and energy of our faculty and staff, their commitment to our students, and their collective desire to move the department forward. I am eager to build on our department's many strengths and leverage them further in order to move the Chemical Engineering Department into an elite status among its nationally-recognized peers.

My priorities include:

- increasing the visibility of our department on a national and international level;
- deepening our networks with employers and alumni; and
- improving the department's infrastructure and capabilities through expanded and modernized laboratories and facilities.

This facility expansion is particularly important as we plan on hiring five new faculty members within the next several years. These positions will be focused on interdisciplinary areas at the forefront of chemical engineering research.

In order to achieve this ambitious agenda, the department needs your active participation and support. We will be having two chemical engineering alumni open house events each year; I hope you are able to visit us during one of these events. If you can't make it to either of these "official" events, please stop by the department and visit us anytime you are in the Gainesville area; I would like to meet you and hear your valuable input. Also please continue to stay connected with us through e-mail (chemical@che.ufl.edu), letters (Department of Chemical Engineering, University of Florida, P.O. Box 116005, Gainesville, Florida 32611-6005) or phone calls (352-392-0882).

I look forward to working with you to continuously improve the quality of education for our students. All our best to you. Go Gators!

New Department Chair

Jennifer Sinclair Curtis assumed her role as chair effective January 2005. Curtis was formerly professor of chemical engineering and University Faculty Scholar at Purdue University. Curtis has an internationally recognized research program in the development and validation of numerical models for the prediction of particle flow phenomena. Images from her work, which accompanied a featured article, recently appeared on the cover of the November 2004 issue of the AIChe Journal.

Curtis is a recipient of the NSF Presidential Young Investigator Award, the ASEE Sharon Keillor Award for Women in Engineering, and the Eminent Overseas Lectureship Award from the Institution of Engineers in Australia. She currently serves on the board of directors for the American Chemical Society-Petroleum Research Fund, the National Academy of Engineering's Committee on Engineering Education, and the editorial advisory boards of the AIChe Journal, Powder Technology, and Pharmaceutical Development and Technology.
NSF Career Award Projects Underway

Jason Butler's Career Award project focuses on the **Dynamics, Rheology, and Microrheology of Rigid Polymers and Brownian Fibers**. Rigid polymers are widely used as high-performance plastics. Examples of small, Brownian rods can be found in the form of macromolecules of biological origin and in exciting nanotechnology applications in the form of nanotubes and nanorods. Processing of these materials generally takes place with the rods suspended in solution, yet the dynamics and rheology, or fluid properties, of suspensions of rigid rods are only understood at a qualitative level. These theories capture the essence of some observations, but improving products and the efficiency of production for these materials partly relies on the ability to accurately forecast the behavior of the suspensions under a wide range of conditions.

To eliminate the disparity between quantitative predictions and measurements, this project will study the dynamics of these complex fluids using advanced simulation methods and experimental techniques such as rheology, microrheology, and light scattering measurements. The expected improvements in methods and theories used for the evaluation of complex fluids composed of rigid polymers and Brownian fibers will impact existing and emerging technologies in polymer science, nanotechnology, and biotechnology.

Jason Weaver's Career Award project focuses on the **Growth Properties and Reactivity of Oxygen Phases on Noble Metal Catalysts**. Oxidation catalysis by noble metals is central to pollution control in vehicles, through the catalytic converter process, and is widely used to transform hydrocarbons into useful fuels and chemicals. However, the oxygen phases at work on these metals, usually platinum, palladium, or rhodium, are not well understood at the atomic level. The objective of the research is to provide a better understanding of these oxygen phases. Model catalysts will be prepared in ultrahigh vacuum conditions by growing thin oxide films and then vapor depositing the catalytic metals onto the films. A low energy atomic oxygen beam will be used to enhance the rate of oxygen chemisorption on the metals so that the oxygen phases important at commercially relevant pressures can be prepared and investigated. The research will significantly advance the understanding of how specific catalyst properties and oxidizing conditions govern the growth and properties of the surface oxygen phases that are important to real-world catalysis.

