Julian Smith: The School of Chemical and Biomolecular Engineering
T. Michael Duncan: A History of Third Twenty-Five Years
ChemE Students Lead the Way - Women in Engineering
75th Anniversary: History in the Words of CBE Alumni

Cornell University
Dear Alumni and Friends of the Department,

At this year’s diploma ceremony, I told our seniors that 2013 is a special year to be graduating as a chemical engineer and particularly as a Cornell chemical engineer. For this year marks the 75th anniversary since chemical engineering emerged from the Chemistry department as a separate discipline at Cornell.

2013 also commemorates the 125th anniversary of MIT’s creation of the now celebrated course sequence, “Course X”, which in 1891 is reputed to have produced the first graduating class of chemical engineers in the world. And, which is today credited with pioneering that distinctly chemical engineering tradition of breaking apart complex chemical manufacturing processes into unit operations such as distillation, reaction, mixing, and transport - each governed by unique laws that facilitate straightforward analysis and scale-up of these processes.

As we celebrate the school’s 75th birthday, I am pleased to report that the chemical engineering department continues to be among the most vibrant in the College of Engineering (CoE). This year, 58 students were awarded Doctoral and Masters degrees - the largest cohort in our history. 98 seniors earned BS degrees – again the largest number in the school’s history. The school welcomed two outstanding new faculty members, Christopher Alabi and Matthew Paszek, who along with recent hires, Roseanna Zia and Alan Feitelberg, bring to 23 the number of full-time faculty overseeing the chemical engineering program. Research expenditures rose by 12.3%, the largest percentage increase among CoE programs this year and among the highest for the third straight year. These broad-based, exciting trends are fueled by a groundswell of interest in the discipline, among young students who along with the traditional science trio - Physics, Chemistry, & Math, now count Biology among their passions. Our vibrancy is sustained by the school’s commitment to the founding principles of Cornell – to be as diligent in the creation of new truth [research] as in facilitating the diffusion of existing truth [teaching].

This issue of the Olin Hall News is dedicated to celebrating the school’s history. My colleague and former director, Julian Smith, sets the tone with a short excerpt from his excellent history book, “The School of Chemical Engineering at Cornell, the first Fifty Years,” which is now available electronically on the school’s website. T. Michael Duncan, the RG Thorpe Professor and the school’s resident historian, provides a longer excerpt from his upcoming sequel to Julian’s book, which focuses on the last 25 years of our history. I am most thrilled by the overwhelming numbers of alumni who accepted my invitation to write brief pieces (pg. 10) about how their experiences in Olin Hall have helped shape perspectives and influenced careers over the last 75 years. On pages 8-9 we tell an evolving and important story of how women chemical engineering students are transforming the school and CoE through their leadership and vision.

I would like to extend a personal note of thanks to all alumni and friends of the department who continue to inspire our students and faculty through your example, loyalty and generosity. This year I had the privilege of joining Marjorie Hart ’50 and Gurnee Hart in naming room 145 Olin Hall the Marjorie Leigh Hart, 1950 classroom. I also had the honor of joining Rachel Gray, Elizabeth Erickson, and three generations of Grays in dedicating room 274 Olin Hall the Charles Gray ’60 Board Room in fond memory of our late friend, Charlie Gray. The photographs on pg. 29 nicely capture the atmosphere of these two events. In closing, I would like to single out a few of you, Edward Wagner ’43, Gordon Dibble ’50, Richard Eales ’58, Robert Abrams A&S ’58, Roger West ’60, Tom Moore ’67, Peter Wright ’75, and Kent Göklen ’79, for giving generously both of your time and resources in helping the school as it executes the Unit Operations Laboratory Modernization project and implements a new capstone course sequence in Chemical Product Design. Your efforts are making a difference in the quality of education we are able to provide, thank you.

I hope you enjoy the stories we have assembled and feel informed after reading this issue of the Olin Hall News. If your travels bring you to the Ithaca area, please make plans to visit Olin Hall.

Lynden A. Archer
William C. Hooey Director and Professor
In my 1988 history I catalogued the changes in the School during its first fifty years. I told how we went from a four-year program in Chemistry plus a fifth year in Engineering, to a five-year program in the Engineering College, then, in 1964, back to a four-year program. How we went from three rooms in the basement of Baker Laboratory to our own building, Olin Hall, and for a time were known as the School of Chemical and Metallurgical Engineering. How we went from almost exclusive emphasis on undergraduate education to the start of significant research. How the faculty grew from four to seventeen, and chaired professorships from one to six. And finally, how the number of degrees awarded, seven undergraduate and one graduate in 1937, rose to 33 undergraduate and 27 postgraduates in 1987.

The changes in the past twenty-five years have been at least as great. The directors who have served since 1987 have done a marvelous job. The School continues to offer excellent undergraduate education, and the number of undergraduates is now greater than in most of the other departments of the College. Starting salaries are greater than in any of the others. (I’m envious—I started at $2,280 per year.) Only one professor and a few graduate students used to be concerned with biological aspects of chemical engineering; now the concern is reflected in the name, Chemical and Biomolecular Engineering.

The curriculum, once heavy in traditional chemistry, now has a major component of biochemistry and bioengineering. The annual number of undergraduate degrees awarded is now close to one hundred. The fraction of women studying chemical engineering has risen from 25 percent to 45 percent for undergraduates, and from near zero to 32 percent for graduate degrees. Slide rules and desk calculators have been replaced by powerful computers, making computer simulation into a valid partner with experiment. The practice-oriented M. Eng. (Chem. E.) program that hung by a thread in the 1980s has grown to be a major part of the School. But the biggest change has been in graduate research. We have gone from “significant research” to world-class research; from a few Ph.D. students and limited funding to a very considerable number, supported by assistantships and research grants in dollar amounts I can hardly imagine. The sophistication of the research and the research techniques are mind-boggling, as are the awards and prizes won by the faculty.

What of the future? The one sure thing is change—the School will change again and again in unpredictable ways. I also think it will continue to grow and prosper, and in a changing society and changing world, continue to carry out its mission of education and high-level research. And do it very well.

— Julian Smith
The Undergraduate Program

An enduring tradition of the School is a vibrant undergraduate program that prepares alumni for prosperous careers in industry and distinction in PhD programs. Our undergraduate program is defined by three components: Curriculum, Culture, and Careers.

Written by T. Michael Duncan

Curriculum

The undergraduate curriculum evolved by perturbations in the past 25 years; no changes were as revolutionary as condensing the B.S. curriculum from five to four years in the mid 60’s. For 1988-2013 the four years of the UG curriculum proceeded through four subjects:

• Foundational Science and Mathematics - freshman and sophomore years: Mathematics, Chemistry, Physics, and Biology (starting with the Class of 2006).


• The Unit Operations of Chemical Processes - junior year: Design and Analysis of Mass & Heat Pumps, Heat Exchangers, Chemical Reactors, and Separators.

• Chemical Processes - senior year. Design and Control of Chemical Processes.

Although the applications of chemical engineering evolved considerably in depth and breadth the past 25 years, the curriculum continued to serve our purpose well. Director Rhodes noted 60 years ago in the School’s 1952 Annual Report:

“It is evident that Chemical and Metallurgical Engineering, like all other fields of engineering, is becoming and will continue to become more and more complex. The graduating engineer today must be familiar with subjects and techniques not known to, and often not even heard of, by the graduate of twenty-five years ago. This increase in complexity of engineering science is not a new trend, but it is one that is proceeding at an accelerating pace. In the past, it has been met by subdividing the fields of engineering into specialized divisions. Further subdivision and specialization is not desirable; we should not contemplate graduating specialists in each of many specific arts. We must continue to train chemical engineers and metallurgical engineers; not paint engineers nor plastics engineers or steel engineers or copper engineers.

“To meet this requirement, we must simplify our training. We must teach fundamental principles rather than a mass of facts. We must discriminate clearly between what is essential and what is merely incidental or supplementary.”

Our core curriculum is robust because it delivers the fundamental principles of chemical engineering.

The B.S. ChemE degree that required 176 credits in 1957-58 and was cut to 144 credits in 1967-68 shortly after the end of the five-year degree continued to decrease to a minimum of 128 credits in 2007-08. It presently comprises 132 credits of coursework.

In fall 1977 Professor Finn created a ‘minicourse’ to describe chemical engineering applications to freshmen. Professors Finn and Thorpe offered this zero-credit lecture series for three years. In fall 1981 Bob Finn introduced Engr 112 - Introduction to Chemical Engineering - the third in the College’s growing album of three-credit freshman engineering courses. Professor Rodriguez inherited Engr 112 in fall 1982 when Finn took sabbatical leave and taught Engr 112 through fall 1990. He introduced freshmen to quintessential concepts of chemical engineering: stoichiometry, vapor pressure, kinetics, fluid flow, and heat transfer and process economics. Professor Olbricht created Engr 118 - Introduction to Bioengineering - in fall 1985. For the three years it was offered, Engr 118 attracted about 50% more freshmen than Engr 112 did.

By 1988, Engr 112 was one of a dozen Introduction-to-Engineering courses.

