As I write this letter, the pace on campus has slowed to its lower summer “heart rate.” But there is lots of activity in Olin Hall now that the Board of Trustees has approved construction on our renovation project and we have begun the eighteen-month-long task of renovating our facilities. It has taken two years of planning and the commitment of almost $15 million, but we are on our way to create twenty-first-century infrastructure for our wonderful old twentieth-century building. Our plan is to make this renovation as “green” as possible. For instance, we will be the first at Cornell to use new energy-efficient chilled beams (a form of radiant cooling). It is interesting to remember that only a year or so ago, when we were performing our life-cycle analysis for the project, we pressed the designers to incorporate a scenario that involved the seemingly impossibly high figure of $100 a barrel for oil.

Energy is again at the forefront of our thoughts as we evolve our research and educational programs. Through the leadership of Lynden Archer, the Marjorie Hart Professor of Chemical Engineering, and a colleague in materials science, Emmanuel Giannelis, we have secured a $25 million research grant from the King Abdullah University of Science and Technology in Saudi Arabia. As you’ll see in this issue, Lynden and Emmanuel have created a new class of materials, nanostructured ionic materials (NIMs), which they will tailor chemically to solve problems related to water purification, photovoltaics, carbon capture, and enhanced oil recovery. The KAUST–Cornell University (KAUST–CU) Center for Research and Education will have a transformative effect on research in chemical engineering and will educate scientists and engineers who will devote their creative genius to solving our energy and environmental problems.

Professor Jeff Tester (B.S. Ch.E. ’66, M.S. Ch.E. ’67) will join our faculty ranks as the inaugural David Croll Chair of Sustainable Energy Systems, leaving his chaired post at MIT. Jeff is a world-renowned expert on geothermal energy and we will be focusing on his work in next year’s Olin Hall News. We hired two wonderful young assistant professors this year, Susan Daniel and Tobias Hanrath. Susan is classically trained in fluid mechanics but is making creative advances in artificial membranes. Susan is the first woman faculty member we have hired in the past twenty years. Tobias grows semiconductor materials suitable for photovoltaic applications and is already hard at work helping undergraduate students build next year’s Solar Decathlon house for exhibition on the National Mall in Washington, D.C.

Finally, since education is our business, I am thrilled to tell you that Professor Mike Duncan was named as the Carnegie Foundation’s New York State Professor of the Year. Mike has won fourteen teaching awards and runs the undergraduate program with the dedication that some of you will remember from the days of Dusty Rhodes. We are very proud of the passion that he brings to teaching.

Despite the disruption to Olin Hall due to the renovations, please continue to come and see us. We are still your home away from home.

Paulette Clancy
Two years ago we announced in the *Olin Hall News* our intention to renovate the north wing of Olin Hall to bring its facilities into the twenty-first century. Luckily for us, the builders of Olin Hall, even under the pressures of 1940s wartime, knew how to make a solidly constructed attractive building with impressive ceiling heights and lots of natural illumination. One of the rooms still bears the various shades of “Navy green,” the only paint available at the time. But sixty-five years later, the lack of a modern HVAC system, the cracked and leaky original windows, the inadequate power supply, and the hit-and-miss fire alarm system, meant it was time for a makeover.

The importance of a high-quality infrastructure in the building cannot be overstated; it affects our ability to recruit and retain the best students and faculty and staff members. With the support of the university and the College of Engineering, the School of Chemical and Biomolecular Engineering became the first renovation project in the college’s Facilities Renovation Master Plan.

Now, two years later, and with the help of Ballinger, an excellent Philadelphia design firm, construction is underway. By January 2010, the entire 100,000 square feet of the north wing of Olin Hall will have its first-ever central HVAC system, new fire alarms and a sprinkler system, new windows, an emergency generator, and a modern electrical service and distribution system that can support the entire 130,000 square feet of the building.

A pivotal point in the design process came when President Skorton pledged that Cornell would become a carbon-neutral campus. Although it cost nearly half a million dollars more, we decided that we would install a full energy-recovery system (the so-called “energy wheel”) and we would make our renovated building as energy-efficient as possible.

Being an educational facility, we set the students to work. We asked Professor Hunter’s energy economics class to determine the maximum savings that we could attain through the best choice of window replacements. They showed that we might save about 15 percent of our energy with new double glazed, low-e coated windows. Their results were sent to our designers for verification.

Our first task was to remove asbestos from the ceilings in January 2008. This unexpectedly yielded a couple of treasures: We found the bronze plaque honoring James Parmelee (1855–1931) (class of 1876) for funding the original Unit Operations Laboratory when Olin Hall was built in 1941. We mounted this plaque in the UO Lab where it belongs. Next, we found the framed photograph of a young Army officer from World War II whose identity we do not know. We speculate that it might be a portrait of Mr. Olin’s son, for whom the building is named. If you think you know the man’s

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Clara H. Rosevear ’38 and Robert A. Rosevear ’37

Clara and Robert Rosevear are about as close to a storybook Cornell couple as you get. They met at Cornell and were married in Sage Chapel a year after Clara graduated. Clara’s father was renowned Professor Frederick Hoffman “Dusty” Rhodes, Ph.D. ’14, founder of what is now the School of Chemical and Biomolecular Engineering. It was the strength of this family tie that initially inspired these College of Arts and Sciences alumni to support the College of Engineering and fueled their lifetime of giving to the college.

When Clara, who majored in botany and zoology, died in April 2007, Bob wanted to make a meaningful gift in her honor. He chose to support the Olin Hall Renovation, acknowledging the project’s importance for strengthening both Cornell and the School of Chemical and Biomolecular Engineering, as well as his personal reasons for making the gift.

“My late wife ... was for many years a generous and steadfast supporter of the teaching, learning, and research associated with Olin Hall,” wrote Bob. “The present gift is in the spirit of her past generosity and interest.” A lecture hall has been named for the Rosevears in recognition of this gift.

After graduating from Cornell with a degree in history, Bob attained bachelor and master of music degrees from the Eastman School of Music at the University of Rochester. In 1979, he received the doctor of music *honoris causa* from the University of Western Ontario. He spent the bulk of his career as a professor of music education at the University of Toronto and played the horn professionally and semi-professionally in a variety of ensembles.

Bob and Clara always remained connected with their Cornell classes and the university. Their generosity extended to several other areas, including the School of Chemical and Biomolecular Engineering and its Industrial Practitioner Program, the Lincoln Hall Renaissance, Cornell Plantations, Cornell University Library, the Class of 1937 Cornell Tradition Fellowship Fund, the Cornell Annual Fund, and Cornell United Religious Work. The Rosevears were honored in 1988 as Foremost Benefactors, one of the university’s most prestigious awards.

continued on page 5
Professor Carol K. Hall was our Julian C. Smith Lecturer this year. On Monday, April 21, she spoke on “Thermodynamic and Kinetic Origins of Alzheimer’s and Related Diseases: A Chemical Engineer’s Perspective.” Her talk was designed to engage the audience as she described her personal connection, through her father’s illness, to the debilitating condition of Alzheimer’s disease and the motivation that this provided to look for molecular-scale explanations of the aggregation of so-called “a-beta” proteins. The following day, April 22, Carol gave a more technically focused talk: “Self-Assembly of Dipolar Particles: Designing Smart Materials Using Computer Simulation.”

Hall is the Camille Dreyfus Distinguished University Professor of Chemical and Biomolecular Engineering at North Carolina State University. She received her B.A. in physics from Cornell University and her Ph.D. in physics from the State University of New York at Stony Brook. After postdoctoral training in the chemistry department at Cornell with Professor Ben Widom (who was in the audience to listen to her talks), and a brief period as an economic modeler at Bell Laboratories, she joined the Department of Chemical Engineering at Princeton University in 1977 as the third woman appointed to a chemical engineering faculty in the U.S. In 1985, she accepted a post in the Department of Chemical Engineering at North Carolina State University, where she joined other Cornell “alumni,” George Roberts (class of ’60) and Keith Gubbins (former Cornell chemical engineering director and professor).

Hall’s research focuses on applying statistical thermodynamics and molecular-level computer simulation to topics of chemical, biological, or engineering interest involving macromolecules or the downstream impact on chemical feedstocks of implementing these options.

Pearson has spent her postgraduate career in the petrochemical industry and is a network leader for engineering excellence, technology excellence, and people-management excellence at BP. She serves on the Cornell Engineering College Council and is the engineering representative to the Cornell Club of Chicago. Pearson was the first African American named as the Raymond G. Thorpe Lecturer in the fourteen-year history of the event. This lecture honors Raymond Thorpe, who spent thirty-nine years on the faculty. Pearson’s parents and members of the Thorpe family were in attendance.
Lectures

Julian C. Smith Lectureship

identity, I hope you will let us know. For now, it’s a mystery.

As the hammers ring and the dust flies, we look forward to the completion of this exciting project. We will be the first group on campus to use energy-efficient European technology called “chilled beams.” This technique was developed to combine radiant cooling systems with conventional overhead ventilation to reduce energy usage, improve comfort levels, and reduce the architectural impact of ductwork and other mechanical systems. Many other units on campus will be looking to the Olin Hall project as a test of energy-efficient renovation. We are excited to take the lead in this. As Jonathan Friedan, the head of our Ballinger design team, said: “If engineers won’t do this [choose to be energy-efficient], who will?”

Funding the Project—The Gift of Alumni

This will be a wonderful example of “building recycling.” Rather than demolish Olin Hall and build a replacement that incorporates modern infrastructure, we have preserved this wonderful building and will give it a new lease on life for another sixty-five years. But the cost of this project is not small. In our design choices, we constantly asked ourselves “What’s the impact on energy use?” “What is the carbon footprint implication?” “Which choice is the more sustainable long-term?” even as we tried to constrain the budget. We even carried this approach to the bathroom renovation project where, for instance, we will use Dyson dryers that use 65 percent less paper and “green” paint (though not U.S. Navy green!)