**Improved Laser Detection and Ranging (LADAR) System**

Fan Ren's research group and researchers from the U.S. Army Research Laboratory (ARL) have developed a near-infrared, prototype laser detection and ranging (LADAR) system based on the chirp, amplitude-modulated LADAR (CAML) architecture. By using self-mixing detectors in the receiver - which have the ability to internally detect and down-convert modulated optical signals - these researchers have significantly simplified the LADAR design. Detectors 1.55 μm in size, made of eye-safe InGaAs-based metal-semiconductor-metal (MSM), have been designed and fabricated for single-pixel, self-mixing in order to extend the LADAR operating wavelength to 1.55 μm. Current efforts are in the process of fabricating linear arrays of such detectors. The InGaAs-based MSM-PD OEM was used to generate 3-D images for face recognition, range finder, terrain mapping, surveying archeological sites, mobile surveillance sensors for robots, and sensors for aerial platform and smart munitions.
Tim Anderson Associate Dean

Tim Anderson, former chair from 1991 to 2003, is now Associate Dean of Research and Graduate Programs for the College of Engineering. In this capacity, he is responsible for the administration of the Office of Engineering Research, which processes all engineering proposals and awards. In addition, Tim's office coordinates graduate recruitment, fellowships and scholarships, graduate programs, and legislative initiatives.

Anderson's research includes the study of advanced electronic and photonic materials processing. Tim has been recognized for his research accomplishments through numerous awards, including the AIChE George Lappin Award (2003), Union Carbide Lectureship Award, ASEE (2001), AIChE Gary L. Leach Award (1996), and the AIChE Charles M. A. Stine Award (1994). He also spent his last sabbatical at the University of Grenoble as a Fulbright Senior Research Scholar. Anderson is associate editor of the Journal of Phase Equilibria, a member of the Editorial Advisory Board of J. SMET Education, consulting editor of the AIChE Journal, as well as editor of the Chemical Engineering Education journal. In addition, he served as director of the NSF SUCCEED Engineering Education Coalition until its completion in 2003.

Dispersion of Nanoparticles in Contact Lenses for Ophthalmic Drug Delivery

Approximately 90% of all ophthalmic drug formulations are now applied as eye-drops. While eye-drops are convenient and well accepted by patients, these are very inefficient at delivering ophthalmic drugs. Only about 1-5% of the drug applied as drops penetrates the cornea and the remaining leaves the eyes through the tear drainage. The drugs then enter the systemic circulation through absorption in the nasolacrymal duct and in some cases cause significant side effects. Furthermore, drug delivery by drops results in a bolus delivery rather than a uniform dosage, and this may limit the efficacy of ophthalmic drugs.

To reduce drug loss and the systemic side effects, and improve drug delivery profiles, Anuj Chauhan and his research group have proposed nanoparticle-laden disposable soft contact lenses as a new vehicle for ophthalmic drug delivery. The essential idea is to encapsulate the ophthalmic drug formulations in nanoparticles, and to disperse these drug-laden particles in the lens material. They have successfully synthesized microemulsion and liposome-laden p-HEMA lenses that are transparent and that can deliver drugs for a period of about 4-5 days. The animal trials of these lenses are expected to begin in a year and a product based on this technology is expected to be in the market in about 8 years. Their work has received much recent attention in the popular press including CNN Headline News, Frost & Sullivan report, BBC, USA Today, Business Week, and was named in Reader's Digest Medical Breakthroughs 2004. This work is supported by NSF and by one of the largest contact lens companies in the United States.
Chemical Engineering Class Of 1956 Holds Third Campus Reunion

The Chemical Engineering Class of 1956 held their third reunion in the Reitz Union on November 6, 2004, along with classmates who graduated a semester later. It was the 48th year after graduation. Attendees were eight graduates, four of whom were accompanied by their wives. Attending as guests of the Class were two retired faculty members, Drs. Mack Tyner and Seymour Block, with his wife, Gertrude, and the interim Department Chair, Professor Spyros Svoronos. Mack Tyner was accompanied by his son, Mack Tyner, III, an MD in research at the Shand's Hospital.