Introduction to Chemical Engineering evolved further when I acquired it in fall 1991. I worked the previous decade at AT&T Bell Laboratories. I wanted freshmen to experience engineering design and analysis in the context of chemical engineering. In my Engr 112, freshmen began with chemical reaction sequences and created process flowsheets by practicing a design strategy; identify the true objective, start with a crude design and improve incrementally, and create many designs and choose the best. To choose, freshmen were introduced to engineering analysis: mathematical (mass, energy, and economic balancing on reactors and separators with recycles), graphical (phase diagrams and multi-stage analysis), and dimensional analysis (dynamic scaling.) The freshmen worked with classic processes (soda ash and ammonia syntheses) and contemporary processes (Earth’s carbon cycle and metallic hydrides). In addition, Engr 112 served to acclimate freshmen by teaching learning styles, study skills, and teamwork.

From fall 1991 through fall 2013, over 1600 freshmen completed Engr 112. Typically 65% of the Engr 112 alumni chose to affiliate with chemical engineering, independent of success in their initial encounter with the field; roughly 65% of the A’s chose to pursue chemical engineering and roughly 65% of the C’s chose to pursue chemical engineering. Engr 112 alumni chose their passion with less regard to their forte.
The chemical engineering curriculum 1988-2013 had two design ‘bookends’: Introduction to Chemical Engineering (Engrl 112) and Chemical Process Design (ChemE 462). Capstone plant design retained the core structure and objectives developed when it was transformed in the early 1970’s from the two-semester fifth-year course in the Masters of Engineering program to the one-semester senior-year course in the B.S. program: use the chemical engineering tools to apply chemistry and physics using mathematical, graphical, and dimensional analysis to design a chemical process plant, and meet criteria for economics, safety, and environmental impact.

Overall, the capstone design course in 2013 is much like the capstone design course in 1988. It remains a project-based course with weekly progress reported in presentations. Personalized management of design teams requires more instructors than design taught by problem sets and exams (as done elsewhere), but the School had a steadfast commitment to provide the instructors required. Two faculty members appraised each weekly design presentation, which required only two instructors for a class size around 30 in 1988. But when enrollments grew in the 1990’s so did the instructor workload; whereas only two taught capstone design in 1991 (Peter Harriott and Bob Merrill), six were required by 1995. The growing instructor workload was not sustainable. In the mid 90’s, three changes decreased the demand for tenured-track faculty in capstone design.

- In 1995, I served as Lead Instructor and introduced using Masters of Engineering students as the second-half each management team. These ‘managers-in-training’ served a purpose and learned from the experience. The training was formalized by a course created by Ken Ackley - ChemE 5720, Managing Chemical Process Design.
- At a faculty retreat in 1995 the endowment of a senior lecturer position was identified as a chief priority. Capstone design needed stable leadership of an expert in industrial design practice.

Concurrent with the School’s quest for a lead instructor, Ken Ackley (B.ChE ’65, M.ChE ’66, but associated with the Class of ’60), was considering options for post retirement. Ken joined as a visiting instructor in spring 1995 and became lead instructor in 1996. Ken Ackley rejuvenated capstone design: he constantly assessed and modified every facet of capstone design to improve the learning-to-effort ratio and to keep current with industrial practice and culture. Ken replaced three of the twelve presentations with business meetings, improved documentation of weekly performance evaluations, renovated the lecture content, and introduced self-assessment.

It became easier to recruit tenure-track faculty to serve in ChemE 4620. And although Ken upheld the high standards and the student workload (estimated to be about 40 hours per week), student satisfaction improved dramatically. In the late 90’s an alumnus corporate recruiter asked a ChemE senior “What was your all-time favorite course?” The senior replied “Plant Design.” The recruiter recalled her experience in plant design in the early 90’s and suspected the applicant was compromising truth to impress. When the recruiter mentioned his skepticism to me, he was surprised (and delighted) to learn ChemE 4620 is often the highest rated course in the spring semester. Ken had brought capstone design to high ratings without relaxing our high standards.

Al Center (B.ChE ’65, M.ChE ’66) joined the instructional team for capstone design in spring 1999 as the School’s second Industrial Practitioner. Al had visited frequently in the mid-90’s, for a day as a lecturer and for a week as consultant and reviewer for instrumentation and control. Because students had high praise for Al’s teaching, as Associate Director I invited Al to increase his involvement with the School. Al was then Manager of Engineering and Construction for Caltex Petroleum Corporation and was also considering early retirement. To our delight and to our benefit, Al accepted a senior lecturer position and joined the faculty in January 1999.

Al Center stepped forward to lead capstone design in spring 2004 after Ken’s untimely death in October 2003.

Al drew on his plant design experience and maintained the continuous assessment and improvement Ken had started. He formalized the weekly assignments to meet the criteria for a front-end-loading (FEL) level-2 feasibility study. Al codified weekly expectations so all design teams had a common work requirement and neither student nor instructor was in doubt as to what was expected each week. New projects Al developed applied chemical engineering fundamentals and were uniformly challenging and educational. Al introduced mid-semester ‘fresh-eyes’ reviews; he recruited industry experts to visit for a few days in March to meet with each design team and confirm the decisions to date were consistent with industry practice. Al
also formalized the Environmental, Health & Safety (EHS) component with external experts - initially John Carberry (B.S.ChE ’63) and later Andy Irwin (B.S.ChE ’81). Other new features include First Approximation Costing Technique (FACT), support facilities (OSBL components), heat integration by pinch analysis, start-up and shutdown procedures, a constructability review, and process safety analysis.

The success of ChemE 4620 continued under Al’s stewardship. In spring 2013 ChemE 4620 earned its highest student evaluation scores of the previous 25 years (and probably the entire 75 years of chemical engineering design.)

Over the past 25 years, younger faculty members were recruited to guarantee the sustainability of capstone design. Several assistant professors served in capstone design during their pre-tenure years: Thanasis Panagiotopolous (1988, 1992-93), Kelvin Lee (1998-2003), Matt DeLisa (2004-2009), Jeff Varner (2007-2009), and Tobias Hanrath (2009-2013). The School now has a repertoire of about a dozen faculty members with experience teaching capstone design.

Ken Ackley and Al Center demonstrated the worth of Industrial Practitioners, the title of our senior lecturers. Indeed, Ken and Al continued the School’s tradition of hiring instructors with distinguished industrial experience that began with Robert York, who joined the faculty as a full professor from Monsanto’s research facility at the Chocolate Bayou Plant. York established many of the attributes of our capstone design. The School consequently hired senior lecturers Andrew Hunter in 2005 and Alan Feitelberg in 2012. Hunter brought experience of designing and installing refineries, energy analysis and trading, and strategic planning. Feitelberg arrived at Cornell with expertise in research, process development, and product development in gas turbines, pollution prevention, chemical reactor modeling, second-generation biofuel production, and fuel cells. The Engineering College has recognized the success of chemical engineering’s industrial practitioner program and has encouraged other fields to create similar programs.

The weekly presentations maintained the same decorum; seniors wear their ‘interview’ suits and faculty managers wear jacket and tie.

Our alumni continue to extol the advantages gained from their capstone design experience, chiefly the skill and confidence to compose and deliver an effective presentation, the ability to think on one’s feet, and the organizational aptitude to prioritize task, allocate to teammates and reassemble into a cogent presentation.

Our capstone design broadened in spring 2012 when Professor Hanrath introduced Chemical Product Design - ChemE 4630 - as an alternative to Chemical Process Design - ChemE 4620. ChemE 4630 adapted the elements of ChemE 4620 to the design of innovative chemical products. Product design integrates technological innovation, creativity, practical engineering, entrepreneurship and communication to train students how to develop from an idea to a commercially viable product with respect to both technical and entrepreneurial aspects.

Whereas design teams in ChemE 4620 work for a fictional consulting company (Olin Engineering) to prepare preliminary designs of chemical processes, design teams in ChemE 4630 form fictional start-up companies to pioneer a chemical product. Three design teams completed ChemE 4630 in spring 2012. Their products were a novel anode...
for photovoltaic cells, protein production by E. coli (instead of mammalian cells), and an innovative antibody treatment for Alzheimer’s disease.

Because our seniors lack training in entrepreneurship, Hanrath enlisted Cornell’s Johnson Business School to create an MBA mentorship program, which designated MBA students as consultants to each ChemE 4630 design teams. In addition to technical aspects of the product designed, Hanrath required the students to create a business plan and a venture capital pitch.

The other half of our capstone experience, Chemical Engineering Laboratory - ChemE 432 - (aka Unit Operations Lab or UO Lab), began its third quarter-century with the opening of the remodeled laboratory in the renovated east wing. The three-floor open bay that spanned the entire length of the east wing (over 3000 sq ft) was contracted to a two-floor open bay over about 1100 sq ft. But now the laboratory enjoyed air-conditioning!