The project will cost just under $15 million. With university and college contributions of more than $8 million, the school was left with nearly $7 million to raise. With this large burden, we turned to our alumni for help—and respond you did. Donations large and small are now being received that have been targeted by alumni for the building renovation fund.

Three Gifts Worthy of Special Mention

First, with the loss of his wife of sixty-eight years sadly still fresh in his mind, Clara Rosevear’s husband, Robert, gave us an outright gift of $1 million in Clara’s memory. This magnificent gift was received at a crucial go/no-go point in our design phase, and allowed us to proceed. In thanks, we have received permission to name the large Olin 155 amphitheatre classroom in her honor. Dusty Rhodes’ daughter Clara and his son-in-law Robert have been long-term supporters of Olin Hall (see page 3) and their continued support of chemical engineering at Cornell has been a key provision of graduate fellowships and other instruction-related gifts. We owe Clara and Robert a debt of gratitude.

Another long-term supporter of chemical engineering at Cornell, Marjorie Hart (B.S. Ch.E. ’51) has made a wonderful planned gift of $1 million. Like the Rosevears, Marjorie has already left an indelible mark on the school through the endowment of a chair, which Professor Lynden Archer now holds, and through her years of service as chair of the school’s advisory council. But she very generously agreed to make a leadership gift to the Olin Renovation Fund which will, she hopes, encourage other alumni to follow in her footsteps. As the first woman executive at Exxon, Marjorie is a trailblazer, and so it is appropriate that her gift will help the school to forge ahead with new facilities.

The third major gift to the fund was a planned $500,000 gift by Robert Ulrich (B.S. Ch.E. ’43, who has been a loyal and generous annual gift-giver to the school for many years now. His sterling gift to the renovation fund takes us nearly one-third of the way to our target.

complex fluids. She is the author of more than 190 publications, is a Fellow of the American Physical Society, and was elected to the National Academy of Engineering in 2005. Hall has been an inspiration and mentor for many women faculty members in the United States.

Evelyn with her parents and Ray Thorpe’s son, Mark, and grandson, Garrett

Pearson speaks to emeritus professor Bob Finn.

Emeritus Professor Julian C. Smith greets Carol K. Hall.

Is this Franklin Walter Olin, Jr?
In April 2008, it was announced by the brand-new King Abdullah University of Science and Technology that it would award $25 million to two new U.S.-based centers, one at Cornell University, for work on a new class of organic–inorganic hybrid nanoparticle-based ionic materials (or NIMS), which were discovered at Cornell by the center's directors, professors Lynden Archer (Marjorie L. Hart Professor of Chemical Engineering) and Emmanuel Giannelis (Walter R. Read Professor of Engineering and Director of the Department of Materials Science and Engineering). This award is one of the largest, if not the largest, award ever to the College of Engineering. And it funds the only center on campus directed by engineers.

We caught up with Lynden Archer as he returned from a celebration of the new center in Jeddah, Saudi Arabia to ask about the center . . .

**What exactly are NIMs?**

These materials combine the low density and processing ease of organic polymers with the functionality of an inorganic nanostructure (e.g., in terms of mechanical strength, photovoltaic properties, or thermal/electrical conductivity) to produce new materials with unique property profiles.

NIMS are created by chemically tethering a charged oligomer (short polymer) corona to the surface of inorganic nanoparticles. The charge on the oligomer is balanced by a counterion species. Because of their hybrid organic–inorganic character, the physical properties of these materials can be manipulated over an unusually wide range. Specifically, you can vary the geometric and chemical characteristics of the core and canopy (corona and counterion) and thermodynamic variables such as temperature and volume fraction. As a result, on one end of the spectrum you can make materials with high core-particle contents, which display properties similar to glasses, stiff waxes, and gels. At the opposite extreme, you can make systems that spontaneously form particle-based ionic fluids, characterized by physical properties similar to simple liquids created from molecular building blocks.

The organic canopy becomes, in effect, the “solvent” in a NIMS fluid. Because this is permanently attached to the core particle, the vapor pressure of liquid NIMS is negligible even at high temperatures. This feature is advantageous for a host of applications, including zero-vapor pressure solvents, carbon-capture fluids, heat-transfer liquids, conducting lubricants, and high refractive index liquids for immersion lithography, where colloidal suspensions either cannot be used or require specialized design conditions to reduce solvent loss. We have already created a large “library” of core chemistries and shapes, making nanoparticle ionic fluids based on SiO₂, C₆₀, TiO₂, ZnO, γ-Fe₂O₃, Au, Pt, and Pd nanoparticles. The consequent variety
of properties that can be engineered into a single material platform makes NIMS attractive for a host of applications, including as fouling-resistant membranes for water desalination, liquid-processable photovoltaics, and novel media for carbon dioxide capture and sequestration.

**What is the mission of the new KAUST-CU center?**

The KAUST–Cornell University (KAUST–CU) Center for Research and Education brings together an interdisciplinary research team of leading experts from Cornell and seven partner institutions (Cambridge, Columbia, ETH Lausanne, Houston, Princeton, UCLA, and Yale) with complementary expertise in materials synthesis, computer simulations, theory, physical property measurements, and structure characterization.

The mission of the center is threefold:

(i) **We want to develop a global alliance of researchers based at Cornell, KAUST, and our partner institutions that is capable of significantly advancing the state of knowledge in four vitally important areas of technology in which Cornell and the United States, in partnership with KAUST and Saudi Arabia, have an opportunity to assume leadership roles.**

- Carbon dioxide capture and advanced sequestration technologies
- Photovoltaics and energy systems
- Water treatment and desalination
- Nanomaterials for oil and gas production

(ii) **Our business is education and thus an important goal is to educate a cadre of interdisciplinary, team-based researchers prepared to assume leadership roles in the world.** The center will leverage Cornell’s excellence in science and engineering education and joint programs with the Johnson School of Management to train graduate students capable of proposing and implementing innovative solutions to the problems of our time. A key feature of the center's program will be its network of industrial partnerships. These partnerships will provide an applications-orientated flavor to the KAUST–CU center and will help ensure rapid commercial transition of discoveries that emerge from it.

We believe this aspect of the center's activities will increase the population of practicing engineers on both university campuses (KAUST and Cornell) proficient in developing and commercializing new technologies.

(iii) **Universities are open collaborative institutions and we want to help build capacity at KAUST through innovative plans for faculty recruitment and research incubation.** We will share our expertise and best-practices for multi-user research facilities development and management, and faculty and student exchange between KAUST and Cornell. The center will promote strong collaborations between our two faculties to develop a first-class curriculum at KAUST. It will provide hands-on research training opportunities for KAUST staff in running and managing large multi-user facilities.

**What impact will the new KAUST-CU center have on the School of Chemical and Biomolecular Engineering at Cornell?**

KAUST–CU is the only research center on the Cornell campus led by faculty members in the School of Chemical and Biomolecular Engineering. It is also the first center with an explicit focus on energy and sustainability, which are priority areas in the school. In concert with our growing energy-focused faculty presence through Jeff Tester and Tobias Hanrath and others, the existence of this center will firmly establish the School of Chemical and Biomolecular Engineering as a leader not only in the college but also in the university for the exploration of sustainable energy systems. Funding from KAUST–CU will support the research programs of six chemical and biomolecular engineering faculty members, and will provide full financial support to twelve chemical and biomolecular engineering Ph.D. students and post-doctoral researchers per year for the next five years. The six faculty members being supported are Lynden Archer, as the center co-director responsible for implementing its research program; Paulette Clancy, for her research in atomistic and quantum mechanical simulations of electronic transport in NIMS-based composite photovoltaic devices; Fernando Escobedo, for his work in equilibrium thermodynamics and phase behavior of CO2/NIMS mixtures; Don Koch, for his research in theory and Brownian dynamics approaches for modeling NIMS transport properties and structure; David Putnam, for his study of NIMS-based vectors for imaging and drug delivery; and Tobias Hanrath, for his work in characterization of NIMS and NIMS/polymer composite materials for photovoltaic devices.

**What relationship will KAUST-CU have to other centers?**

Research activities in the KAUST–CU center will take advantage of Cornell’s world-class infrastructure of research facilities, such as the High Energy Synchrotron Source (CHESS), the Center for Advanced Computing (CAC), the Cornell Center for Materials Research (CCMR), and the Nanofabrication Facility (CNF), to characterize interactions in NIMS and to understand their effect on rheology, phase behavior, structure, properties, and function. The center will work especially closely with CNF to establish a national multi-user photovoltaic systems characterization laboratory modeled after CNF, which will serve as a hub for prototyping, analysis, and systems build-outs of new solar-energy technologies.
Jeff Tester, First Croll Professor of Sustainable Energy Systems in the College of Engineering

We are pleased to announce that Jeff Tester, B.S. Ch.E. ’66, M.S. Ch.E. ’67, has been chosen as the first Croll Professor of Sustainable Energy Systems in the College of Engineering. Jeff will lead the college's new energy initiative and will be an associate director for the energy division of the new, university-wide, Cornell Center for a Sustainable Future (CCSF). In these leadership roles, Tester will bring together experts in the fields of education and research from across campus to work toward common sustainability goals. As a member of the chemical and biomolecular engineering faculty, Tester will strengthen the school's growing faculty expertise in sustainable energy systems. He will be on campus starting in the fall of 2008.

Tester is the H. P. Meissner Professor of Chemical Engineering at the Massachusetts Institute of Technology and co-chair of an institute-wide task force on energy education. After receiving his undergraduate and masters degrees in chemical engineering at Cornell, Tester earned his Ph.D. from MIT in 1971. His research interests include renewable and geothermal energy systems, advance drilling, hydrothermal reforming, upgrading of biomass and fossil fuels, clean chemical processing in supercritical fluids, and environmental remediation and control technology. He has co-authored more than 200 research papers and ten books including one on sustainable energy that is the first of its kind.