The graduates were Bob Agee, Gil Brown, Jack Clement, Roland Foster, Kenneth Hall, Wendell Hall, Joe Morris and Tom Stewart. The Class presented a plaque to Professor Block for the Chemical Engineering Department. Inscribed on the plaque is an ODE TO THE CHEM'Es IN '56. The Ode was engraved on a polished brass plate that is mounted on mahogany. Contributing to the plaque were the attendees as well as classmates Al Leybourne, John Martinez, Gordon Riel, Marvin Shankin and Don Windham. The plaque is now displayed for public view in the Trophy Case of the Chemical Engineering Building.

Do You Want To Host A Reunion For Your Graduating Class?

If so, please contact Professor Curtis at 352-392-0882 or jcurtis@che.ufl.edu. We will help you to make it happen.
The Ode -
A Legacy

The Ode, a brainchild of Gil Brown, is a tongue-in-cheek tribute to the Class of 1956 and their professors. The Ode provides the names of most of the professors, references to their courses, and a reference to a Strength of Materials professor who harassed the class while categorizing them as "You chemicals". Noted in the Ode are the use of slide rules, the hanger for classes and offices, and a mixture of veterans on the GI Bill along with recent high school graduates. This provides a glimpse through a time window for a period some 50 years ago of the University of Florida Chemical Engineering classroom history. The displayed Ode will make it possible for current and future students to read, reflect and smile about their professors.

U of F Chem'Es in 1956

Ague, Robert B.
Baldwin, Douglas, Jr.
Bosworth, Robert T.
Brown, Gilbert M
Cabina, Rudolph J.
Campbell, Joe L.
Clement, John L.
Foster, Roland B.
Geddes, James C., Jr.
Green, Robert H.
Habbaba, Saadallah
Hall, Kenneth W.
Hall, Maurice
Hall, Wendell L.
Leybourne, Allen E.,III
Martinez, John L.
Morris, Joseph D.
Potter, Arthur E.
Riel, Gordon K.
Schwab, Credo
Shankin, Marvin Y.
Speed, George B. H.
Stein, Charles A.
Stewart, John T., Jr.
Sumner, Wallace B.
Whitmore, Harold B., Jr.
Wilson, Walker V., III
Windham, Donald M.

Ode To The Chem'Es in '56

The Chem'E students in 1956 were a motley crew, as for adulthood, some were old and some were new. The majority were kids, some too young to shave, the others were veterans, having served so brave.

Everyone could tell who was in the Engineering School, because each was decked out with his new slide rule. They wore them proudly, on their right hips, and as they strutted across campus, they had smug lips.

They felt superior to the students in BusAd, and to have a friend in the Cow College was a little sad. So they took their math, physics and chemistry, and a few moved on up to Stoichiometry.

In Stokie we hit our first really rough stuff, earlier courses had been difficult, but Stokie was extremely tough. Yet our saving grace was the professor, Dr. Mack Tyner, if you researched all college professors, none would be finer.

In his quiet, methodical, and patient way, he taught us how chemical balances come into play. And to solve interrelated functions which have more than one unknown, requires the same number of equations be analytically shown.

Next came Engineering Economics, taught by Dr. Schweyer, every student who passed his course became a much wiser buyer. And to profitably market an engineering product, one had to see, how the relationships of output versus cost and profit came to be.

Our most varied course was Dr. Huckaba's Unit Ops, there we designed fractionating columns from bottoms to tops. And there our trusty slide rules really came into play, to determine the necessary number of plates, there was no other way.

In the UnitOps lab, Dr. Huckaba's teachings were put to the test, and all quickly learned Credo's reports were always the best. And if you thought you knew what the rest results should be, but your test data were different, then a 'dry lab' report was the best recipe.

