Notes from the Chairman

Dear Friends:

2003 was a year marked with significant change for the Department. After over a century of operation as the Department of Chemical Engineering, we changed our name to the Department of Chemical and Biomolecular Engineering. The name change was done with a lot of thought, and consultation with our University constituencies and our Board of Advisors. It was done to reflect the dynamic nature of the profession; that we are engineers who tinker with molecules and develop processes and products from an understanding of molecular phenomena. And just as we have been richly rewarded by being the engineering equivalent of chemistry, we stand to benefit by developing strengths as the engineering equivalent of molecular biology. As we continue to emphasize the core skills that a chemical engineering education involves, we will also attempt to seamlessly integrate new concepts that will provide our students additional opportunities in the rapidly growing fields of biotechnology and advanced materials. We are confident that this strategic direction will positively impact our undergraduate recruitment and retention efforts, provide additional employment opportunities for our students, and enhance our research visibility.

In the last year, we hired Dr. WT Godbey who is a wonderful addition to our faculty. W works in the area of gene delivery and gene therapy, and his expertise provides an exciting addition to our research and education portfolio. Regrettably, we lost Dr. Dan Lacks who has taken up a prestigious Endowed Chair position at Case Western. While we miss his bright and friendly voice, we are very proud of his achievements.

In the following pages, you will find news of our students, our faculty, and some of our alumni, citing in particular, some of their remarkable achievements over the last year. The department continues to move forward with intensity in both research and education. We have clear strategic directions in Nanotechnology and Biotechnology. Together with this progress comes the realization that we have critical infrastructure needs. I wish to bring up to you one item in particular. We plan to completely renovate the Francis Taylor Laboratory to provide additional space for undergraduate teaching laboratories and research laboratories. We will convert the building to a three-storey building with significant additional space. On the ground floor will be the new Unit Operations Laboratory and a Polymer Processing Facility. On the second and third floor, there will be laboratories for research in high strength ceramics, nanostructured materials, cell and tissue engineering, polymer drug delivery, catalysis, environmental science, and laser spectroscopy. The building will be named the Francis M. Taylor Laboratory for the Chemical and Biomolecular Sciences and Engineering. The Chemistry department which has been our strong supporter for many years will jointly help us with the Building development. We have the architectural plans drawn up and the basic renovation cost is less than $2 M, clearly an achievable goal. There will be naming opportunities for laboratories. In the next few weeks we will send you more information about our fund-raising for this project.

As always, we are so grateful to those of you who help in providing internship and employment opportunities for our students. As a small department, we do not have a significant number of companies coming to campus. We really look to you to help our students find jobs and internship opportunities. If you see such opportunities in your company, please do contact us and let us know.

And finally, we are always so happy to hear news from you, your professional achievements and your progress through life's transitions. Please continue to write to us and let us know how you are.

With very best regards,

Vijay John, Chair
Dear Friends:

From time to time, we request our alumni to give us feedback on whether their education at Tulane has served them well in their professional careers. This feedback is also of importance to our continued accreditation, as ABET (Accreditation Board for Engineering and Technology) wishes to see how we address our program objectives and our program outcomes.

With this in mind, I would welcome feedback from members of the classes of 2003, 1998, 1993, 1988, 1983 etc. (in 5 year spacings). The feedback can be in e-mail form to me (vj@tulane.edu) or to Ms. Belinda Lacoste (bal@tulane.edu). The feedback can be structured to address the objectives and outcomes listed below, or can be in free form. If you wish to respond anonymously, you can send the feedback by mail to my attention.

Next year we will request the classes of 2004, 1999, etc., so that each class will be requested to respond only once in 5 years.

Thanks so much.

Vijay

---

**Program Educational Objectives**

1. Our students will obtain expertise in mathematics, science and engineering principles, with particular emphasis on those that apply to chemical engineering practice.
2. Our graduates will be able to apply this expertise to identify and solve chemical engineering problems, design chemical engineering processes and conduct and analyze experiments, using the most up-to-date engineering tools and techniques. The students will be able to work effectively with others on such problems, and communicate their results effectively.
3. Our graduates will be able to carry out their work professionally and ethically, and understand the impact of their work in a global and societal context.
4. Our graduates will be able to function in an engineering profession which is continually evolving, will be aware of contemporary issues and will be prepared for life-long learning.