Jeff brings immense international prestige and recognition in the energy arena to Cornell. His activity in matters of renewable energy is too long to include here but, to give you some highlights, Jeff has testified before Congress on several occasions on matters related to energy. He has chaired the National Advisory Council of the National Renewable Energy Lab since 1998. He has been the chair of the governor of Massachusetts's Advisory Committee for the Renewable Energy Trust since 2000, and an advisor to the U.S. Department of Energy's division of geothermal energy since 2001.

Jeff’s family has a tradition of Cornell degrees; his daughter has a B.S. and a D.V.M. from Cornell. We eagerly await Jeff’s arrival.

Cornell Ch.E. Team Takes First Place in L'Oreal National Ingenius Competition

Kavita Baba ’09, Akshay Shekhar ’09 and Reshma Hooda ’09 shared first place in the national L’Oreal Ingenius Competition held on January 10, 2008. The event, held at L’Oreal’s Franklin Manufacturing Plant in New Jersey, was intended to make the plant more environmentally sound by conserving natural resources. Professor Paulette Clancy was the team’s advisor for this national event.

The L’Oréal Ingenius Competition is an annual event in which L'Oreal invites teams of three students who are engineering majors at schools across the country to come up with different ways to solve a given task. Each team had only two days to work on the project.

The Cornell team, named “Pinnacle,” introduced waste-water treatment and recycling into the plant to recycle the water that ran down the drain as a result of the cleaning and sanitization of the tanks in which the cosmetic products are made. They also introduced a revolutionary ultraviolet sanitization light fixture that could be placed in the tanks for sanitizing and then removed. The UV sanitization light fixture replaced the steam that the plant currently uses to sanitize the tanks. By implementing their water recycling system and UV sanitization method, the manufacturing plant could save up to 8 million gallons of water a year and reduce energy costs for heating the steam dramatically.

The Cornell team had six weeks to improve their solution before heading for the international competition on March 13 in Paris, France. They worked with their coach from L’Oreal, Robyn Palang, and the human resource director responsible for the competition, Kimeth Williams. They also had the advice and help of Professors Jeff Varner, Lynden Archer, Paulette Clancy, and Al Center. Professor Varner accompanied them to Paris for the international competition. While they were unsuccessful in the international competition they enjoyed the chance to showcase their project and take advantage of networking events. In 2007, the Cornell team placed second in the national competition.
Twenty-Fifth Annual CEAA Conference Focuses on Sustainable Energy Systems

The twenty-fifth annual College of Engineering Alumni Association (CEAA) Conference, “Sustainable Energy Systems: Investing in Our Future,” was held on March 28–29. The conference was designed to engage the attendees in active discussions on critical energy topics. Gus Noojin, B.S. Ch.E. ’69, former chair of our advisory council and former president and CEO of Shell U.S. Gas and Power, chaired the conference and is to be congratulated on assembling a wonderfully articulate and impressive list of speakers. The audience of faculty members, students, and alumni at this very popular and timely conference was the largest in CEAA recent history.

The keynote speaker, Dr. Mohammed Y. Al-Qahtani, chairman, president, and CEO of Aramco Services Company (ASC), presented the William G. Ohaus ’49 Public Lecture entitled, “A Rational Vision for a Sustainable Energy Future.” His enlightening and data-rich lecture concentrated on the principle that as the world seeks reliable, economical, and environmentally acceptable supplies of energy, a realistic and balanced vision will be needed to incorporate both traditional and emerging energy sources. He suggested that a complementary mix of traditional and new such sources must evolve over time and appropriately take into consideration economics, technological advances, and feasibility, as well as addressing environmental concerns and public acceptance.

Among the many invited speakers were Andrew Hunter, senior lecturer in the School of Chemical and Biomolecular Engineering, and Jeff Tester, B.S. Ch.E. ’66, M.S. Ch.E. ’67, the College of Engineering’s first Croll Professor of Sustainable Energy Systems. In Hunter’s presentation, “Energy Engineering and Meeting the Needs of the Near Tomorrow,” he discussed how the practice of training engineers in discrete disciplines worked well in the past to serve discrete (“silo-bound”) users, but that in the “near tomorrow,” engineers must be trained to evaluate and integrate across technology boundaries. Engineers will need management skills to adjust quickly to a fundamentally changing market. The engineers of the “near tomorrow” must be capable of providing sound cross-discipline advice to policy-makers whose actions will influence energy-use strategies. The presentation described the challenges that must be addressed for these goals to be achieved and how Cornell can contribute in educating its engineers to help meet these challenges.

Tester’s presentation, “The Future of Geothermal Energy—Can It Become a Major Supplier of Electrical Power in the U.S.?” drew from his international expertise in estimating the potential of geothermal energy sources. His talk focused on the need to evolve from our hydrocarbon-based energy system to diversify from the selection of energy options currently available. The presentation centered on engineered geothermal systems (EGS) and how his research evaluates the potential and pathways for geothermal resources to become major suppliers of energy.

Cornell Student Team, “TS Hydro,” Finalists in Global Venture Challenge

Sasikrishnan Kalyanaramasubramanian, M.Eng. Ch.E. ’08, and Trevor Wirsig, M.Eng. Ch.E. ’08, were selected as finalists in the Global Venture Challenge at Oak Ridge National Laboratory. The event took place April 2–4, 2008 in Oak Ridge, Tennessee. K. R. Sridhar, a well-known “green energy” entrepreneur, was the keynote speaker at the event. Our team was one of seventeen interdisciplinary teams of students from universities and one high school that competed with business-oriented ideas centered on technologies to help solve some of the world’s growing energy problems. Their project was a “Potable Water Generator Using Ammonia Refrigeration to Remove Water from Humid Air.” Professor Al Center was their project advisor.

The teams were judged by panels of energy executives, venture capitalists, legal experts, researchers, and entrepreneurs. The winning team, the University of Tennessee, received a $25,000 cash prize.
Design is the ultimate purpose of engineering. Typically, design training is reserved for the final capstone design course in the engineering sequence. In that course, seniors apply engineering science—technological applications of mathematics, physics, chemistry, and biology—to solve a technical problem. Creative solutions are derived from ill-defined problems with insufficient and/or ambiguous data, constrained by economics, safety, and environmental impact.

My goal in CHEME 112: Introduction to Chemical Engineering, has been to introduce chemical engineering design to first-year students by giving them opportunities to practice it. Most are understandably apprehensive about design because they fear the unknown. Exposure to existing designs in reading or lectures can exacerbate this apprehension; although they appreciate the genius of a design, they feel they could never invent a process so clever or a device so sophisticated. CHEME 112 gives them the opportunity to practice design, to gain confidence in their design skills, and, hopefully, to begin to enjoy the challenge of engineering design.

Design exercises in this course start simply and evolve by iterative problem definition and analysis. A simple, workable design should be sufficiently obvious that students can gain an initial foothold. By sketching an initial design, students show that they have successfully translated the exercise statement into a workable design and assimilated the situation. By doing so, they reinforce their knowledge of the problem, and change from passive readers to active designers.

To draft an initial design, I teach them to start at a key step, usually a chemical reaction, and then find ways to provide the reactor input and to treat the reactor output. Assessment of the viability of the design is built into the exercise statement. Students must know the fate of any substance that enters the reactor(s), and which substances can be separated.

The exercise guides them through improvements by explicitly stating the criteria for a better design. For example, they might use benzene as a solvent. The exercise statement will list environmental impact and safety as qualitative criteria, and will state that benzene is toxic and a suspected carcinogen. Students may devise alternatives that avoid benzene, but subsequently find that this requires more process units. The exercise statement states the relative priority of environmental impact and number of process units. Students try to come up with a reactor input that contains reactants only, which may require an awkward solid–liquid separation. Allowing an inert impurity to pass through the reactor may avoid the solid–liquid separation, and allow purification of the product by a relatively easy liquid–gas separation. In critical analysis, design criteria must be ranked. I have found that students tolerate arbitrary criteria, but are frustrated by ambiguity. I assure them that they will later learn the skills to define and rank design criteria, but that here the goal is design evolution.

They explore alternatives by examining the true objective at each point in the process. For example, is the objective to separate air into oxygen and nitrogen, or is the objective to produce nitrogen? The latter allows one to convert the oxygen into a more easily separated substance. Or, is it truly necessary for the reactant stream to be free of impurities, even reactive impurities? Perhaps it is preferable to allow a reactive impurity to enter the reactor, and then separate the reacted impurity from the product later on.

Initially, students apply qualitative criteria to judge their designs (minimize the number of process units, avoid toxic solvents, avoid...
To improve their critical analysis skills, I introduce elementary mass balances that allow students to use a quantitative analysis of mass flows to maximize the flow rate of product. Energy balances require that several factors are considered, two of which are temperature change and phase change. Elementary energy balances consider these two factors only.

But the ultimate basis for choosing the best design is economics. Given two viable, environmentally sound, and safe designs, which is the better design? By analogy to the conservation of mass and the conservation of energy, I propose the conservation of assets. Like the conservation of energy, which grew incrementally from Liebniz's kinetic and potential energy, I develop an asset balance to introduce students to fundamental process economics quantities such as operating costs, capital costs, revenue, profit, and return on investment. With this background, their analysis evolves from arbitrary to absolute. They evaluate the consequences of no recycle, recycle by splitter, or recycle by separator by the effect on the bottom line—return on investment.