In fall 1995 the School’s first industrial practitioner Ken Ackley became the lead instructor for ChemE 432. Like capstone design, UO lab benefited from Ken’s perspective and experience gained from 35 years in industry. Because the same person now led both capstone lab and capstone design courses (an onerous burden never carried by a tenure-track faculty member) Ken improved the connections between these courses. Ken resurrected the multi-stage distillation column dismantled and stored during the East-Wing renovation, although it was rebuilt with only 8 stages. Other experiments included catalytic oxidation, fermentation, a fluidized bed, laser-Doppler velocimetry of fluid flow, and membrane separation of air.

Ken accelerated the School’s enduring goal of using the capstone experience to add engineering practice to our students’ engineering science. Assignments in UO Lab became requests from clients, for example, how to treat a water waste stream with 3% methanol to yield 99% methanol and waste water suitable for discharge? Lab teams designed an experimental agenda, collected pertinent data, and recommended to the client in the written report. The goals of this particular assignment could not be met with an 8-stage column. Instead, seniors needed to operate first with the column as a rectifier, collect the intermediate and then use the column as a stripper.

Our second industrial Practitioner Al Center stepped forward to serve as lead instructor in Unit Operations Laboratory in fall 2003 following Ken’s death. Al had been involved in UO Lab since fall 1999. Al also added experiments - liquid-liquid extraction, Michaelis-Menten kinetics, and process control of a heat exchanger - and added more aspects of professional practice. The most notorious was the reinstitution of the “/30” (the slash-30), a preliminary grade given to unacceptably poor reports. A slash-30 meant the report was so far from the stated requirements that the instructor quit reading. The UO team must rewrite the report. If the edited report was acceptable, its score would be some fraction of 30 points.
Culture

The undergraduate community within the School has traditionally been supportive and closely knit. The undergraduate-faculty relationship is sustained outside the classroom in social gatherings such as the Welcome-Back Barbecue in August, Drink-of-the-Week Friday evenings (aka dot-W’s), “lunch with a faculty member” organized by the AIChE student chapter, and monthly Director and Associate Director lunches with the sophomores, juniors, and seniors. The seniors enjoy additional events such as the December Holiday Party, the Senior Dinner, and Vegas Night. When our seniors list program strengths on their exit surveys, they repeatedly list the “family atmosphere” of Olin Hall.

The chemical engineering faculty also helps maintain a non-competitive culture. Students are initially dismayed when they learn that grades are generally not curved in chemical engineering courses. Gone is the system in secondary schools that protected them against exams with low means. But a curve dictates there will be a precise percentage of A’s. If a student helps a colleague, that colleague may take one of the allocated A’s. We convince students that their performance is assessed on an absolute standard. If all excel, all earn an A. And if all neglect the course, all can earn a C … or lower.

The School promoted camaraderie by posting student photos at the departmental website starting in the late 90’s. We also posted class photos (with every student named) back to the class of 1941 to emphasize the School’s long tradition of attention to undergraduates. Since 2006 graduating classes have printed a Yearbook with memories from four years at Cornell, senior mock awards, and a page devoted to each design team. For the past ten years, the seniors placed pins on a US map showing their post-Cornell destination.

The facilities provided by the School support the collegial undergraduate culture. The undergraduate study room - B49 Olin, designated the Scheele Lounge in 1994 - provides a centralized location for study and teamwork. The atmosphere speaks to the mutual trust among our undergraduates.

Extracurricular opportunities - teaching

Teaching is a valuable skill, even for non-teachers. Teaching assistants hone presentation and communication skills; TA’s benefit from practice in organizing a presentation and delivering a presentation that has structure but invites discussion. Our graduates will ‘teach’ throughout their careers, not necessarily to a classroom of students, but to a corporate board of MBA’s or one-on-one to their technical support person. TA’s benefit from learning to recognize the learning preferences of their audience (a group or an individual) and they learn the importance of listening.

Just like research mentors impart research techniques, instructors impart pedagogy. The scholarship and joy of research is obvious to undergraduates. But the scholarship and joy of teaching surprises some undergraduates.
The role of undergraduate teaching assistants in chemical engineering has grown steadily over the last 25 years. At present, each year about two dozen seniors serve as teaching assistants in ChemE courses, chiefly ChemE 1120, 2190, 3130, and 3240 in the fall semester and 3230, 3230, and 3900 in the spring semester.

**Extracurricular opportunities - student project teams**

During the last 25 years, about 20 student project teams have been launched in engineering. Almost all are interdisciplinary, although typically one field dominates the theme. Chemical engineering’s entry has been the Cornell ChemE Car Team, organized in 2004. In 2009 the car team was formally organized as a project course, ChemE 4980 - Design and Testing of the Chemical Engineering Car, created by Professors Varner and Anton. ChemE 4980 was created to provide structure for the team-oriented, hands-on design and construction, and to allocate specific tasks.

The AIChE created the competition in 1999 to “bring favorable public attention to chemical engineers and chemical engineering by creating a novel, high-profile annual event – in the style of egg drop competitions and cement canoe races conducted by engineers in other disciplines.” The competition would demonstrate chemical engineering principles to the general public, with “novelty and visual appeal.” Each team designs and constructs a small autonomous vehicle powered by a precisely controlled chemical reaction to carry a load a designated distance. The distance and load are announced immediately before each competition.

The competitions - part of the AIChE regional student conferences in March and the national student conference in November - have two components: a performance competition and a presentation competition (a poster session). Teams are recognized for Most Consistent Performance, Most Creative Vehicle Design, Most Creative Drive System, Inherent Safety in Design, and Spirit of the Competition.

The eighteen-member Cornell Car Team won the 2008 national competition by traveling the designated distance exactly. This precision was unprecedented in the ten-year history of the competition. The team returned to national prominence by again winning in 2010 and in 2012: three national championships in five years! Moreover, the team has matured into a valuable training in organization, project management, leadership, and constrained design.

**Extracurricular opportunities - professional organizations**

Our undergraduates continue to serve the professional community at Cornell through student chapters of national organizations such as the American Institute of Chemical Engineers (AIChE), the Society of Women Engineers (SWE), the Society of Hispanic Professional Engineers (SHPE), the National Society of Black Engineers (NSBE), and Engineers for a Sustainable Society of Hispanic Professional Engineers (SHPE), the National Engineers (AIChE), the Society of Women Engineers (SWE), the organizations such as the American Institute of Chemical Engineering’s Engineering Management program (2008 and after) and Biomedical Engineering (2005 and after).

**Culture - diversity**

The graduating classes have been impressively diverse with respect to sex. For 1994-1998, women constituted 35% of the graduating classes. By 2009-2013 women constituted 45% of the graduating classes. The fraction of women in chemical engineering was consistently 50% greater than the fraction of women in the College of Engineering overall.

**Careers**

During the past 25 years, an average of 13% matriculated to PhD programs; 11% to chemical engineering PhD programs (about 7 per year) and 2% to other disciplines, mostly bioengineering and biomedical engineering. The percent to chemical engineering PhD programs started this period at 16%, fell to 8% for 1999-2003, and returned to about 10% by 2013. The PhD programs popular with our graduates varied year to year, but over the past 25 years the top programs were MIT (18), Stanford (13), Illinois (10), UC Berkeley (10), UC Santa Barbara (10), Caltech (9), and Michigan (9).

Masters Degrees are considerably less popular than the late 1960’s. Shortly after the five-year B.S. program was shortened to four years, a high percentage of the B.S. graduates stayed a fifth year and earned a masters of engineering degree; typically 70-80%. Twenty years later this percent had dropped to about 10%. The fraction earning a Masters degree for 1988 - 2013 averaged 17%, with about two thirds in chemical engineering at Cornell and one third in other majors at Cornell, mostly Civil Engineering’s Engineering Management program (2008 and after) and Biomedical Engineering (2005 and after).

Medical schools and law schools attracted relatively few of our B.S. graduates; 3% and 1% respectively. Students learned that although the fundamentals of the chemical engineering curriculum are useful preparation for medicine and law, the capstone courses are less useful. Many pre-med and pre-law students on the chemical-engineering path affiliated with the College Program (renamed the Independent Major in 2006).

For 1988-2013, an average of 47% of our B.S. graduates had secured employment by graduation; a total of 745 alumni. For each five-year epoch, our graduates joined about 75 different companies. Over the 25-year period, our graduates started careers at 265 different companies. The industry type varied. Chemical producers hired 22% of those taking jobs for 1989-93, then only 6% for 2004-2008, and rebounded somewhat to 10% for 2009-2013. Electronics companies (IBM, Intel, and Advanced Materials) peaked at 18% of jobs for 1994-1998, but averaged 9%. Consulting - engineering, design, and construction - was nearly constant at 17%. The percent taking jobs in petroleum-related companies tripled in the last 25 years, from 6% for 1989-1993 to 19% for 2009-2013. Pharmaceuticals began with 6% of the jobs, rose to 17% for 1999-2003 and averaged 11%. Consumer products averaged 17% of jobs for the first 20 years, and then fell to 10% for the last five years.

The top employers for the past 25 years hired 36% of our B.S. graduates: Procter & Gamble (61), Merck (48), ExxonMobil (32), Automation & Control Specialists (23), Air Products (19), Johnson & Johnson (16), Schlumberger (16), Intel (14), Kraft Foods (13), Andersen Consulting (12), and the US Navy (11).