Probably our 'most unsung' professor was Frank May. He made complex and troublesome experiments seem like play. One such test involved liquid/solids separation using the Humphrey Spiral, following his directions, it worked perfectly the first trial.

Strength of Materials Professor Neff ate his peanuts and called us "You Chemicals," his test problems were killers, having stemmed from his whimsicals. The walk from the Hangar to Leigh Hall was almost a mile, and a prize was offered to anyone who had ever seen Dr. Beisler smile.
Department Visits the Past...

Professor Gar Hoflund
January 1995

Professor Seymor Block
June 1974

Professor Chang-Won Park
March 8, 1988
Faculty Candidate Seminar

Professor Spyros Svoronos
Alumni Updates

1962
**Judith H. Maddox**, BSChE
Judith is currently enjoying her retirement in Aiken, South Carolina.

1965
**Edward L. Root**, BSChE
Edward is currently on disability from Affiliated Computer Services in New Orleans, Louisiana. He and his wife Madeline enjoy time-share condos in Orlando, Florida.

1947
**Rex A. Roden**, BSChE
Rex has been happily retired since 1986 and is currently enjoying beach life in Orange Beach, Alabama.

1957
**William C. Morgan**, BSChE
William was a Pediatrician for 25 years. He is currently the Associate Chief Medical Officer at Sarasota Memorial Hospital in Sarasota, Florida. He and his wife Hope have one daughter, Julie, who is married to a Major in the US Air Force and has 2 sons. William enjoys backpacking, canoeing, and tennis is his ‘spare time.’

1959
**W. Kelly Smith**, BSChE
Mr. Smith is currently the President of Smith Mackinnon PA in Orlando, Florida. He is a practicing lawyer and consultant on many matters involving technical issues and has always been thankful he had a strong engineering/math/science education. Mr. Smith is on the UF Law School Board of Trustees, Board of Directors-Gator Boosters, Board of Central Florida Council Boy Scouts of America, Chairman Pollution Control, Board of Reedy Creek Improvement District (Walt Disney World.) Mr. Smith enjoys adventure traveling all continents and 100+ countries, running, snow skiing, and photography.

1969
**Dr. Kamlesh K. Bhatia**, PhD
Received the 2005 AIChE Process Development Practice Award which was presented to him at the 2005 Spring AIChE National Meeting

1970
**Dennis C. Prieve**, BSChE
Dennis is a Gulf Professor of Chemical Engineering at Carnegie Mellon University. His research interests focus on the nature and measurement of colloidal forces and their effect on transport of colloidal particles.

1975
**Mark N. Congiunti**, BSChE
Mark is a Senior Principal Engineer with Sasol North America in Lake Charles, Louisiana. He and his wife Ellen have 5 children: Anthony, Joseph, Samuel, Lisa, and Sarah. Mark enjoys traveling, motorcycling, computers and chess.

1978
**Diana Morandi**, BSChE
Diana is Vice President of Morandi Engineering & Construction in Tamarac, Florida. Diana is currently working as a Real Estate Broker and involved in the design and construction of residential buildings. She received her Masters in Civil Engineering in 1993 from Florida Atlantic University and is married with 2 daughters.

1979
**David C. Attridge**, BSChE
David is currently a Senior Research Associate in Eastman Chemical Company’s Research Department in Kingsport, Tennessee after being promoted in November 2001 from Research Associate. David is the holder of 2 patents and is in charge of Vitamin E process and another proprietary process. He has been married to his wife Sherry for 24 years and they have 2 sons: Kevin, 18, and Timothy, 15. David enjoys researching his family’s genealogy, snow skiing, and scuba diving.

1985
**Steven J. Bos**, BSChE
Steven is working at the U.S. Patent and Trademark Office as a Patent Examiner in Crystal City, Virginia. He and his wife Gena have 3 children: Michael, 12, Christopher, 7, and Abigail, 4. Steven is a conscientious blood donor, giving every 2 months. He enjoys snow skiing, watching Gator football and basketball, and working on computers.