Design exercises based on current research show the chemical engineer's role in transforming research discoveries into commercial processes. In recent years I have devised design exercises based on low-temperature synthesis for ammonia (Nature 427, 527 [2004]), fuel cells that run on methane (Nature 400, 649 [1999]), a new synthetic route to store H₂ as boron hydride (U.S. Patent 6,586,563, July 1, 2003—Millennium Cell, Inc.), the synthesis of tissue plasminogen activator (U.S. Patents 4,766,075, August 23, 1988 and 5,763,253, June 9, 1998), and a new route to convert methane to methanol (Science 259, 240 [1993]).

Design exercises are an excellent opportunity to develop teamwork skills. Throughout the semester, teams are given guidelines on productive teamwork practices. Initially, we require that every team member read the exercise and sketch a crude solution before they meet. Students are coached on team interactions; for instance, how do you explain a creative idea to a team and encourage creative thinking from team members? At the beginning of the course, students identify their preferred learning style. Throughout the course, students share experiences on how to design and learn with teammates of different learning styles. Although teams are motivated by the design assignment, the real goal is learning. To stress this, I require team members to rate their peers on their contribution to learning—how much did each team member contribute by explaining or (equally important) by questioning? Students learn that their team's output is greater than sum of the efforts of the team members, both in the design they create and in the learning they acquire. Teamwork also helps to treat the impostor syndrome; students realize they are as capable as their peers.

The course includes design tournaments in which teams (acting as companies) compete to produce the most product or achieve the highest return on investment. Judging criteria may include the balance between operating and capital costs, the economy of scale, the importance of rapid introduction of a novel product, and the mutual benefit of inter-company agreements. In one such competition, students manufacture a new pharmaceutical: the details of the process are fixed by the FDA and various regulatory agencies. Student teams decide how to allocate their start-up money for standardized equipment, operations, and research. In another competition, teams must choose reactor (high conversion and poor selectivity vs. low conversion and good selectivity), product purifier (high cost and high product recovery vs. modest cost and modest product recovery), whether to recycle, and whether to separate before recycling. The optimal choice of each depends on the process they design and the degree of collaboration with other teams. Teams may trade intermediate products and services. For example, one company may decide to purchase only a reactor and then sell intermediate products to other companies with extra capacity for separation. Students learn from the tournaments and enjoy the friendly competition.

UPCOMING EVENTS

Fall 2008

Homecoming
September 26-28, Big Red vs. Yale
Join us for a warm “tailgate party” after the game in the Fred H. Rhodes Lounge, 128 Olin Hall

Raymond G. Thorpe Lecture
Check CBE web site for details.

Cornell AIChE Reception
Tuesday, November 18 7-9 p.m.
The Union League of Philadelphia
South Marble Room
Online registration form (www.cheme.cornell.edu/cheme/alumni/Alumni-Events.cfm)

Spring 2009

Julian C. Smith Lecture
Check CBE web site for details.

Commencement
Sunday, May 24
Details of Olin Hall Diploma Ceremonies TBA on the CBE web site

Reunion Breakfast
Saturday, June 6, 8–11 a.m., Olin Hall. Tent on Ho Plaza (Fred H. Rhodes Lounge in case of rain)
With the renovation in full swing this year, our plans for Commencement 2009 and Reunion 2009 are still being made. Please look on our web site (www.cheme.cornell.edu) for the latest news.
We are again very fortunate to have a large cadre of alumni who returned to campus to help us with our educational programs. Alumni give the students the benefit of their experience and enrich our classes. Several of these folks have served in multiple capacities. Our thanks to all the alumni who contributed to our educational programs with the valuable gift of their time this year:

**CHEME 462: Chemical Process Design**
The senior process design course benefited with the expertise from our Ch.E. alumni. The alumni came to campus several times, providing a “fresh eyes” review at mid-semester and evaluating the final design presentations.

- Bob Ganz, Exxon (retired)
- Mike Gibson, ChemOrganics
- Kent Göklen, Merck
- Andy Irwin, Irwin Engineers, Inc.
- Jim Staid, Exxon (retired)

**Presenting (left to right):**
- Joe Bellucci
- Derrick Tang
- Denise Catapano
- Alison Levy

**Evaluating the Design Presentations (left to right):**
- Brian Earl, (retired Prof., U of Canterbury, New Zealand)
- Al Center
- Elizabeth Marcil
- Man Kit James Leung
- Mike Duncan
- Mike Gibson (ChemOrganics)

- Bob Ganz, Exxon (retired)
- Mike Gibson, ChemOrganics
- Kent Göklen, Merck
- Andy Irwin, Irwin Engineers, Inc.
- Jim Staid, Exxon (retired)

**PICTURED LEFT TO RIGHT:**
- Namrata Kothari, Al Center, Nicolas Ciole, Daniel Brecher, Daniel Lee
- Ovie Omene, Jim Staid (retired, ExxonMobil), Susan Kim, Seihwan Jeong, Minyoung Lee

**CHEME 432: Chemical Engineering Laboratory**
These Ch.E. alumni shared their knowledge of fluid dynamics, heat and mass transfer, separations, and other operations.

- Dan Benedict, Exxon Mobil
- Jennifer Carrano, Shell
- Bill Cleary, Corning
- Robert Ferris, Automation & Control Specialists
- Stephanie Glass, Exxon Mobil
- Eric Hoag, Dupont
- Kristina Phipps, Clorox
- Hiren Shah, Exxon Mobil

**PICTURED LEFT TO RIGHT:**
- Rachael Barton, Emily Reasor, William Cleary (Corning), Jenny Dionne, Carly Anderson.

**PICTURED LEFT TO RIGHT:**
- Namrata Kothari, Al Center, Nicolas Ciole, Daniel Brecher, Daniel Lee
CHEME 528: Renewable Resources from Agriculture—Sugarcane as a Feedstock (module)
As executive director of the Godavari Sugar Mills Ltd, this alumnus shared his expertise in distributed and localized energy production using sugarcane as a renewable resource (see page 25). This 1-credit, 1/3 semester course, was enthusiastically received by the students. It was offered for the second time in two years, and we hope to be able to offer it again in 2010 pending Samir’s availability.

Samir Somaiya  
Godavari Sugar Mills Ltd  
Instructor for CHEME 528

CHEME 572: Managing New Business Development
Case studies were presented by these alumni introducing the typical fundamental factors driving a business venture, implementing strategies and management skills:

Bob Ganz  
Exxon (retired)  
CHEME 572 Board, Instructor (Fall 2008)
Charlie Shafra  
Pfizer (retired)  
CHEME 572 Board
Chris Wolcott  
Mobil (retired)  
CHEME 572 Board
Steve Elkins  
Bank of New York (retired)  
CHEME 572 Board
Claudia Elkins  
Akzo Nobel (retired)  
CHEME 572 Board
(Wells College alumna)
Kent Göklen  
Merck  
CHEME 572 Board
Carrie Shearer  
Caltex (retired)  
CHEME 572 Board and lecturer on international human resources
Terry Yamada  
Zurich Re  
CHEME 572 Lecturer on risk management

* We are also very grateful to our alumni who “gave back” by serving on our Advisory Council this past year (see page 17).
Kent Göken, B.S. Ch.E. ’79, moved to GlaxoSmithKline in August 2008 to direct a group developing purification processes for therapeutic proteins. Kent was previously Senior Scientific Director of Biopurification Development at Merck, where he worked since completing his graduate education in 1986. Kent will continue his involvement with the school in his new appointment as an adjunct professor and as a member of its advisory council.

Charles Shafran, B.S. Ch.E. ’70, M.Eng. Ch.E. ’71, has recently retired from Pfizer Global Manufacturing as vice president of strategic planning after completing a three-month assignment as a Pfizer Global Health Fellow, working on malnutrition for the U.S. Agency for International Development in Lilongwe, Malawi. His career with Pfizer began in 1971 following graduation. He is currently president of the School of Chemical and Biomolecular Engineering’s Advisory Council. Charles will share the teaching responsibilities with Al Center and Bob Ganz in a new course called, “Introduction to Chemical Processes.” He also plans to consult on transactions involving pharmaceutical manufacturing and research facilities.

1970s

1980s

Marshall Watson, B.S. Ch.E. ’81, joined Shell Oil Co. as a reservoir and production engineer after graduating from Cornell. In 1984, he worked as a reservoir engineer for Gaffney, Cline & Associates. In 1985, Marshall joined Chuska Energy/ACT Operating Co. as a vice president of production and served on their board of directors. Following the sale of Chuska to Harken Energy in 1992, he became vice president of engineering until rejoining ACT Operating Co. in his current position as vice president. ACT is active in West Texas Permian Basin EOR projects and coaled methane research and exploitation throughout North America. In 2004, Marshall was awarded Chancellor’s Fellowships for both his M.S. and Ph.D. work at Texas Tech University. Currently, Marshall is teaching several courses and researching coaled methane well completions at Texas Tech, while still working for ACT. Marshall is a member of the Society of Petroleum Engineers, and Pi Epsilon Tau and Phi Kappa Phi honor fraternities, and is on the national board of directors of the Society of Petroleum Evaluation Engineers.

Andrew Scirri, B.S. Ch.E. ’88, M.B.A. ’04, has been appointed as president and chief operating officer of MedHesives and its wholly owned subsidiary, North Sea Resins®. The company, which is based in Ithaca, develops field application systems based on novel photopolymerizable resins, including coatings and adhesives technologies for industrial, marine, medical, and other strategic applications. Prior to joining MedHesives, he was employed at Dupont for eleven years, managing and leading the operations of a chemical manufacturing facility, and was employed two years as plant manager with Emerson & Cuming Composite Materials. Andrew was a cofounder and CEO of Linguaflex, Inc., a medical device company specializing in the treatment of sleep apnea. He has also worked as a consultant for several small businesses and emerging companies. Recently, he served as CEO of Fingerlakes Aquaculture, Inc.