This article is a digest of an extended treatise to be published in the 75-year update of Julian Smith’s “History of the First Fifty Years.” The full article is posted at the School’s web site; see “Our History” in the menu item “About.”
As the Cornell Chemical Engineering department has evolved over the past 75 years, the student body filling the classrooms and laboratories of Olin Hall has changed, too. In 1967, almost thirty years after its inception, Cornell Chemical Engineering celebrated the commencement of its first female PhD graduate. The first women in the department were true pioneers, rising as research, academic, and industrial leaders unlike any before them, even in the face of great adversity.

Today, the student body is nearly half female, and these women have demonstrated the inspirational leadership of those before them in every facet of the Cornell Engineering and campus community. The following profiles share stories and reflections from many of the department’s extraordinary female students and recent alumnae. These young women have made an amazing impact in their time on campus and beyond; they have truly continued the legacy of those early female pioneers.

Alexandra Bishop, B.S. 2012

**Leadership:** American Institute of Chemical Engineers (AIChE) President

**Professional Life:** Alex is an engineer with Kraft Foods, living in Manhattan and performing musical theater in her spare time.

**Advice to Student Leaders:** “You have to love what you’re leading. It shouldn’t be about what gets on your resume or making important connections. Those are great results from being a leader, but that shouldn’t be what drives you to it…follow your passion with leadership.”

**Favorite ChemE Memory:** “I had an amazing design group senior year…we would always work in [Olin Hall] room 246…we had been working in there for several weeks when I found out that my previous manager from Kraft, a close friend who died in 2011, was going to have a room dedicated to him and it was going to be 246. It was a touching moment and I was glad I got to share it with my group.”

Kerianne Dobosz, B.S. 2012, M.Eng. 2013

**Leadership:** Society of Women Engineers (SWE) President, SWE Outreach Co-Chair, SWE Graduate Chair, LeaderShape Institute Coordinator, Graduate Teaching Assistant, Graduate Resident Fellow, among many other roles

**Professional Life:** Kerianne is beginning a graduate program at UMass Amherst in Fall 2013.

**Advice to Student Leaders:** “The faculty and staff members here are not only world class in their respective fields but also truly invested in your growth. Take the time to foster relationships with these people to both grow and teach. There are so many opportunities so go out and chase them.”

**Favorite ChemE Memory:** “Cornell has so many exciting and quality opportunities inside and outside of the classroom but most of all you are sharing these experiences with such wonderful people. Together, after long hours of hard work, successes, and failures…I felt a huge sense of accomplishment.”

Patricia Grippo, B.S. 2013

**Leadership:** Engineering Peer Advising Co-Chair, SWE Big Sister, Undergraduate Teaching Assistant, Orientation Leader

**Professional Life:** Tricia is a Materials Engineer for Procter & Gamble, working on Pampers and Luvs diaper products in Mehoopany, PA.

**Leadership Accomplishments:** “I enjoyed implementing new on-boarding activities for freshmen engineers through the Peer Advising program. These programs really helped open student’s eyes to the abundance of opportunities Cornell has in store.”

**Advice to Student Leaders:** “Build a network! Being in contact with people from a variety of different perspectives and backgrounds will provide you with the resources to launch your bright ideas into reality.”

**Favorite ChemE Memory:** “The ChemE holiday party was a lot of fun and a great way to bring the whole department together!”

Allison Pinterpe, B.S. 2013

**Leadership:** Catholic Fellowship President, Engineering Peer Advising Co-Chair, AIChE Senior Representative, Sophia Christian Women’s House Treasurer, Undergraduate Teaching Assistant

**Professional Life:** Allie is currently searching for Process Development & Engineering jobs in the natural gas industry. She also hopes to teach at some point in her career, as she discovered a passion for sharing knowledge while serving as a teaching assistant for multiple courses at Cornell.

**Advice to Student Leaders:** “I think that an important part of being a leader is knowing what’s expected of you…when you can identify something specific to work on, it’s a lot more plausible in the sometimes chaotic world of Cornell to get it done.”

**Favorite ChemE Memory:** “Definitely Intro to ChemE twice! Not only did I have an amazing time as a freshman, working in a group that I actually stayed with through all four years…but I again had an amazing experience being a Teaching Assistant for the class as a senior…we pushed our problem solving skills to the limits.”
Helen Tan, B.S. 2014

Leadership: SWE Co-President, SWE Public Relations Podcast Chair, SWE Corporate Relations Publicity Manager, SWE Corporate Relations Liaison Director, Cornell Ukulele Club President, Academic Excellence Workshop (AEW) Facilitator

Professional Life: Helen plans to enter industry, hopefully in a rotational program that will help her decide the best role for her. She has an interest in business, and will perhaps pursue an MBA in the future.

Leadership Accomplishments: “Teaching my own class as an AEW facilitator was out of my comfort zone, but I definitely learned a lot and developed my personal skills. I was not only able to understand the material even more, but I also developed my public speaking and communication skills. The feeling of being able to help others and seeing them succeed was indescribable and made me feel valued.”

Advice to Student Leaders: “Don’t overwhelm yourself with so many activities. If you are looking to becoming the President of a large organization, you should be passionate and committed.”

Alana Szkodny, B.S. 2014

Leadership: SWE Vice-President, SWE Fundraising Chair, Phi Sigma Sigma Sorority Philanthropy Chair, Engineering Peer Advisor, Undergraduate Teaching Assistant

Professional Life: Alana is unsure of what field she would like to pursue, but has developed an interest in the biotechnology and pharmaceutical industries through her research. She plans to gain industry experience immediately after graduation and return to earn her PhD.

Advice to Student Leaders: “Leadership is all about generating trust and respect. Leaders gain their effectiveness through their reliability and their openness to new ideas and to changes within an organization. Caring about the members of an organization, taking an interest in their concerns, and respecting their criticism can go a long way in inspiring them to contribute and give their best to the organization’s efforts.”

Favorite ChemE Memory: “One can walk into Olin Hall and find groups of friends working in classrooms or the undergrad lounge, all putting their heads together to learn and teach others. I love being able to find my fellow classmates anywhere, ask a question, and have them be completely willing to put aside their work to explain...these classmates have gone from homework partners to true friends.”

Emily Polk, B.S. 2014

Leadership: Engineers Without Borders Team Leader, American Institute of Chemical Engineers President, Engineering Peer Advisor, Cornell Annual Fund Management Team Member

Professional Life: Emily is interested in leadership rotational programs and consulting jobs, specifically in technical operations for the pharmaceutical or consumer goods industries. She is also considering pursuing advanced degrees to support her strong business interests.

Advice to Student Leaders: “Never forget that there are many, many types of leaders. Take the time to understand your own strengths and weaknesses, and also those of the individuals you work with and lead. Recognizing when you could use a little guidance and knowing who can provide it is invaluable. Your peers are a brilliant resource—never underestimate the power of these connections and friendships, and strive to learn from those around you.”
History in the Words of CBE Alumni:

Class of 1941

John (Jack) Weikart (B.S. ChE. ’41)

When Weikart completed his work at Cornell University in 1941, he packed all of his things from Baker Lab and Olin Hall and returned to his home in Baltimore, Maryland. The next day, he would leave his home in Maryland to move to Elizabeth, New Jersey to begin his career at Esso (now ExxonMobil).

Weikart’s first assignment at Esso was on butane dehydrogenation to butadiene in a small pilot plant. He calls this, “a hot project because the East Indies rubber plantations were no longer ours.”

In January of 1943, Weikart was assigned as a shift supervisor on a demonstration plant. He and his team learned enough so that the full scale units came “on-stream” smoothly.

“Cornell ChemE provided me the knowledge and experience in ChE practice, adding a feel for human relations. This was needed to grow in development and operation of new processes. It was subtle but I got a feel my ChemE professors encouraged us to use our imaginations.”

Class of 1943

Karlton J. Hickey (B.S. ChE. ’43)

Born and reared in Western New York, Karlton Hickey entered Cornell’s five-year Chemical Engineering Program in the fall of 1939. He was fortunate to be deferred from military service and completed the program in early 1944. He was employed by Atlantic Richfield Company in an Engineering Capacity for his entire career (40 years) before retiring in June of 1984.

“I spent less than 2 years in Olin Hall and can point to no specific experience that influenced my career. I did however enjoy the spacious facilities for Unit Operations and the private, but shared laboratories.

I have worked with chemical and other engineers from many other schools, but none were better prepared. “Dusty” Rhodes ran a tight ship, but in the long run, the frustration and sleepless nights were rewarded.”

Class of 1948

Fred Siefke (B.S. ChE. ’48)

Fred Siefke came to Cornell in the summer of 1942 and graduated with the Class of 1948. Within that time, there were three years of Army service, including one year at the Universities of Rhode Island and New Hampshire, and then overseas to the Philippines and Japan. In 1948, he joined Standard Oil N.J. (Esso) and retired in 1982. He then began working with the East Coast refineries and concluded his career with marketing positions in London and New York City.