1988
**Demetri Clikas**, BSChE
Demetri is currently an Oilfield Supply Boat Captain of a 500-ton Oceans Master for Seabulk Internation in Layfayette, Louisiana. Demetri spent 1999-2001 working, traveling, and fishing in Mexico. He had so much fun he returned with a new wife and son. His and his wife Laura’s son, James Andrew, was born August 2001.

1989
**Wendy M. Takken**, BSChE
Wendy is a Research Scientist in the Product Development R&D Division of Kimberly-Clark Corporation, Canton, Georgia.

1992
**Noel R. Mateo**, BSChE
Noel is a Duroblade Specialist for BTG Americas, Inc., Norcross, Georgia, providing technical support to customers in the Pulp and Paper Industry. Noel started working for BTG in June 2002 after working for Paragon Trade Brands/Tyco from June 1996 to February 2002 when his job was eliminated. He is a member of the Atlanta Chapter of AIChE and a member of TAPPI (Technical Association for Pulp and Paper Industry.) Noel still enjoys watching Gator sports and traveling. He is married to his wife Mona.

1993
**Daniel A. Hall**, BSChE
Dan is with Lockheed Martin in Webster, Texas, as a Senior Engineer providing research and engineering support for batteries. He is currently working on an application of fractional calculus to battery systems. Dan is married to wife Madelin.
Alumni Updates

1996
Corey A. Wisniewski, BSChE
Corey is an Assistant Store Manager of Publix Supermarkets in Columbia, South Carolina. He and his wife Dawn have 3 children: Bryan, 5, Jacob, 2, and Courtney, 7 months.

1997
Kevin L. Van Workum, BSChE
Kevin is now with the National Institute of Standards and Technology as a Post-doctoral Associate in Gaithersburg, Maryland after receiving the National Research Council Post-doctoral Associate Award in 2002. Kevin received his Ph.D. from the University of Wisconsin-Madison in November 2002.

1999
Christopher B. Bedwell, BSChE
From April 2000 through May 2002, Christopher worked for a company in Philadelphia, Pennsylvania, that made catalytic converters. Christopher was recently laid off but looking for contacts and openings. He is currently located in Brandon, Florida.

2000
Steven K. Fanning, BSChE
Steve is with Intel Corp in Queen Creek, Arizona, as a Process Engineer in Chip Manufacturing.

2001
Devina Pillay, BSChE
Devina is a Graduate student at the University of Texas at Austin.

Miyako Hisamoto, BSChE
Miyako is a Ph.D. Graduate Student at University of California, Santa Barbara under Susannah Scott.

Dale Kirmse Retires

Professor Dale Kirmse retired on June 30, 2003 after serving for 39 years as a faculty member in the chemical engineering department. Tim and Sandy Anderson hosted a party in July to honor Dale's contributions to the department and to the field of chemical engineering.

Dale received his bachelors degree in 1960 from Oklahoma State University and his doctorate in chemical engineering in 1964 from Iowa State University. Dale joined the faculty at UF shortly after finishing graduate school. Since that time, Dale has taken leaves of absence to work with several companies, including Union Carbide through a Ford Foundation Internship, DuPont, Occidental Chemical and Reynolds, Smith and Hills. Dale first became involved in energy related activities while working on a project on integrated utility systems with Reynolds, Smith and Hills. This experience ultimately lead to Dale's involvement in establishing the Florida Power Corporation/University of Florida Cogeneration Facility located on the UF campus near the chemical engineering building. Dale also co-founded the University of Florida Industrial Assessment Center with Prof. Barney Capehart, professor emeritus in the department of industrial and systems engineering at UF. As assistant director, and later as director, Dale audited over 150 manufacturing companies in Florida and Georgia.