Michael Filler, B.S. Ch.E. ’00, went on to Stanford for graduate work upon graduating from Cornell. His Ph.D. at Stanford was focused on studying the interaction between organic molecules and semiconductor interfaces for applications in molecular electronics and nanopatterning. His post-doc at Cal Tech focused on nanostructured photovoltaics. One of Mike’s recent publications in the Journal of the American Chemical Society demonstrated the first photovoltaic-Si wire solar cell, and was an Editor’s Choice highlight in Science. Michael will begin a position as assistant professor in the School of Chemical and Biomolecular Engineering at Georgia Tech in January 2009. He got married in August in Livermore, Calif.

1990s

1980s

Samuel Lai, B.S. Ch.E. ’99, is currently a post-doc at Johns Hopkins University (JHU), developing trans-mucosal nanosystems for therapeutic applications at mucosal organs. He received his Ph.D. in October 2007 from JHU for his pioneering work on mucus-penetrating nanoparticles. He will begin a research faculty position at JHU this fall.

Ingui Song, B.S. Ch.E. ’03, received his Ph.D. from Georgia Tech in September 2007. He is currently working for Texas Instruments as a diffusion/wet etch process engineer. Ingui got married this past May.

2000s

Robert Ferris, B.S. Ch.E. ’04, M.Eng. Ch.E. ’05, has been accepted into the Ph.D. program at Duke University Pratt School of Engineering in the Department of Mechanical Engineering and Materials Science. He has begun work in nanolithography and surface chemistry characterization with biosensing.

Thomas Ricketts, B.S. Ch.E. ’03, left Anika, a medical device manufacturer, in September 2006, about a week before he moved to the U.K. for graduate school. He received a M.Sc. degree in pharmacology (with distinction) from Oxford University in September 2007, and moved back to Boston shortly thereafter. Since November he has been working for ETEX, a medical device company in Cambridge, Mass., as a research engineer.
and hydrogen production applications. To comple-
ment his continued work in engineering, Robert has also
been accepted to the Duke University Fuqua School of
Business and will pursue an M.B.A. in conjunction with his
Ph.D. in materials science. Robert was accepted into
each school independently and is one of the first to
attempt this combination of interests.

After living and working in the Triangle Area of North
Carolina for nearly three years, his decision to return to
academic study stems from his research performed during his undergrad-
ate and graduate degrees. Though eager to continue
his education at Duke, he recognizes the unique and
comprehensive education received during his time at
Cornell University. He holds Cornell chemical engineering
as the paramount example of a school dedicated to the
development of its students. His hobbies currently
include art, music appreciation, and extreme endurance events. He is currently
training for his third Ironman event, planned for August
2008, and is hoping for an improvement on his fifth-place
age-group finish from last year’s Ironman Coeur d’Alene.

Brian Ranade, B.S. Ch.E. ’05, is a project development
engineer for the Procter and Gamble Company in Cincin-
nati. He works in the haircare shampoo department and
leads the process development of several different
projects. He has traveled to several of P&G’s manufactur-
ing plants including Blois, France, and Guangzhou,
China. Brian has gained an extensive knowledge and experience
from CHEM 462: Chemical Process Design, about which he says, “The kind of projects
we did at Cornell has definitely applied to the proj-
ect work I do now daily.”

Robert Hutchins, B.S. Ch.E. ’06, is working for Lummos
Technology as a chemical process engineer. He began
working on hydrocracking technology, which involves
converting butylenes and ethylene to propylene, recently, he has been researching catalysts
for olefins conversion technology in the Lummos
Technology Development Center. Robert has come to
Cornell on occasion seeking recruits for the company.

Jeffrey Wu, B.S. Ch.E. ’06, is attending medical school at
SUNY Downstate in Brooklyn. He received his M.S. in
physiology from Georgetown University in June 2007. Jeffrey traveled to Korea, Japan, and China last sum-
mer. While in China, he took a fifteen-day refresher course in
the Chinese language at Beijing University.

Recombinant
HB, a Hepatitis B vaccine, in the Bio/Sterile
Validation department. Her job responsibilities include
testing/validating SIP and CIP cycles used to sterilize
and clean equipment that process vaccines, ensuring
compliance with current good manufacturing practice
(GMP) standards, matrixing equipment to streamline vali-
dation testing, and providing validation support for new
products and new processing equipment relating to
recombinant and bacterial vaccines. In her leisure time,
she enjoys running, cooking, and is currently learning
to play the guitar. She is also considering commuting to
work by bike due to climbing gas prices.

Betty Wei Jiang, B.S. Ch.E. ’07, is currently working at
Bank of America as an equity research financial analyst on
the Oil & Gas Exploration and Production team. Under her senior analyst,
she follows seven domestic independent E&P companies operating in natural-gas producing regions, such
as the Marcellus shale and Barnett shale, as well as two Canadian companies working on Alberta oil sand. Her team
also analyzes the supply and demand situations for
natural-gas and oil-based economic industrial trends. She states, “My chemical engineering background had
earned me credibility as a ju-
ior analyst, but also helped me to understand quickly
the technical aspect of the
various operations.” By
following the energy sector
from a macro perspective, in
addition to knowing “how
resources are produced, she
has also gained insights on “where” it goes, “what” is
involved in the supply chain, “who” owns the rights, and,
most importantly, “why” resource prices are trading at
record highs. Betty affirms,
“As high energy prices be-
come an everyday concern,
most of my classmates are
trying to resolve the supply
crisis that is the core of
the current situation, while
I am just trying to facilitate
distribution of such informa-
tion to my protégés.”

Arturo Lo Guila, M.Eng.
Ch.E. ’07, is a process
engineer for the facilities engineering group at Exxon-Mobil Development Company (EMDC) in Houston, Texas.
In the past year, he has been involved in supporting the
engineering function in performing conceptual engineering
work and optimization studies for several new de-
velopment opportunities for EMDC. These activities have
taken him, on a regular basis,
to the United Arab Emirates, Italy, and France to work with
different contractors and vendors such as KBR, Air
Liquide, and GE Oil & Gas.

Kimberly Lyle, B.S. Ch.E. ’07, went on a long European
vacation following gradu-
ation, after which she took a job with Air Products and
Chemicals in New Orleans. She worked in a maintenance
group and spent a lot of time
crawling all over compres-
sors and inside reformers.
She is currently in Allentown, Pa., for a second rotation in the career development
program with Air Products, working as a process design
engineer on hydrogen oxygenator systems and
working towards a masters degree at Lehigh at night.

Caroline Mline, B.S. Ch.E. ’07, is working as the tech-
ical support analyst for Argonne National Laboratory’s
High Flux Isotope Reactor. After graduating from
Duke, she continued her education at Illinois
(Urbana-Champaign) pursuing her Ph.D. in chemical engineer-
ing. Her research is in the
field of systems biology, and her project is looking at using systems biology and meta-

In Memoriam

We are sad to note the passing of several alumni this past year. They remain alive in our memories.


William Daniel Forqeng, Jr., B.S. Ch.E. ’58, July 30, 2007, Vancouver, Washington

Jolopgh Edmund Stou, B.S. Ch.E. ’67, M.Eng.
Ch.E. ’68, August 25, 2007, Rockaway, New Jersey

Douglas Cain Yearley, B.S. Ch.E. ’58, October 7, 2007, Osterville, Massachusetts

Calvin Lewis Martin, B.S. Ch.E. ’48, October 16, 2007, Richmond, Virginia

Dixon Barclay Hoyle, B.S. Ch.E. ’48, October 18, 2007, Gainesville, Virginia

Edwin Clifford Younghouse, B.S. Ch.E. ’49, November 9, 2007, Cranford, New Jersey

John Johnson Potter, Jr., B.S. Ch.E. ’45, November 21, 2007, The Villages, Florida

Thomas Sherman, B.S. Ch.E. ’70, M.Eng. Ch.E.
’71, December 6, 2007, Manahawkin, New Jersey

William Chase Ruch, B.S. Ch.E. ’45, B.Ch.E. ’47, January 2, 2008, Sun City Center, Florida

Robert Frank Rakowski, B.S. Ch.E. ’64, M.Eng.
Ch.E. ’66, February 19, 2008, Athens, Ohio

Dale Richard Pulver, B.S. Ch.E. ’52, March 26, 2008, Mentor, Ohio

Howard William Blose, B.S. Ch.E. ’44, B.Ch.E.
’47, May 9, 2008, New Canaan, Connecticut

Michael Strenk, B.S. Ch.E. ’07, is a process engineer
for BP at its Carson Refinery in Southern California. His
current assignment is unit engineer for Carson’s FCCU
(fluidized catalytic cracking unit). Michael is grateful for being exposed to fluidization
as an undergrad and feels
that the process control and design courses have
rendered themselves invaluable on the job. In regard to Pro-
fessor Center’s design course he comments, “Design was an unbelievably valuable
educational experience that has returned huge rewards
for me already.”
Many Ch.E. alumni came to Olin Hall after the Big Red Homecoming game against Colgate on Saturday, October 13, 2007. All had fun at the after-the-game reception hosted by the school in the Fred H. Rhodes Lounge.

Photos by Thomas Hoebbel
The School of Chemical and Biomolecular Engineering’s Advisory Council

The Advisory Council of the School of Chemical Engineering was created in 1981 to assist in development and long-range planning for the rapidly growing school. To continue the tradition of excellence in professional programs while expanding graduate research programs, Julian C. Smith, then director of the school, asked representatives from industry and academe to join in giving the school “the guidance from knowledgeable people who have an interest in the quality of our future—and who can help us in charting our directions.”

Advisory Council members serve a three-year term and convene once a year, meeting with faculty and students of the School of Chemical and Biomolecular Engineering and administrators of Cornell University and the College of Engineering. This year's meeting is scheduled for September 19 and 20.