Norm Woonton, Tom Meiss, and I had a fifth-year research project to strengthen H2SO4 with SO2. Our lab was on the third floor of Olin. One day, to save some awkward labor, we put a vacuum on the feed container so as to suck back the concentrated H2SO4 into..."
the feed container. The glass container broke and spilled about a gallon of H2SO4 onto a steel floor plate that partially covered a large hole that carried utility pipes to various labs. We rushed down to the second floor to find an empty but locked lab. Through glass in the door we could see the H2SO4 dripping on a similar steel plate and hole in the floor, down into the first floor, where we found a room with a freshmen studying. He was aware that his woolen sport jacket had damp spots on the shoulder and back. We advised him to promptly wash the spots with water. We were called into Dusty Rhodes’ office the next day, where we were given a forceful lecture on the thickness and strength of laboratory glassware.

“In my final years at Cornell, through circumstances and the aid of Esso recruiter and fraternity brother Ted Tracy (Class of 1933), I had been interviewed at Christmas time and received an Esso job offer in early January 1948. This was six weeks ahead of normal job interviewing time. The same day I received the offer, I saw Dusty Rhodes in a corridor and he said tersely, “I see you have a job,” and walked on. I was too naive to grasp his meaning—that my job hunt was over. The ChemE School had fulfilled its mission of education and placing a student with a respectable company involved in chemical engineering. In evidence of this, my name was removed from all the lists of upcoming interviews with other companies. There was a firm hand at the tiller of the school of Chemical Engineering!

My recollection of the training/instruction in the ChemE school was the emphasis on the laws of conservation of mass and energy. Time and again, I applied these basic laws in my career.”

Class of 1949

Henry Bungay (B.S. ChE ‘49)

Henry (Harry) Bungay, B.S. ChE ‘49, Ph.D. Syracuse ‘55) had a very rare trajectory to his career, as he went back and forth from industry (Eli Lilly) to academia (Virginia Polytechnic Institute), back to industry (Worthington Biochemical Corporation), and then again to academia (Rensselaer Polytechnic Institute) with stints at the National Science Foundation and the U.S. Energy Research and Development Administration. One of his five single-author books won the award from the American Association of Publishers as best technical book of the year. There will be a session in his honor at the AIChE national meeting this November.

“The incident that illustrates my undergraduate years well is when I had the highest grade on a test and attracted a classmate who copied from my paper on the next test where I had the worst grade in the class. Graduate school in biochemistry was a snap for somebody from chemical engineering at Cornell.

My Cornell education was great, but overwhelming. The many all-nighters to finish lab reports that soon bled red with corrections taught me how to write fairly well under pressure. Prof. Clyde W. Mason was one of the two best teachers I ever had, and all of the other professors were top notch.”

William Koch (B.S. ChE. ‘49)

Born in 1926, William Koch’s early life was shaped by the Great Depression and World War II. A scholarship and the GI Bill made his Cornell education possible. He was drafted into the Army infantry after his sophomore year. He was fortunate enough to survive and return to Cornell two years later. After graduating in 1949, he took a job with Shell Oil Co., spending 42 years in the Natural Gas Department.

“What I remember most about Cornell was a lot of hard work associated with the accelerated schedule (no time off or vacation) during the war. After the war, I had a chance to socialize. However, during both periods we all did our best to get along with Dusty Rhodes. He was a “hands on” director who knew all his students personally. He set high standards and we all learned a lot. I learned how to organize work, solve complex problems, and write a report. I will never forget his comments in the margins of my Unit Operations reports.”

Billie Nelson (B.S. ChE. ‘49)

Following Cornell graduation in 1949, Billie Nelson worked for the DuPont Company in Wilmington, DE, and then transferred to the new atomic energy site they managed in Aiken, SC, as one of the early operations engineers (#49). A year later, she left chemical engineering to raise four children. Eighteen years later, she entered the Ph.D. program in psychology at the University of Delaware, and graduated in 1978. Her work in research psychology at Delaware continued in Hawaii as a member of the research campus in early education at Kamehameha Schools, the trust established to help Hawaiian children, which had been founded many years ago by Princess Berenice Pauahi Bishop.

Dusty Rhodes was a taskmaster but also an inspiration. He taught me to write succinctly, which proved useful in report writing no matter what the topic/field. He also encouraged me as a woman in a male-dominated field.

“I felt after my 5 years at Cornell that I could approach any problem in any field and help find solutions. This proved valuable as my work interests changed, but also has been a positive lifetime approach whatever the challenge.”

Class of 1950

John Prausnitz (B.S. ChE. ’50)

Following Cornell, John Prausnitz (B.S. ChE. ’50) obtained a Masters degree from the University of Rochester. After a Ph.D. from Princeton University, he joined the chemical engineering faculty of the University of California, Berkeley. There, he gave much of his attention to research in applied thermodynamics for process design in the petroleum, natural-gas, cryogenic, petrochemical and polymer industries. This research led to long-time consulting appointments at Air Products and Chemicals, and Fluor Corporation, and shorter appointments at several other corporations. He has received many honors, including election to three prestigious academies, four honorary doctorate degrees, and the U.S. Medal of Science. In recent years, he has focused his research interests toward applied thermodynamics for biotechnology. His present activities are directed at process development for biofuels and at properties of hydrogels for next-generation contact lenses.

Perhaps my most valuable educational experience at Olin Hall was the year-long unit operations laboratory course where I learned how to write technical reports. The brutal (but ultimately highly useful) buckets of red ink from Professors Rhodes and Smith taught me an essential skill that has provided much help in my professional life and beyond.

I will always be grateful for the Cornell BChE requirement to complete a two-semester course in the history of science, taught by the
splendid Professor Guerlac. This course greatly contributed to my intellectual growth. The insights from that course have provided perspective for my professional work, greatly increased the relevance (and subsequent popularity) of my classroom teaching, and stimulated my cultural interests. I very much regret that, although this course is still offered at Cornell, it is no longer required for engineering students."

**Class of 1951**

**Marjorie Leigh Hart**
(B.S. ChE. ‘51)

After graduation, Marjorie L. Hart ‘51 went to work for the Esso Research and Engineering company (now ExxonMobil), where she spent a distinguished 30-year career as a scientist, engineer, and executive. Along the way, she attended the New York University Graduate School of Business Administration. At Exxon, Hart rapidly rose through the ranks to become a senior adviser to the gas, energy policy, and corporate planning divisions of the company. Her Exxon career is distinguished by several firsts—she was the first woman in the executive dining room and the first professional woman sent overseas. After leaving Exxon in 1984, she founded Business Line Consulting, a private consultancy that specialized in natural gas, emission controls, and environmental systems. Following her retirement from Business Line Consulting in 1994, Hart worked for several non-profits, including serving as chair of the Board of Directors for Scenic Hudson, Inc.; as an advisory board member for Land Trust Alliance; and as vice chairman of the Seventh Regiment Armory Conservancy, Inc.

Hart is a lifetime member of the Cornell University Council and served as the council’s vice chair from 1979 to 1982 and as chair in 1986–1987. She also served on the Cornell Board of Trustees as an alumni-elected member from 1979 to 1984 and was reappointed for an additional year. In October 1996, she was named a Cornell University Presidential Councilor.

Howard Littman
(B.S. ChE. ‘51)

Born and raised in Brooklyn, New York, Howard Littman graduated from Brooklyn Technical High School in January 1945, entered Cornell in March of that year, enlisted in the U.S. Navy in July 1945, and was discharged in August 1946. He then returned to Cornell, graduating with a chemical engineering degree in 1951. Littman then went on to Yale University, where he obtained a Ph.D in 1956. He taught at Syracuse University from 1956 to 1965 and at Rensselaer Polytechnic Institute from 1956 to 2001. He retired in 2001, but is still an active researcher.

“My interest in research was greatly stimulated by working for and interacting with Prof. J.C. Smith on a research project. What it taught me most clearly was the difference between taking courses and creating new knowledge.

Chemical Engineering requires that one build up basic knowledge of chemistry, mechanics, and engineering. As a result you become able to address a wide range of practical and theoretical problems. That makes for a very interesting life. Under Prof. F.T. Rhodes’ leadership, the curriculum was a blend of theory and practice. The academic environment was competitive and the course load heavy (19 credits/semester). Cornell’s depth in mathematics and the sciences made it possible for me to take advanced courses in these disciplines. Even more important, was the experience of coming into contact with Nobel-level minds (Debye, Flory, and Feynman). Overall Cornell was a very rich experience for me socially, culturally, academically, and athletically.”

**Donald Victorin**
(B.S. ChE. ‘51)

Donald Victorin, B.S. ChE. ‘51, was raised in Leonia, New Jersey, which is near the George Washington Bridge, where he tied for first in class in high school with Marge Gulnick, now his wife of 58 years. He earned an Eagle Scout Badge before attending Cornell on a McMullin Regional Scholarship. Upon graduation in 1951, Victorin received an ROTC commission and served as first lieutenant for nearly two years in Korea, for which he was awarded the Army Commendation Medal. He received an MBA from Rutgers University and retired from Exxon after 34 years. Victorin has three daughters and seven grandkids, and now lives in a retirement community in Frisco, Texas.