---

**Program Outcomes**

a. An ability to apply knowledge of mathematics, science, and engineering.
b. An ability to design and conduct experiments, as well as to analyze and interpret data.
c. An ability to design a system, component, or process to meet desired needs.
d. An ability to function on multi-disciplinary teams.
e. An ability to identify, formulate, and solve engineering problems.
f. An understanding of professional and ethical responsibility.
g. An ability to communicate effectively.
h. The broad education necessary to understand the impact of engineering solutions in a global and societal context.
i. A recognition of the need for, and an ability to engage in life-long learning.
j. A knowledge of contemporary issues.
k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
l. An ability to solve a problem of industrial relevance.
m. A knowledge of current issues in industrial and academic research and development.
n. An ability to consider the entire system in project solutions.
New Faculty Member Profile - WT Godbey

As part of the department’s recent name change to the Department of Chemical & Biomolecular Engineering, we are pleased to announce the arrival of WT Godbey, Ph.D. as a new assistant professor. Dr. Godbey is a gene therapy researcher who came to us from Boston, MA where he was a postdoctoral fellow at the Children’s Hospital, Boston and the Harvard Medical School.

Dr. Godbey received his Ph.D. from Rice University in 2000, under the direction of professors Frederick B. Rudolph and Antonios G. Mikos, earning the first degree granted by Rice’s Institute for Biosciences and Bioengineering. Dr. Godbey’s thesis, entitled, “Poly(ethylenimine) as a Gene Delivery Vehicle, and Its Potential for Gene Therapy,” generated 7 first-author papers, a book chapter, and a patent application. All of this work was performed under a prestigious National Science Foundation Graduate Fellowship. After leaving Rice, Dr. Godbey spent 2½ years in Boston in the tissue engineering laboratory of Anthony Atala investigating tissue engineering and gene therapy applications. His work led to an additional 3 first-author papers and 2 patents before he joined the Tulane ranks in July this year.

Dr. Godbey’s research interests are encompassed by the development and application of gene therapy techniques for tissue and cellular engineering. The design and testing of novel gene delivery vehicles is of some interest, while the application of gene therapy for clinically oriented results is a major focus of the laboratory. His success in altering cellular behavior through the manipulation of DNA delivered into cells has been a driving force for his current research direction, which includes the harnessing of cells to serve as microscopic chemical processing plants without labor unions or property taxes.

Since arriving at Tulane, Dr. Godbey has presented work to the American Academy of Pediatrics, has written the course Introduction to Gene Therapy (offered in the coming Spring semester), has undertaken the writing of a chapter on gene therapy for the CRC Biomedical Engineering Handbook (due out in November, 2004), and has co-founded the company Integrated Therapeutics, which was formed around his technology and aims to treat numerous afflictions (including bladder and prostate cancer) in a clinical setting.

Alumni News

Shawn Haynes (MS 2002), was featured in the December 11, 2003, edition of the Times-Picayune, Money section, entitled "Michoud facility revs up shuttle fuel tank redesign".

Lixiong Wen (PhD 2001 under Kyriakos Papadopoulos), after spending a year-and-a-half with Intel Co. R&D in California, has joined the Beijing University of Chemical Technology as Assistant Professor.

Harry Asmussen ’82
Children featured in the Albuquerque Journal
Kalysta and Harrison Asmussen dedicated their birthday parties to raise funds to bring Army reservist Bryan Griego home from Iraq for Christmas. View the article at http://www.mvtelegraph.com/120558mtnview12-11-03.htm

International collaborations with the following Institutions are in place:
Universidad Nacional del Bio-Bio, Concepcion, Chile
Universidad Nacional del Litoral, Santa Fe, Argentina
Universidad Nacional Autonoma de Mexico, Iztapalapa
Saitama University, Tokyo, Japan
CNRS, Lyon, France

Appointments:
Advisory Board member, International Congress of Microcalorimetry and Thermal Methods, Lyon France
North American Catalysis Society. Educational Trust Fund

Vijay John participated as a member of the Committee of Visitors Panel for the Division of Chemical and Transport Systems in the Engineering Directorate of the National Science Foundation.

Vijay John, Yunfeng Lu, and Gary McPherson (Chemistry) received a one-year grant from the NSF-EPA Technology for a Sustainable Environment Program on Self-Assembly for Environmental Remediation.