Current Members
Carol Boyd Amos, B.S. Ch.E. ’79, M.Eng. Ch.E. ’80
Technology Manager, Process Engineering
DuPont Engineering
2006–2008

William E. Bentley, B.S. Ch.E. ’82, M.Eng. Ch.E. ’83
Robert E. Fischell Distinguished Professor and Chair
University of Maryland
2008–2010*

H. Sam Bergh
Vice President of Engineering
Symyx Technologies, Inc.
2006–2008

Roger T. Bonnecaze, B.S. Ch.E. ’85
Professor and Chair, Chemical Engineering
University of Texas, Austin
2008–2010*

Bobby Bringi, Ph.D. Ch.E. ’91
President and CEO
MBI International
2007–2009

Maria Burka
NSF Program Manager
National Science Foundation
2008–2010*

Scott Diamond, B.S. Ch.E. ’86
Arthur E. Humphrey Professor of Chemical and Biomolecular Engineering and Bioengineering
University of Pennsylvania
2008–2010*

Kent E. Gökløn, B.S. Ch.E. ’79
Merck & Co, Inc. (retired)
2005–2008

Ignacio E. Grossmann
Professor of Chemical Engineering
Carnegie Mellon University
2008–2010*

Martha Jones, Ph.D. Ch.E. ’97
Staff Reliability Engineer
Intel Corporation
2006–2008

Ronald Larson
Chair and G. G. Brown Professor of Chemical Engineering
University of Michigan
2005–2008

Charles M. Shafran, B.S. Ch.E. ’70, M.Eng. Ch.E. ’71
Pfizer Inc. (retired)

Eric Shaqfeh
Professor of Chemical Engineering
Stanford University
2007–2009

Retired from the Advisory Council in 2007

Joining the Advisory Council in 2010
Kristen A. Fichthorn, Fenske Professor of Chemical Engineering and Professor of Physics, Pennsylvania State University, and Michael DeAngelis, Ph.D. Ch.E. ’93, Intel Corporation, will join the council in 2009.

* New to the Advisory Council in 2008
Memories and Beyond: The Graduating Class of 1953 Looks Back Fifty-five Years

By Thomas Weber

In the summer of 2006, Tom Weber, B.S. Ch.E. ’52, Ph.D. Ch.E. ’63, mentioned in a letter to Professor Paulette Clancy, the William C. Hooye Director of the School of Chemical and Biomolecular Engineering, that he had many fond memories of his days in Olin Hall. She asked if he might jot some of these down. Two histories of the school had been written before, but these concentrated on the “bricks and mortar” aspects of the school and its program.

That set Tom to thinking that it would be nice to have some personal histories from the graduates, not only about where their careers had taken them. Tom contacted his classmate, Jim Ling, B.S. Ch.E. ’52, who said he would write something. Jim, in turn, asked Irwin Margoloff, B.S. Ch.E. ’52, to help. From this nucleus came the idea of making this a class project.

The class had entered Cornell in 1948, numbering between 106 and 108. Five years later twenty-five graduated, of which seventeen are still living. Tom solicited write-ups from them. By the spring of 2007, eight had written up their memories and told what they had done during their careers. In the meantime, Tom came across a number of articles and pictures stored in his home and more members of the class continued to send in their memories.

While the original target date for the project was the Fifty-fifth Reunion of the Alumni Class of 1952 (The Graduating Class of 1953 are considered members of the Alumni Class of 1952), the scope was expanded to include current pictures of the class and a brief description of the program between 1948 and 1953, including some mention of costs (tuition, books, and dormitories) and the admission process at that time—both very different from today’s! Much of the focus is on Dusty Rhodes, the director and founder of chemical engineering at Cornell, and the faculty. The historical material includes a copy of the Senior Banquet Program, a spelling test (of all things) in the infamous fourth-year Unit Ops Lab, and some of Dusty’s corrected pages for one of the reports.

All told, there were sixty pages of text and sixty pictures. Jim Ling arranged for its publication by Coren Printing, Inc. in Windsor, Colorado. Costs have been covered by contributions from the class. Although only a very limited number of copies were printed, the complete booklet is available in the Cornell archives, thanks to the assistance of John Saylor in the Cornell Engineering Library. The book is directly accessible on the Internet at ecommons.library.cornell.edu/handle/1813/10732 in two PDF versions.

One is a so-called “Optimized for Web version” of 10.01 MB; the other is a “Large-size version” of 45.15 MB. (Professor Julian Smith’s book, The School of Chemical Engineering at Cornell: A History of the First Fifty Years, published in 1988, is also available on this web site.)

This monograph is believed to be unique and may be of interest to those who passed through the halls of Olin during the era of Dusty Rhodes.
CBE School Holds Hooey Staff Appreciation Day

Thanks to the Austin Hooey gift to the School of Chemical and Biomolecular Engineering, staff members enjoyed Staff Appreciation Day on June 5. They took a voyage on the M/V Columbia on Cayuga Lake, and enjoyed the relaxed atmosphere of the boat and a lovely lunch on board.

Shelby Clark-Shevalier completed an internship at the State Theatre this past year in association with a course she took at Ithaca College as part of the curriculum for a graduate degree in communications. She worked with the marketing committee to generate promotional ideas and to monitor their success. Shelby also had the distinguished honor of receiving the highest GPA in her graduate curriculum. Her training at Ithaca College will be a great asset next year when she will play a key role in developing a crisis-response plan for the department, so that we are prepared to react to situations like the tragedies of Virginia Tech.

Two staff members have played irreplaceable roles in the two-year planning process for the renovation of Olin Hall: Facility Director Brian Ford’s inestimable knowledge of every inch of Olin Hall has been a vital asset in the designs for the Olin Hall renovation. His suggestions for solutions to problems as diverse as routing ductwork in the basement, to placement of generators, to landscaping, have eased many a difficult moment in the design phase and have undoubtedly saved us money. Brian and Colleen McClenahan, our business manager, have pored over every line and notation on the 2” thick booklet of oversized design documents, have endured many a long meeting with the designers, and have provided thoughtful ideas in the midst of a dizzying array of options for the redesign. Colleen has also had to liaise and negotiate on the budget side of the renovation equation and is now on first-name terms with the Director of Debt at Cornell (what a wonderful job title).

This past summer the Department of Biomedical Engineering moved to the new life sciences technology building, Joan and Sanford I. Weill Hall. Belinda Floyd, Diana Guilford, and Bonnie Sisco were among those leaving Olin Hall to take up residence in the new building. Bonnie began her Cornell career with CBE on July 1, 1971, supporting the faculty of chemical engineering. She later became an administrative assistant to Mike Shuler and Claude Cohen on the third floor, and advanced to assisting just Mike Shuler when he began the bioengineering program. During a renovation project on the third floor in 1985, Bonnie, in her fun-loving and spirited character, wrote her name and the date “85” in the concrete of the wall. Bonnie has attained thirty-seven years of dedicated service and will continue to add to those years at Weill. Although she enjoys her new surroundings in Weill Hall, her spirit will live on forever in the halls of Olin, for it is surely “set in stone.”

Sue Shipman and Shelby Clark-Shevalier added to the extended family at Olin, as both delivered “first” babies this past summer. Shelby gave birth to Carter John (7 lbs, 19 1/2 inches) on June 19 and Sue gave birth to Madelyn Grace (6 lbs. 7 oz., 18 inches) on July 24. Congratulations to both families!
On Sunday, May 25, seventy-one bachelor of science degrees in chemical engineering were conferred during the school's diploma ceremony at Cornell. As usual, there was a crowd of more than six hundred happy undergraduate and graduate students, relatives, friends, and faculty members who attended the ceremonies and luncheon.

The undergraduate diploma ceremonies followed the university-wide commencement ceremony at Schoellkopf Field. While waiting for the graduates to arrive in the lecture halls, their families and guests enjoyed a slide show of photographs contributed by the students as a reflection of their four years at Olin. The faculty presenters, Professors Duncan, Center, Hunter, and Varner, announced each person by name, and noted the contributions of each design team as they posed for photos with their diplomas in hand. This year, the design groups worked on projects in coker distillate upgrade, MTBE decomposition, ammonia from UGCG syngas, and the renewable fuels: propane diol and ethanol from corn.

Almost 40 percent of the class accepted employment at seventeen different companies. The largest employers were Conoco Phillips (4), Johnson & Johnson (3), Merck & Co. (3), and Shell (3). The average starting salary was more than $68,000, making chemical engineering one of the highest-paid majors in the university. This year's graduates are employed in chemicals (2), consulting/engineering (8), consumer products (4), petroleum products (8), pharmaceuticals (5), and government defense contracting (1). Four students were still looking for employment in the first week of May.

Approximately half of the Class of 2008 are continuing their studies in graduate school next year. Five have begun chemical engineering Ph.D. programs. Four are pursuing other graduate degrees in such areas as applied physics and materials science (1), bioengineering (1), engineering science and applied mathematics (1), and mechanical engineering (1). Eleven have joined our M.Eng. program. Ten entered the biomedical engineering M.Eng. program at Cornell. Two are pursuing a master in engineering management through the Department of Civil and Environmental Engineering at Cornell. Another student will attend law school, and two have started medical school.