“My most memorable experience was taking the Unit Operations Lab course, which required a weekly report, due Saturday morning (after staying up all Friday night to complete it). Grades were given on English composition and technical content and then multiplied to-gether; tough to get an 85. We did learn how to work really hard, write proper English, work together, and understand principles of chemical engineering.

It was hard to work much versatility into a tough engineering program without adding an important course or adding time. I picked required electives from the Arts School based on ease of getting a decent mark without the expenditure of much time. However, after serving in the Army, I did gain versatility in my career from getting an MBA from Rutgers University.”

**Class of 1952**

**Deran Hanesian**
(B.S. ChE. ‘52, Ph.D. ‘61)

Deran Hanesian ‘52, Ph.D. ‘61 began his career at DuPont and started teaching in 1963. From 1975–1988, he served as chairman of the Department of Chemical Engineering, Chemistry, and Environmental Science at the New Jersey Institute of Technology (NJIT). He was a Fulbright Scholar in 1982 in the Armenian SSR, USSR. He has taught in Algeria and Scotland. He received the Robert W. Van Houten Award for Teaching Excellence in 1977 and 2001 at NJIT. In addition to numerous awards at NJIT, he has received outstanding teaching awards in ASEE, among them the Chester F. Carlson Award for Innovation in Engineering Education. He also received the Dickran H. Kabakjian Award for Outstanding Contributions in the Field of Science, given by the Armenian Students Association of America. He was designated in the inaugural group of Master Teachers at NJIT. He is a fellow and emeritus member of the American Institute of Chemical Engineers and a fellow and life member of the ASEE.

**Class of 1953**

**Elliot Cattarulla**
(B.S. ChE. ‘54)

A native of Binghamton, New York, Elliot Cattarulla spent 40 years with ExxonMobil, half of it dealing with the company’s Middle East concessionary holdings. He
also held executive positions in England, Saudi Arabia, Peru, and Greece, before ending his career as corporate secretary and then vice president, public affairs. After his retirement in 1995, he continued to live in Dallas, Texas, where Exxon had relocated five years earlier, and served until 2012 as executive director of the Nasher Foundation which built Dallas’ Nasher Sculpture Center. He is married to Kay Hartell Cattarulla BA ’55; their son, John, graduated with a degree in History of Architecture in 1993.

“ChemE Director Rhodes’ insistence on clear explanatory writing in Unit Operations reports forced us to develop writing skills that we otherwise would have lacked. These skills contributed greatly to my professional advancement in the non-technical path I took not long after joining ExxonMobil and in my subsequent foundation work. The fact that most of my career was spent in non-technical positions is evidence that my training at Cornell gave me versatile capabilities that went beyond those related to traditional engineering.”

Thomas Weber
(B.S. ChE. ’53)

Thomas Weber was raised in Hinsdale, Illinois, a suburb of Chicago, and entered Cornell for chemical engineering in 1948. Upon graduation in 1953, he was unexpectedly and swiftly drafted into the U.S. Army as the Korean War was ending. Weber’s typing talents led to a position as company clerk at Ft. Slocum on an island in Long Island Sound. Upon discharge, he worked for Esso Research and Engineering for three years while pursuing a master’s degree in chemical engineering at night from Newark College of Engineering (now NJIT). Weber then returned to Cornell for a Ph.D. in chemical engineering, conducting research under Prof. Peter Harriott. In 1963, he joined the newly forming Department of Chemical Engineering at the State University of New York at Buffalo. After 38 years, Weber retired as an emeritus professor in 2000. He and his wife now reside in Canterbury Woods, a continuing life-care retirement community in the Buffalo suburb of Williamsville, New York.

“When I returned to Cornell for graduate work, I was one of several teaching assistants in the Unit Operations Laboratory. I was also provided the opportunity by Prof. Raymond Thorpe to teach in some stoichiometry classes. Finally, near the end of my graduate work, I taught several senior-level courses as an instructor. These enhanced my desire to pursue a career in engineering education. My father had been an electrical engineer with a degree from the University of Iowa and my mother was a school teacher who graduated from the University of Chicago. She had always hoped that I would go into teaching; so in the end, I wound up having the best of both worlds.

For those with a “technical bent,” there is nothing better than a background in chemical engineering. I have to look no further than my own family. My daughter was a chemistry major at Cornell and then went to the University of Illinois for an M.S. in chemical engineering. She has been working in the food industry throughout her career. My son followed me through the undergraduate program in Olin Hall some 41 years ago. He works in the area of medical devices. In 2008, my classmate, Jim Ling, and I collaborated on a booklet, Memories and Beyond, which can be found in the Cornell Archives about our graduating class of 25. It profiles our class, describing the career paths of the respondents. The versatility of a chemical engineering degree is very evident. In summary, I have to give credit to my father, who had the foresight to point me to Olin Hall, and to my mother, who knew the great satisfaction of a teaching career.”

Class of 1954

John Hileman
(B.S. ChE. ’54)

Cornell gave John Hileman, (B.S. ChE. ’54) the son of a poor widow, the opportunity to earn a chemical engineering degree by granting him a McMullen scholarship. He retired at age 65 from Hercules, Inc. (which was later bought by Ashland Chemical) as the manager of the process engineers and automation engineers in central engineering. Since retirement, Hileman has been teaching statistics at Wilmington University and at age 81, is their oldest adjunct professor.

Dr. Rhodes’ Unit Operations course left a lasting impression. He insisted that our reports be both technically sound and written clearly. He would take the time to rewrite whole paragraphs to illustrate what was expected.

“The versatility of the training at Cornell led me to venture into the measurement and control of chemical processes during my engineering career. I am indeed indebted to Cornell; my training and degree opened many doors.”

Edward McDowell
(B.S. ChE. ’54)

When Edward McDowell, B.S. ChE. ’54, arrived at Cornell in 1951 at the age of 18, he was enrolled initially in the College of Arts and Sciences as Chemistry major. After reviewing the course catalogue, he discovered Chemical Engineering to be a better fit. He presented his file to the then-director of the chemical engineering school, Dr. “Dusty” Rhodes, who, after a five-minute perusal, said there was “no reason to reject him”. And thus, he was enrolled as a student in the school of chemical engineering.

His career began at a Standard Oil of California refinery in El Segundo, California, in process technical service. After four years, he was accepted into the California Institute of Technology’s M.S./Ph.D. program. Upon receipt of his Ph.D. in 1984, he returned to Standard Oil of California, now Chevron, in their upstream research laboratory, where he worked primarily of computer simulations of oil, gas, and water deposits in underground petroleum reservoirs. Upon retirement, he was elected as the AIChE President in 1989.

“My Cornell Chemical Engineering education provided me with knowledge in mathematics, chemistry, physics, and engineering necessary to solve many problems that have come up throughout my experiences. The most important Olin Hall experience was time spent inside (and outside) Unit Operations laboratory and the attendant reports, both of which greatly affected my thinking.”

Harvey Schadler
(B.S. ChE. ’54)

After graduating from Cornell in 1954, Harvey Schadler attended Purdue University for his Ph.D. in metallurgical and materials science. His entire career was spent with General Electric Research and Development Center (now called Global Research Center) in Schenectady, New York. His major scientific focus was on materials for nuclear power, aircraft engines, and nuclear magnetic resonance. Schadler’s administrative responsibilities culminated in the position of manager of the Materials Laboratory. He was also elected to the National Academy of Engineering in 1992.

“My five years at Cornell taught me how to become a successful communicator, which was important for training and mentoring the scientists on my research team.”

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My training gave me the background I needed to pursue a successful career in science. The opportunity to study in the fields of liberal arts allowed me to expand my horizons and inspired me to visit lands and peoples on every continent in the world.

Class of 1955

Joel Mallin
(B.S. ChE. ’55)

Joel Mallin graduated from the School of Chemical and Metallurgical Engineering in 1956. However, because engineering was a five-year course in those days, he considers himself part of the Class of ’55. Upon graduation, he went to work for North American Aviation in Downey, California. After two years, Mallin realized he wasn’t happy as an engineer, so he enrolled in Columbia Law School, graduated in 1960, and immediately went to work with a law firm specializing in federal tax matters. In 1964, he was recruited by the IRS to be staff assistant to the chief counsel in Washington, D.C., a position he held for two years. He has been in private practice in New York City ever since, and presently serves as chairman of the Finance Committee of the Herbert F. Johnson Museum of Art at Cornell.

“Probably the most influential experience was taking Prof. Clyde W. Mason’s course on Materials of Construction, a required course for all engineers. It was the first course in which I learned how to think and solve problems. I subsequently funded a scholarship in Prof. Mason’s name to honor a great teacher. Obviously my training at Cornell was very versatile, as it taught me that you can apply the ability to solve problems to any field.”