Victor J. Law has been appointed to the Research Committee of the newly formed Entergy-Tulane Energy Institute. Entergy has committed $500,000 per year for five years to the ETEI. The ETEI involves primarily the School of Engineering and the School of Business and the funds will be used to leverage research projects in areas of interest to Entergy. As a result of his involvement with ETEI, Dr. Law has submitted three proposal to DOE and USDA in the following areas:

- Co-Burning of Biomass (wood chips, rice hulls, and bagasse) in Coal Burning Power Generating Plants
- Collection and Purification of CO₂ from Stack Gas for Subsequent Use in Enhanced Oil Recovery
- Thermochemical Water Splitting for Hydrogen Production (with Argonne National Labs, Dr. Brian S. Mitchell, Co-PI)

ETEI is providing matching funds for each of these proposals.

Yunfeng Lu is the first recipient of the Presidential Early Career Development Award which honors “outstanding Tulane scientists and engineers who show exceptional potential in the early stages of their careers.” He will receive funding of $20,000 per year for the next three years through the Lallage Feazel Wall Fund.

Yunfeng also has been chosen as one of only 26 researchers in the country to receive an Office of Naval Research Young Investigator Award. He will receive a grant of $300,000 to further his research in high-efficiency solar cells.

Brian S. Mitchell has returned to the department after completing a six month research visit to the Germany Aerospace Agency in Cologne on an Alexander von Humboldt Research Fellowship. His textbook "Materials Engineering and Science for Chemical and Materials Engineers" was recently published by John Wiley and Sons. In November, Brian presented a talk at the 5th Annual Louisian Materials Conference in Lafayette, LA, attended the Honda Initiation Grant conference in Newport Beach, CA, and chaired a session at the AIChE Annual Meeting in San Francisco. He is currently chair of the General Arrangements Committee for the AIChE 2004 Spring Annual Meeting to be held in New Orleans.

NEW FROM WILEY
An Introduction to Materials Engineering and Science for Chemical and Materials Engineers

Ideal for either a one- or two-semester undergraduate course, An Introduction to Materials Engineering and Science for Chemical and Materials Engineers provides a unique educational tool for the student. Resources for learning include:

- Cooperative learning exercises with example problems geared towards active learning principles
- Instructional objectives to assist both students and teachers in determining the extent and depth of understanding required for each topic, and to assist in course assessment for accreditation purposes
- Detailed case studies in materials selection, application, and design
- End-of-chapter references for supplemental reading
- Links to Web-based information and graphics
- Extensive materials property data

Students and teachers of chemical or materials engineering, as well as those of biomedical, mechanical, electrical, or civil engineering, will all find this book an invaluable resource for establishing a solid understanding of the field.

E-mail: custserv@wiley.com • URL: www.catalog.wiley.com
Faculty News (cont.)

Kim O’Connor Prof. O’Connor’s research on prostate cancer and cell differentiation has been recently published in Biotechnology Progress, Biotechnology Letters and the Journal of Cellular and Molecular Medicine. This work was presented at the national meetings of the American Association of Cancer Research in Washington, American Institute of Chemical Engineering in San Francisco, Society for In Vitro Biology in Portland, NASA Cell Science Conference in Houston, and American Chemical Society in New Orleans. She was invited to chair a session entitled “Cell Models and Cellular Differentiation” at the Society for In Vitro Biology and to participate in peer-review service for the National Science Foundation and the journals Biotechnology & Bioengineering and Tissue Engineering.

2003 Outstanding Researcher Award Recipient

Recognizing the need to honor deserving scholars and to increase the visibility of the school’s research activity, the Outstanding Researcher Award was established in 2001 by the faculty of the School of Engineering upon the recommendation of the School of Engineering Research and Graduate Studies Committee. The Award is given according to the following criteria:

• The quality and quantity of publications, with particular emphasis given to archival publications, research treatises and citations of published work.
• The total amount of research funding.
• The contributions to the mission of the university in graduate education, training and mentoring, including graduate students and post-doctoral scholars.
• National and international recognition as evidenced by honors and awards, journal editorships and participation in editorial boards, national and international scientific committees and boards, and professional patents.