1. Denise Catapano
2. Adepeju Adeniji
3. Mou Chung Ng
4. Daniel Lee
5. Minyoung Lee
6. Ka Yip
7. Alison Levy
8. Lindsay Jones
9. Jenny Dionne
10. Seung-yeon Sally Kang
11. Joan Zhou
12. Claudia Rodriguez
13. Cassie Murillo
14. Gautham Sridharan
15. Ashley Weber
16. Sheela Damle
17. Jenny Prigge
18. Jaime Ambrosio
19. Emily Reasor
20. Calinda Yew
21. Catherine Manix
22. Gabriela Moreira
23. Justin Li
24. Joe Bellucci
25. Nimil Sood
26. Seiwan Sam Jeong
27. Troy Watson
28. Namrata Kothari
29. Kristen Derhaag
30. Rachael Barton
31. Rebecca Gauthier
32. Michele Annibal
33. Allison Lee
34. Jenna Rea
35. Tisha Joy
36. Olivia Nnadi
37. Derrick Tang
38. Kartoo Chow
39. Ben Schreiber
40. Dennis Kim
41. Carly Anderson
42. Thomas Ober
43. Si Kathy Chen
44. Ariel Waitz
45. Jeremy Kwong
46. Danny Brecher
47. Guojian Ou
48. Shanon Sim
49. Matthew Dumouchel
50. Matt Spencer
51. Sean Harrington
52. Ting Wun Daphne Ng
53. Michael Davis
54. Corey Siegel
55. Chris Richards
56. Derek Biederman
57. Eweni Habursky
58. Jason Brody
59. Keith Wong
60. Eric Purzycki
61. Nick Ciole
62. Ali Ahmed

Not pictured: Yuka Asano, Sean Fitzgibbon, Nicholas Hoh, Susan Kim, Max Lieberman, Nwanyinma Nnodum, Jalal Siddiqui, Rob Yackee
It was the turn of the 8s and 3s this past June 7. A lovely breakfast was hosted by the School of Chemical and Biomolecular Engineering for its alumni under the tent in Ho Plaza.

Kent Fuchs, Dean of the College of Engineering, and Paulette Clancy, director of the school, welcomed and spoke to the alumni. Al Center gave the alumni an update on the senior-year capstone courses.
American Chemical Society Minority Fellowship
This award is merit-based and awarded to ethnically diverse students who are studying engineering and science.

Olanike Green ’11

American Chemical Society, Research Internship in Science and Engineering (RISE) Scholarship
Research Internships in Science and Engineering give students in the fields of science and engineering the chance to spend a summer working with German doctoral students on research projects. Participants receive stipends from DAAD (a German academic exchange service).

Kartoa Chow ’08

American Institute of Chemical Engineers, Othmer Sophomore Academic Excellence Award
This award was established by the AIChE to recognize undergraduate academic excellence.

Daphne Ng ’08

American Institute of Chemical Engineers, Twin Tiers Outstanding Scholar Award
This award was established by the AIChE to recognize outstanding scholarship and leadership in campus, community, and professional activities.

Matt Dumouchel ’08

American Institute of Chemists 2008 Baccalaureate Student Award
This award was established by the AIC to recognize undergraduate ability, leadership, character, and scholastic achievement.

Derrick Tang ’08

Daphne Ng receiving the AIChE Othmer Sophomore Academic Excellence Award from Professor Mike Duncan at the Senior Dinner, Thursday, May 1

American Chemical Society Othmer Sophomore Academic Excellence Award

Austin O. Hooey Research Excellence Recognition Award
This award was established by the Austin O. Hooey Endowment to recognize quality research by graduate students leading to the Ph.D. degree.

Colman Carroll
Lydia Contreras
Adam Fisher
Xiong Wen (David) Lou

Charles Winding Scholarship
This scholarship was established by alumni in memory of Professor Charles Winding, former director of the school, to provide financial assistance to graduate students.

Jason Boock

Clyde Mason Award
This award was established by an alumna as a tribute to Professor Clyde Mason, to provide financial assistance to graduate students.

Hsiu-Yu Yu

Cornell Engineering 2007 Co-op Student of the Year Award
This award is given to one student each year who demonstrates leadership, initiative, and innovation in the Co-op position. Students are nominated by their supervisors.

Keith Wong ’08

Cornell Engineering 2007 Co-op Student of the Year Award

Fred H. Rhodes Scholarship
This scholarship was established by family and alumni in memory of Professor Fred Rhodes, founder of the school, to provide financial assistance to Ph.D. candidates.

Anthony Altieri
Colman Carroll
David Chen
Brenton Cox
John Dingee
Krishna Iyengar
Lucas Landherr
Henry Lau
Eric Lee
Heidi Park
Brian Pasquini
Ju Ho Song
Juan Rincon Valderrama
Eduard Zhmayaev

Genentech-Scheele Outstanding Junior Award
This award was established by Genentech in memory of Professor George Scheele, former associate director of the school, to recognize academic excellence, and achievement in campus and professional activities.

Nicholas Hoh ’08

Goldwater Scholarship
Scholars are selected for this prestigious award on the basis of academic merit in science and engineering and are expected to pursue careers in the fields of mathematics, the natural sciences, and engineering.

Parbir Grewal ’10

Ariel Waitz receiving the Outstanding Service to School Award from Director Paulette Clancy

Goldwater Scholarship

Henry L. Mattin Scholarship
This scholarship was established by the Mattin family to provide scholarship funds for Ph.D. students.

John Dingee

H. N. Scholarship
This scholarship was established by an alumna to provide financial assistance to graduate students.

Praveen Agarwal
Umang Agarwal
Anthony Altieri
Prakash Ananth
Colman Carroll
Anirikh Chakrabarti
John Dingee
Linelle Fontenelle
Vibha Kalra
Edward Kish
Lucas Landherr
Henry Lau
Deyan Luan
Jeremy Luterbacher
Tom Mansell
Jeanne Panels
Sudhir Prabhu
Peng Wang
Allen Yang
Zichao Yang

Paper Selection for the 2008 International Medical Informatics Association Yearbook of Medical Informatics
Deyan Luan’s paper in a 2007 issue of the journal PLoS Computational Biology, “Computationally Derived Points of Fragility of a Human Cascade Are Consistent with Current Therapeutic Strategies,” was selected for this yearbook, based on quality of the research in this high-impact open journal.

Deyan Luan

John McMullen Scholarship
The John McMullen Scholarship recognizes undergraduate students with outstanding achievements both in the classroom and beyond. Selection is reserved for students with potential for exceptional success in the field of engineering.

Kartoa Chow ’08

Liu Memorial Award
This Graduate School award was established by friends and colleagues in memory of the late Professor Tie-Ching Liu and his wife, Ya-Chao.

Xiong Wen (David) Lou

H. N. Scholarship

Joe Arieti

Liu Memorial Award

Deyan Luan

John McMullen Scholarship

Kartoa Chow ’08

Goldwater Scholarship

Henry L. Mattin Scholarship

H. N. Scholarship

Paper Selection for the 2008 International Medical Informatics Association Yearbook of Medical Informatics

Ariel Waitz receiving the Outstanding Service to School Award from Director Paulette Clancy

John Dingee

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H. N. Scholarship

Goldwater Scholarship

Paper Selection for the 2008 International Medical Informatics Association Yearbook of Medical Informatics

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L’Oréal National Ingenius Competition
This competition was established by L’Oreal as a contest for engineering students aimed at providing students with real-life project experience with L’Oreal management in a competitive setting. The contest was held January 8–10, 2008. The winning team goes on to compete internationally in Paris, France.

Kavita Baba ’09, Akshay Shekhar ’09, and Reshma Hooda ’09 (shared first place)

Merrick Engineering and Technology Fellowship
This fellowship was established by the company to recognize undergraduate scholastic and technical excellence.
Matt Dumouchel ’08

Merrill Presidential Scholar
This is a Cornell program that honors outstanding seniors and their academic mentors from high school and university faculty who made important contributions to the students’ lives.

National Science Foundation Integrative Graduate Education and Research Traineeship (IGERT) Fellowships
The Integrative Graduate Education and Research Traineeship (IGERT) program was developed to meet the challenges of educating U.S. Ph.D. scientists and engineers who will pursue careers in research and education, with interdisciplinary backgrounds, deep knowledge in chosen disciplines, and technical, professional, and personal skills to become, in their own careers, leaders and creative agents for change.
Rebecca Cantrell
Ryan Tasseff

Outstanding Graduate Teaching Assistant of the Year Award
The recipient of this award for outstanding teaching by a graduate assistant is chosen by the undergraduates and faculty.
Lucas Landherr and Camilo Velez Vega (both assisting Professor Lynden Archer; Lucas Landherr in CHEME 323: Fluid Mechanics, and Camilo Velez Vega in CHEME 432: Unit Operations Laboratory)

Award for Outstanding Service to the School
This award recognizes outstanding service to the undergraduate community.
Ariel Waitz ’08

Peter Harriott Master of Engineering Fellowship
This fellowship was established in honor of Emeritus Professor Peter Harriott for M.Eng. students who are interested in focusing their studies in the areas of sustainable energy systems and environmental protection.
James Jesoon Kim

Rohm & Haas—Rodriguez Outstanding Student Award in Polymers and Electronic Materials
This award was established by Rohm & Haas to honor Professor Rodriguez and recognize outstanding undergraduate- or masters-level research in polymers or electronic materials.
Eric L. First ’09

Semiconductor Research Corporation Fellowship
This fellowship was established to attract qualified under-represented minority students to graduate study in areas of interest to the semiconductor industry. The program links students with industry advisors and provides opportunities for internships in SRC member companies.
Ed Kish

William C. Hooey Scholarship
This named, endowed scholarship is awarded to graduate students in the College of Engineering who are studying chemical engineering.
Kartoa Chow ’08
Michelle Giron
Jeanne Panels

Many of our Ch.E students form special friendships during their four years in Olin Hall. Professor Center encouraged the different design groups to get coordinating T-shirts.
Senior Nick Hoh found a shirt online at marriedtothesea.com that depicted the camaraderie of the Wednesday CHEME 462: Chemical Process Design groups. This picture, taken on a Wednesday after design presentations, shows the seniors enjoying a well-deserved break following the hard work and hours of preparation they spent on their projects. This picture—showing our chemical engineering students modeling the shirts—was posted at marriedtothesea.com.