Class of 1956

John Baldeschwieler
(B.S. ChE. ’56)

After graduating from Cornell School of Chemical Engineering in 1956, John Baldeschwieler completed a Ph.D. in chemical physics at the University of California, Berkeley, in 1959. After finishing his military service in the U.S. Army, Baldeschwieler joined the faculty at Harvard as an instructor and assistant professor of chemistry. He then moved to Stanford in 1965 as professor of chemistry. Baldeschwieler served as deputy director of the Office of Science and Technology in the Nixon White House from 1970 to 1972 and then joined the Division of Chemistry and Chemical Engineering at Caltech. He is currently professor of chemistry emeritus at Caltech. His career has been focused on research in molecular structure and spectroscopy including infrared, nuclear magnetic resonance, and ion cyclotron resonance. Baldeschwieler also lead the development of phospholipid vesicles as vehicles for drug delivery, resulting in a successful commercial venture ultimately acquired by Gilead Pharmaceuticals.

“In our fifth-year plant-design project, we made an error in converting units of a factor of ten in estimating the capacity of our plant to produce chlorobenzene. We only discovered the error during the last week of the project, when it was time to design the storage facilities and the number of required tanks didn’t make sense. I have since always been very careful to check design and financial estimates before making major commitments.

My career has involved a wide variety of technical, leadership, and consulting assignments. My chemical engineering background has provided a solid basis for learning what I needed to know to be effective.”

Paul Bradley
(B.S. ChE. ’56)

Paul Bradley was by convention the Class of ’55, but because of an academic anomaly – the five-year program – he didn’t leave Olin Hall until 1956. His class was referred to as “the last of Professor “Dusty” Rhodes’ boys”, which expressed the culture of the time, of how both the students and the Director felt. To quote from personal correspondence, “My own acquaintance with the boys who finish the course here convinces me that they certainly are not all outstanding geniuses.” (Excerpt from personal correspondence with Director F.H. Rhodes) His statement was accurate on two counts, the gender reference and the intelligence appraisal. Paul Bradley is Professor Emeritus at the University of British Columbia and serves as commissioner with the British Columbia Utilities Commission.

The pivotal course in our program was “UO” (Engineering 5335-4 Unit Operations Laboratory). An experiment was performed on Monday, and the report was due on Professor Smith’s desk at 12:00 hours on Friday – there was no grace period. Revelation came on Monday when the graded reports were returned, always in my experience bearing the dreaded “R & R” (Revise and Return). The grading system was double jeopardy – the product of the mark for presentation and the mark for technical content, divided by one hundred. Picking one of my reports at random (“Pressure Drops in a Packed Column”), I see the mark to be (50 x 60)/100 = 30. My write-up of the results of this experiment covered five and one-half pages. When returned these were decorated with red marks, rather like graffiti on a public wall. Attached were eleven pages of critical commentary – to be addressed by the following Friday. As it turned out I have spent most of my career as an academic and I can only marvel at the dedication of the Ch.E. faculty.

“The versatility of our Cornell education would be documented if we had record of the diverse positions that graduates have filled. I lack this, but if the classmates with whom I remain in contact form an accurate sample, the versatility of the program is not in doubt. I refer to a Cornell education rather than “chemical engineering training” to acknowledge the opportunities that were available outside Olin Hall, enhanced by the luxury of the five-year program.

Memories of the Olin-Hall experience are revived whenever I sit down to write. From those long-ago UO reports the injunctions still rain down as if from on High: “Omit – can cover with fewer words & more clearly.” “Don’t string together nouns used as adjectives.” “Too many words to say too little.” “You don’t mean ‘interpreted’ – perhaps you mean ‘explained.’ No, you don’t find teaching like that anymore.”

Class of 1957

Roger Fisher
(B.S. ChE. ’57)

After graduation, Roger Fisher ’57 was one of only three classmates to continue to graduate school, which he followed with one year as a Fulbright Fellow in Osaka, Japan. Upon returning to the states, Fisher resumed working for American Oil R&D, who had granted him leave to accept the fellowship. Next, he transferred to Amoco Chemicals R&D for a three-year assignment, again in Japan. Fisher remained with Amoco Chemicals and Amoco Corporation for over 30 years, working in process design and planning and economics, and acquiring an Executive Program MBA.
from the University of Chicago along the way. Upon retirement, he was asked to continue an existing project, but as a consultant, representing Amoco Chemicals on a government trade advisory committee. This continued until 1998, when Amoco’s acquisition by BP ended its eligibility for membership.

“When contemplating going to graduate school, I was counseled by Prof. Jay Hedrick, who advised me to consider Princeton, a school I had not previously known for chemical engineering. It was good advice; I applied, was accepted, progressed from teaching assistant to Standard Oil of Indiana Fellow, and then received my Ph.D.

I know that my preparation at Cornell was instrumental in my admission to, and completion of, graduate school and a very interesting and rewarding career.”

Morton Friedman
(B.S. ChE. ’57)

After graduating from Cornell, Morton H. Friedman ’57 went to the University of Michigan, where he earned a Master’s and Ph.D. in chemical engineering. He then spent about five years at the 3M Company doing propellant research, before moving to the Johns Hopkins University Applied Physics Laboratory, where he soon became involved in its collaborative biomedical program with the Hopkins Medical Institutions. Friedman has been in biomedical engineering ever since, applying good fluid and transport principles from chemical engineering to biomedical problems at Hopkins, Ohio State, Duke, and George Washington universities. Although he has had his share of administrative and professional positions, he has continued to conduct research on transport and mechanics in the eye and the circulatory system.

“The Olin Hall experience that, in retrospect, was most influential for me was Dusty Rhodes’ obsession with concise and clear writing. His philosophy was that technical accuracy and good writing had to be present simultaneously if the product was to be acceptable, a view he emphasized by evaluating our unit operations lab reports for both writing and content, and multiplying the two scores to calculate our grade.

Much of what we learned to do manually in the area of process design is now done computationally, but the knowledge of chemistry that we gained, along with doses of mechanics and principles of electricity, gave us an added area of expertise that other engineers of our era did not have. This is particularly evident in my field. The preparation for a biomedical engineering (BME) career offered by a chemical engineering department—particularly one such as Cornell’s that has embraced biomolecular engineering—is probably comparable to the education one can obtain in an established BME department.”

Class of 1958

Matthew Sagal
(B.S. ChE. ’58)

After graduating from Cornell in 1958, Matthew Sagal received a Ph.D. in Physical Chemistry at MIT and started as a research scientist at Bell Labs, where he spent 15 years mostly in R&D management. He then shifted to the AT&T semiconductor business where he retired as VP of Business Development. For the past 22 years, Matthew has been a consultant in the planning and negotiation of technology-based strategic alliances (AKA “Open Innovation”).

“One memorable Olin Hall experience was Unit Operations lab, where I learned to work closely with professional colleagues, to deliver on a tight schedule, and to write clearly. I never worked as a chemical engineer and only for a few years as an individual researcher at Bell Labs before moving into management. But the combination of my scientific and engineering training as a chemical engineer, along with the ability to learn new things that I gained at Cornell, has been vital to me in a 52 year (and counting) varied career.”

Class of 1960

Stephen Rosen
(B.S. ChE. ’60)

After receiving his undergraduate degree in 1960, Stephen Rosen graduated with a Masters of Engineering in plastics engineering from Princeton in 1961, before returning to Cornell to complete his Ph.D. in 1964. Stephen started as an assistant professor of chemical engineering at Carnegie Tech (now Carnegie Mellon) in January of 1964, where he rose through the academic ranks. He left in 1981 to become department chair at the University of Toledo and in 1990, joined the University of Missouri-Rolla (now Missouri University of Science and Technology) where he was chair for five years before retiring in December of 2002 as Professor Emeritus. Since then, Stephen has been enjoying a quiet retirement in Rolla, a nice college town in the Ozark boondocks.

“I elected the polymer course as an undergraduate, which was taught by a new, young faculty member, Ferdinand Rodriguez, who lit a fire under what had been an uninspired (and uninspiring) student. I returned to Cornell to work under Professor Rodriguez for my Ph.D. That formed the basis for my 39-year academic career and my successful book Fundamental Principles of Polymeric Materials. I recycled many of Ray Thorpe’s homework problems whenever I taught the intro course throughout those 39 years, and I often used Julian Smith’s text when I taught unit ops. I tried to hide behind the microscope in C. W. Mason’s microscopy course, but in his materials science course, I learned how to formulate exam questions that required thought and synthesis rather than rote memory (e.g., “How would you test the crispness of corn flakes?”)

Our five-year undergraduate curriculum included several courses that are no longer part of a chemical engineering B.S. Some (e.g., cost accounting) weren’t worth much, but others, such as the mechanics courses, have been very helpful to me. Professor Mason’s materials science course provided a good foundation for my subsequent work in polymers. Peter Harriot’s emphasis on technical communication in the unit ops lab has been invaluable (I still cringe at split infinitives). I tried to follow his example whenever I taught unit ops lab.”

Class of 1961

Roger West
(B.S. ChE. ’61, Ph.D. ChE. ’65)

Roger West obtained his Chemical Engineering degree in the five-year program in 1961 (class of 1960) and followed with a Cornell Ph.D. in 1965. His entire career was spent at Exxon Chemical Research & Development, where he worked in synthetic rubber technology. He worked with four other engineers and chemists to commercialize a novel method to produce a polymer with varying composition along its length in a tubular reactor. Their work was recognized by...
The broad range of education received at Olin Hall equipped me for various aspects of research and new product and process commercialization, including equipment design.