During his 39 years in the department, Dale has taught all of the undergraduate chemical engineering courses and many of the graduate courses. Dale was particularly fond of teaching the senior design course since it provided him with the opportunity to expose undergraduates to a diverse set of chemical engineering applications. For the past five years, Dale graciously served as the undergraduate coordinator for the chemical engineering department. He very much enjoyed his interactions with our undergraduate students during this time. The entire faculty greatly appreciated Dale's work as the undergraduate coordinator.

Dale has been traveling a lot since his retirement. He and his wife Sue have been visiting relatives and they took a cruise to the Caribbean this past summer. Dale has also taken up genealogy as a hobby. He spent much of September in Missouri looking through historical society archives and interviewing distant relatives for information about his great and great-great grandparents. Dale and Sue are sponsoring a Kirmse family reunion in mid-November. They plan to continue to visit relatives and will travel to New Zealand some time next year. Dale remains active in the department and is currently working on projects to enhance the educational experiences of our undergraduate students. He is planning to rebuild the Cogeneration Academic Interface using new technologies. This effort will emphasize visualization of unit operations and will provide real-time data for student engineering problems.
UF Leads Public Universities in National Merit, National Achievement Scholars

The University of Florida has moved to the top spot in public universities’ enrollment of both National Merit Scholars and National Achievement Scholars, as announced by the National Merit Corp. Overall, UF ranks second nationally in National Merit Scholars and fourth nationally in National Achievement Scholars within its 2004-05 freshman class. With 259 National Merit scholars recruited, UF is behind only Harvard University in recruiting more National Merit scholars in 2004. “UF’s remarkable educational and social opportunities attract some of the nation's most talented undergraduates,” said Joseph Glover, interim provost and senior vice president for academic affairs. “UF’s ranking as the nation’s top public university in enrolling National Merit and National Achievement Scholars is due to the rich academic environment created by an outstanding faculty, staff and student body.”

Merit Scholars are selected from more than 15,000 semifinalists nationally by the National Merit Scholarship Corp. The students scored in the top one-half percent of high school seniors in their states on the Preliminary SAT-National Merit Scholarship Qualifying Test. The top-5 ranked participating schools, followed by the number of recruited Merit scholars, are:

1. Harvard University -- 312
2. University of Florida -- 259
3. University of Texas -- 242
4. Yale University -- 224
5. Stanford University -- 217

In National Achievement Scholar recruiting, UF ranked fourth this year out of 166 participating schools across the country and first among the 76 public institutions. The National Achievement Scholars Program recognizes minority students who place well on the Preliminary SAT. The top-ranked participating schools, followed by the number of recruited Achievement scholars, are:

1. Harvard University -- 85
2. Yale University -- 61
3. Stanford University -- 57
4. University of Florida -- 40
5. Duke University -- 35

2005 Annual GRACE Research Symposium

Every year GRACE hosts a graduate research symposium to provide a venue for chemical engineering graduate students to share their research projects. This year was the largest symposium with 18 participant oral presentations. The talks were split into four sessions with a cash prize for the best presentation in each session. The session categories were "Biological, Biochemical, and Biomedical Systems", "Advanced Materials Processing", and two sessions of "Complex Fluids and Interfacial Phenomena". The winners are shown left to right in the picture to the right and are as follows: Marissa Fallon (Professor Chauhan, research advisor), Marco Verwijs (Professor Svoronos, research advisor), O. Berk Usta (Professors Ladd and Butler, research advisors), Ashish Gupta (Professors Kopelevich and Chauhan, research advisors). For more information on GRACE and the annual research symposium, please visit http://grace.che.ufl.edu.
UF's Outstanding ChE Undergraduates!

- 26 National Merit Scholars currently in the department
- 29% of students admitted into the UF Honors Program
- Strong student diversity (13% Hispanic, 6% African American, 30% female)
- Large graduating classes (70 students per year)
- Average high school SAT score 1310
- Average high school GPA 3.92
- Many of our students work in multi-disciplinary teams on real projects from industry during a two-semester capstone design course (IPPD)