Yunfeng Lu, 35 Assistant Professor of Chemical Engineering, Tulane University

A native of southern China, Lu received his undergraduate degree in chemistry from Jilin University and his masters in polymer science from the Chinese Academy of the Sciences, before traveling to the University of New Mexico for doctoral work in chemical engineering. He has been with Tulane for nearly three years and, in that short time, has attracted international interest for his research in developing high-efficiency solar cells and for his use of nanotechnology. Lu points out that his work has many practical applications for both military and civilian use, from powering the space station to homeland security initiatives to the development of alternative energy sources. For his efforts, Lu was one of only 26 researchers in the country to be selected as an Office of Naval Research Young Investigator; the honor, announced in February of this year, includes a three-year, $300,000 grant for the continuation of his work. More recently, in September, Tulane president Scott Cowen tapped Lu as the first recipient of the university’s Presidential Early Career Development Award, citing his more than $1 million in research grants, major awards, wide publication in scientific journals and numerous patent applications. Lu, who has also been recognized by the Chinese National Science Foundation, is doing his part to bring along another generation of scientific thinkers: several of the undergraduate, Ph.D. and post-doctoral students under his supervision are already award winners as well. To top it all off, scientific academia, it seems, is something of a family affair for Lu. “My brother,” he reveals, “is also a professor -- of chemistry.”

Daniel De Kee a fellow of the Chemical Institute of Canada, obtained his Ph.D. in chemical engineering from the University of Montreal. He is currently Professor of Chemical and Biomolecular Engineering, Director of the Tulane Institute for Macro-molecular Engineering and Science (TIMES), and Associate Dean for Research and Graduate Studies.

Dr. De Kee received the Canadian Society for Chemical Engineering ERCO AWARD for distinguished contributions in chemical engineering before the age of forty; and he was the recipient of the Chemical Institute of Canada PROTECTIVE COATINGS AWARD. He has served as Chair of the Canadian Group on Rheology and Director of the Canadian Society of Chemical Engineering. Recently he chaired the XLIth International Congress on Rheology. He has presented several invited lectures including the H. Armstrong Memorial Lecture at Monash University, Australia, the Du Pont Lecture and the 3M Lecture, both at the University of Wisconsin, Madison. He collaborated as a senior researcher, under the auspices of NATO, with the University of California, Berkeley and with the Technical University, Aachen, Germany. He was also Visiting Professor at Columbia University in New York. Dr. De Kee is a member of the International Advisory Board of the Canadian Journal of Chemical Engineering.

His research interests are in the general area of rheology. In particular, he is engaged in research concerning the development of constitutive equations, bubble dynamics, yield stress measurements and diffusion in polymers. He published over 190 papers in the area of non-Newtonian fluid mechanics and is the co-author of four textbooks and eight edited books.
Student News

Undergraduate student David Johnson submitted an idea for ANON Technologies for the Business Idea Challenge hosted by the Tulane Entrepreneurs Association in November 2003. The business idea scales up a process making nanostructured solar films and materials, then applies it to coatings which power electronic devices such as cell phones and laptops. ANON received 1 of the 5 winning awards, out of a total of 24 business idea teams. The award was accompanied by a $200 cash prize. David has since expounded on the concept and developed the idea into a full business plan with 5 years of financial statements projected from the start of the business. He has entered this idea in the undergraduate section of the 2004 Business Plan Competition which began on March 24, 2004.

Sophomores get involved! Matthew Eggert was elected President of the Tulane Student Chapter of AIChE and Ernesto Pichardo was elected President of the Tulane Chapter of SHPE. Ernesto also participated in the Hispanic Engineer National Achievement Awards Conference (HENAAC) College Bowl program and won a $300 scholarship and a Playstation 2 from NASA and Lockheed Martin as a second prize award as part of the CH2MHill Platinum team along with teammates from other Tulane departments.

Graduate Students Mohit Singh, Limin Liu and Nurettin Sahiner took the first three spots in the Poster Competition for the 2003 Louisiana Materials Research Conference held at the University of Louisiana, Lafayette, in November. Mohit will be finishing his Ph.D. work in February and will take up a Post-Doctoral Fellowship at U.C. Berkeley.

Hong Song successfully defended his doctoral dissertation entitled “Spatial Assembly and Composition of Prostate Cancer Spheroid” and was awarded the Graduate Student Achievement Award from the Tulane School of Engineering. He is currently a postdoctoral fellow in the Department of Radiation Oncology at Johns Hopkins School of Medicine in Baltimore.

Graduate Student Byron McCaughey has been selected to receive a 2004 Beckman Fellowship at the Beckman Institute for Advanced Science and Technology at the University of Illinois, Urbana-Champaign. The appointment starts as soon as June 1st and lasts up to 3 years.