Pictured in their TGIW (Thank God It’s Wednesday) T-shirts are (front row, left to right): Denise Catapano, Jenny Dionne, Lindsay Jones, and Alison Levy; (back row, left to right): Matt Spencer, Carly Anderson, Nick Hoh, Jenna Rea, Rachael Barton, Ariel Waitz, Kristen Derhaag, and Keith Wong.

Fun-Loving Chemical Engineers

Professor Mike Duncan’s CHEME 112 TAs in another demonstration of their teamwork: Pictured (left to right from the top): Emily Reasor, Rachael Barton, Jenna Rea, Nimil Sood, Derrick Tang, and Nick Hoh.
Lynden Archer, the Marjorie Hart Professor of Chemical Engineering, has been elected to the Fellowship of the American Physical Society (APS) by his peers for “outstanding contributions to physics” in the area of polymer physics. His citation for the fellowship reads: “For outstanding contributions to the understanding of interfacial properties and bulk viscoelasticity of polymer liquids.” This prestigious honor is conferred upon only 0.5 percent of the membership of the APS. The distinction reflects Lynden’s international recognition as a leader in the field of rheology, the study of flow and deformation of complex fluids. Lynden also has the great privilege of having received a $25 million grant funded by the Global Research Partnership of the King Abdullah University of Science and Technology for a new interdisciplinary scientific research and education center. He shares this honor with Emmanuel Giannelis, a professor at the Applied Rheology Center at Korea University and as a research consultant at Samsung.

Professor Donald Koch was on sabbatical leave during the spring 2008 semester. Don studied the hydrodynamics of swimming bacteria. Many bacteria such as E. coli swim in a fluid by rotating a bundle of flagella and occasionally tumble and change direction when the bundle unravels. A number of experimentalists including Dr. Mingming Wu (Cornell MAE) have found that groups of cells swim in a coordinated fashion. Don developed a theory that explains such collective motions in terms of the fluid flow caused by the cells and the rotation of the cells in the flow.

We are delighted to report that David Putnam was granted tenure at Cornell University and promoted to the rank of associate professor, effective February 1, 2008. Dave has contributed to our department in a very significant way, creating two very well-appreci-
In celebration of his distinguished career, Michael Shuler, James M. and Marsha McCormick Chair of Biomedical Engineering and Samuel B. Eckert Professor of Chemical Engineering, received an honorary degree from the University of Notre Dame at their commencement on May 18. A distinguished alumnus at Notre Dame, Mike was honored for his innovative, groundbreaking research in biochemical engineering, which has led to unprecedented advancements in the modeling of cells and the development and efficacy of medicine, while remaining a committed teacher.

Emeritus Professors Julian C. Smith and Peter Harriott have been awarded the AIChE’s prestigious Warren K. Lewis award in 2008. This award recognizes distinguished and continuing contributions to chemical engineering education through scholarship, the creation of textbooks, and leadership in education.

Abraham Stroock won a 2007 National Science Foundation Career award for his work on the science and engineering of water at negative pressures. CAREER funding represents NSF’s most prestigious award in support of the early career-development activities of teacher-scholars who “most effectively integrate research and education within the context of the mission of their organization.” Stroock’s group is pursuing research in a physical regime that has been only sparsely explored experimentally and nearly entirely unexploited technologically: the thermodynamically metastable state of liquid water at negative pressure. His group has built artificial microfluidic “trees” that drive liquid water deep into the negative pressure regime. This has the potential to open a new regime of operation for water management technologies for heat transfer, soil remediation, microfluidic lab-on-a-chip systems for separations and purifications, and electrodes for low-temperature fuel cells. Abe was named to Technology Review’s 2007 List of Top Young Innovators.

In the spring 2008 semester, Samir Somaiya, B.S. Ch.E. ’90, M.S. Ch.E. ’92, returned a second time to teach a 1-credit course, CHEM 528: Renewable Resources from Agriculture—Sugarcane as a Feedstock, to a class of twenty-three students. Samir is the executive director of Godavari Sugar Mills Ltd in Mumbai, India.

The course described the context, i.e., global trade (or its lack) in agriculture, high energy prices, global warming, and the renewed interests in renewables. Somaiya described the world from the point of view of sugarcane, from which traditionally only sugar was produced. In the context of high energy prices and policy changes, sugarcane is now also used to produce ethanol (as an industrial feedstock, to drink, and as a fuel mix), electricity, and compost. The “value added” products from renewable sources. Students were encouraged to take such ideas, and develop the techno-economic feasibility around them. Teams of students undertook projects on biodiesel from cane, bio-gasoline from cane, cellulose ethers, lignosulfonates, and ethanol from bagasse.

Somaiya described how global companies seek to further find new “value-added” products from renewable sources. Students were encouraged to take such ideas, and develop the techno-economic feasibility around them. Teams of students undertook projects on biodiesel from cane, bio-gasoline from cane, cellulose ethers, lignosulfonates, and ethanol from bagasse.

Somaiya takes great pleasure in saying, “It is wonderful to be able to share with students knowledge of what I do for a living. It is a two-way process, I learn much from them as well. And it is wonderful to be back in Ithaca, and at Cornell.”
Twenty-one graduate students in the School of Chemical and Biomolecular Engineering participated in the school’s graduate diploma ceremony on Sunday, May 25. Nine of these students received M.Eng degrees, one received an M.S., and the remaining eleven either already completed their degree requirements or will receive Ph.D. degrees as they finish their program over the summer. In total, nearly seventy-five friends, family, and members of the faculty joined us for a well-deserved celebration of their accomplishments.

The ceremony opened with a welcoming speech by Professor Fernando Escobedo, the director of graduate studies. The thesis focus and scientific accomplishments of each graduate were then described by the student’s faculty advisor. A champagne reception for advanced degree holders and their families followed the ceremony in a tent outside Olin Hall.

Our graduate students will be moving on to positions in industry and academia.

The job market was quite resilient for our M.Eng. and M.S./Ph.D. graduates this year and their destinations include: Applied Materials; Boehringer Ingelheim Pharmaceuticals, Inc.; Corning, Inc.; Irwin Engineers; GE; Public Utilities Board (Singapore); and Saudi Aramco.

Several graduate students stayed in academia, with post-doctoral positions at the University of Pittsburgh Medical School (Harris), the New York State Department of Health’s Wadsworth Research Center in Albany (Contreras), the Cornell Ph.D. program in applied economics and management (Alrugaib), and as an assistant professor at Nanyang Technological University (Lou).

We welcomed two talented students, Abdulaziz Alrugaib and Rami Madadin, into the M.Eng Ch.E. concentration in energy economics and engineering. Abdulaziz and Rami were sponsored by Saudi Aramco; we hope they are the first of many such students.
Giving Opportunities 2008–2009

With the renovation in full swing now, this is our top priority for funding. As you’ve read, your financial support can make something transformative happen in Olin Hall.

We are bringing along the next generation of chemical engineers who, like you, will excel over a broad spectrum of endeavors from finance, to law, to medicine, to real estate, to marketing, and—yes—some are still working as chemical engineers! Please help us to keep our educational programs at the forefront of chemical engineering.

Olin Hall Renovation Fund (Fund 0003240)

• Contribute to the Chemical Engineering Building Fund to help us renovate the building. [Over $2.1 million was raised last year from gifts large and small! We have several million still to raise.]

• Leadership gift for the renovation of the North Wing of Olin Hall including naming opportunities. There are several classrooms, labs, and spaces that can be named for you or your loved ones.

• Renovate a lab to start a new experimental (adult, not fetal) stem-cell program to study cell differentiation as part of a cancer-treatment program. [We need $100,000 to buy equipment and supplies for the lab.]

Support the Ray Thorpe Chair Fund to provide one final honor to an inspirational teacher. [We have nearly $500,000 of the $2 million we need to endow the Thorpe Chair. We would like to close out this fund in the next year. (Fund 0001901)]

Support an Industrial Practitioner to lead the senior-year experiences in the Unit Operations Laboratory and Process Design courses. This costs us over $100,000 annually from our unrestricted gifts. It’s wonderful to see the students learn from those with real-life experience. As a bonus, we support the teaching of Energy Economics and Energy Engineering courses in our M.Eng. concentration in Sustainable Energy Systems [Partially funded by Shell Oil Company last year]. We hope to eventually endow two full-time positions. We have more than $1 million of the $2 million we need for this great program. (Fund 251921)

If you would like to make a donation or have any questions about giving, please contact the director at cbe_director@cornell.edu or call 607 255-6331.

Thank you for your gift!

Lydia Contreras, one of Matthew DeLisa’s senior graduate students, was named as a Ph.D. banner bearer at commencement in May. This was quite an honor, as only two Ph.D. students were chosen to represent all the doctoral candidates in the university at the ceremony. Lydia graduated this summer and will take up an academic career following a post-doctoral experience at the New York State Department of Health’s Wadsworth Research Center in Albany as a NIH Post-Doctoral Fellow.

Eligible Graduate Degree Recipients (January, May, and August Degrees):

Master of Engineering
Hamzah Al-Jefri
Abdulaiz Alruqaih
Terence Davidevits
Januf Ng
Hong Fong
Isabelle Harroch
In Sun Hwang
James Kim
Jonathan Leehr (January)
Man Kit Leung
Rami Madadin
Elizabeth Marcil
Tina Tsong
Trevor Wirsig

Master of Science
Sugandha Bhargava

Doctor of Philosophy
Colman Carroll
James Catherton
Lydia Contreras
Patricia Echtenkamp
Adam Fisher
Conor Foley
Leonard Harris
Bettina John
Yong Min Lee (January)
Xiong Wen (David) Lou
Matt Marrichi
Jeanne Panels
Brian Pasquini
Luying Wang (January)
Didi Waraho
Peter Zawaneh
Edward Zhmayev

A big smile from Didi Waraho with her mother
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