There were numerous valuable experiences in Olin Hall. I audited Prof. Rodriguez’s Polymer Science course to fill a gap in my training, which was fortuitous since when I began my career I was assigned to the Exxon area concerned with synthetic rubber R&D, culminating in the award mentioned above.

Class of 1962

Samuel C. Fleming  
(B.S. ChE. ‘62)

Sam Fleming’s B.S. ChE. ’62 interest in chemical engineering sparked as a junior in high school. Fleming was invited by his chemistry teacher to spend a weekend in Ithaca, sponsored by Walter Carpenter, learning about Chemical Engineering at Cornell.

“The weekend changed my life, ushering in a now 55 year involvement with Cornell, having served on the Chemical Engineering and Engineering Advisory Council, served as a Cornell Trustee, and currently serving on the Weill Cornell Medical College Board.”

Fleming’s career began as a Research Chemical Engineer at Du Pont where he was introduced to exciting entrepreneurial frontiers in polymer science and was led to get an MBA at Harvard. After which he joined the Chemical Management Consulting section at Arthur D. Little (ADL) in 1967 at the dawn of the modern information age.

In the early 1970’s, he saw an opportunity for ADL to provide a cost-effective information service that gave chemical clients access to the non-proprietary insights of ADL experts about promising technologies. ADL supported and funded Fleming to create a subsidiary, Arthur D. Little Decision Resources (ADLDR) in 1974, which he led for ten years as it became a leading global information source of promising emerging technologies impacting the chemical, biomedical and information technology industries. In 1984, Fleming was promoted to the Management Group at ADL and managed many of its domestic businesses ranging from Information Technology, Operations Research, and Financial Services to the Middle East and Hong Kong.

While fascinating to him, Fleming saw a great entrepreneurial opportunity to buy out ADL-DR. In 1989, after long negotiations, ADL agreed to sell ADLDR and he became DR’s Chief Executive and Major Stockholder. The new strategy for DR focused on higher value added, proprietary information services that identified and assessed promising products for the global bio pharmaceutical industries. The new strategy worked well from the outset, as 12 leading pharmaceutical companies subscribed to the Cognos Information Service, which forecast the therapeutic impact of frontier technologies on diseases of the central nervous system. In subsequent years, he successfully introduced new information services, covering oncology, cardiology, and other leading therapies. In 2003 Fleming sold the company and decided to focus on not-for-profit boards and foundations committed to improving the quality of health care.

“An Olin Hall experience that shaped my professional development and career was taking Professor Rodriguez’ course. I was introduced to the dramatic future potential of polymer science. His insight led me to join the Du Pont Company as a polymer research engineer, where I gained invaluable experience learning about the frontier opportunities in the field. These experiences sparked my interest in becoming an entrepreneur.

My impression about the versatility of Cornell chemical engineering training is that the wide ranging experience gained as a Cornell chemical engineer influenced the diversity of my career choices: research chemical engineer, Army Officer, chemical industry management consultant, health care entrepreneur, board chair, chief executive, and trustee and board member of non-profits and foundations. My multifaceted career reflects the impressive versatility of the Cornell chemical engineering experience.”

Class of 1963

Michael Wolfson  
(B.S. ChE. ’64, LL.B. ’67)

For Michael Wolfson, the combination of a Cornell chemical engineering degree in 1964 and a law degree in 1967 naturally led to a career in patent law. He practiced in both large and small corporate settings and then became a partner at a boutique intellectual property firm and later at several large international law firms. Wolfson notes that throughout his career, which involved patent solicitation, litigation, licensing, and counseling, he continually drew on the strong chemistry education and the extensive engineering curriculum at Olin Hall. The varied curriculum allowed him to practice in areas unknown at the time. For example, Wolfson did extensive patent work involving the early development of liquid crystal displays and semiconductor fabrication; DNA synthesis; synthetic lubricants; trenchless pipeline rehabilitation; medical products, such as catheters, stents, and vascular graphs; and a wide variety of consumer products. None of these subjects were taught in courses at Olin Hall, but a strong chemical engineering background proved to be invaluable.

Michael and his wife Ellen Wolfson, M.D., reside in Greenwich, Connecticut, where Ellen is a practicing internist. They have one married daughter, Jennifer ‘95, also a practicing physician, and two grandchildren. Michael and Ellen are long-time supporters of Cornell and were catalysts in the efforts in 1998 to restore the mural in the Olin Hall Lounge. They are also supporters of the Cornell Golf Course and benefactors of a named scholarship at the Law School to support students with an undergraduate degree in engineering and an interest in patent law. Michael is currently a member of the Cornell Law School Advisory Council and the Dean’s Special Leadership Committee that seeks to encourage support and continued relationships between alumni and the Law School.

“I am grateful for the opportunity to have received a versatile education in chemical engineering that taught him the “outside the box” adaptability with which to approach complex legal and technical problems. It as an honor to be part of the class representing the 75th Anniversary of the School of Chemical Engineering and it has been my great pleasure to be invited to present several seminars about the practice of patent law in Olin Hall and at the Law School.”

Class of 1964

Clark A. Colton  
(B.S. ChE. ‘64)

After graduating from Cornell, Clark Colton ’63, Ch.E. ’64 received a Ph.D. from MIT in 1969 and stayed on in the faculty, where he served as deputy department head, first Bayer Professor, and chairman of the Centennial of Chemical Engineering. He has had an active research effort spanning
many fields, mostly bioengineering, including membrane separation processes, artificial internal organs, enzyme engineering, physiological transport, and therapeutic approaches to diabetes, which includes implantable glucose sensors and tissue engineering approaches to transplantation of islets of Langerhans in devices of various types. Colton’s current interests include regenerative medicine, particularly stem cells and their differentiation. Nineteen of his former doctoral students have held, or now hold, positions in academia. Colton has won a number of awards for research from various U.S. and international organizations. Most important, he met Ellen Brandner ’64 at Cornell. They married in 1965 and had four children and eight grandchildren, each of whom is the apple of Colton’s eyes.

“My career and professional development were most influenced by my experience in Unit Operations Laboratory. That is where I learned how to write technical reports, a capability that has served me well over the years. I was most astounded at the dedication and effort of Prof. Peter Harriott and his faculty colleagues as they critiqued and corrected our reports. For more than 15 years, I have been in charge of the Chemical Engineering Project Laboratory at MIT, a major, resource-intensive effort that currently involves about 25 staff, including 10 faculty members. It is a problem-solving class with a heavy emphasis on written and oral technical communications as well as on team building and interpersonal communications. The focus on communication I have brought to this class flows directly from my experience in UO lab at Cornell.

As a student I was always told that chemical engineering is the broadest discipline. My professional career has verified that this is absolutely true. With our broad grounding in the physical and biological sciences, as well as engineering sciences, we have a view of the world like none others and we go literally where angels fear to tread. I have found my training, which also permits me to learn deeply in new fields, has made me comfortable in tackling a wide variety of careers. One the most valuable components of the Chem. E. training, however, is learning how to analyze a problem and use clear logic to determine a solution. That skill is critical to success in many careers in addition to engineering, including medicine and law.”

Philip Brodsky
(B.S. ChE. ’65, Ph.D ChE. ’69)

Philip Brodsky received his B.Ch.E. and Ph.D. degrees from Cornell in 1965 and 1969 respectively. During his 34 year career with Monsanto Company, he held various positions in research and research management, involving the fields of plastics, resins, industrial chemicals, agricultural chemicals, pharmaceuticals and environmental technology. He was appointed Director of Corporate Research and Development in 1987 and elected Corporate Vice President in 1996. After retiring in 2002 he moved to Vail, Colorado and in addition to enjoying mountain activities with his wife, Sunny, and his children and 8 grandchildren, he serves as Board Chair of the Walking Mountains Science Center, an institution dedicated to science education for residents and visitors to the Vail area.

“The small size of the Chem E. department provides students with a supportive and nurturing environment within the large Cornell University community. I clearly remember preparing for an organic chemistry exam in which I and a small group of classmates stayed up all night cramming. Just when we thought we had finished preparing and were hoping for a couple of hours of sleep, we realized we had another chapter to cover, “Dicarboxylic Acids”. We all groaned, and to this day I get queasy when I see those words. We completed the cram session at 8 am and went directly to the exam, and to this day I credit the support and encouragement of the group for helping me through the exam. I learned then that a team approach helped us all and I have benefited from that understanding throughout my career.

Rigorous science and engineering courses, coupled with a healthy dose of humanities courses, establishes a strong foundation for a wide variety of careers. One the most valuable components of the Chem. E. training, however, is learning how to analyze a problem and use clear logic to determine a solution. That skill is critical to success in many careers in addition to engineering, including medicine and law.”

Michael A. Gibson
(B.S. ChE. ’65)

Michael Gibson, B.S. ChE. 1965, was born in Dallas, Texas, and grew up in Tulsa, Oklahoma, with a father and several other relatives who were engineers, some from Cornell. Following his Cornell graduation and several oilfield summer jobs, Gibson worked in process design at Exxon’s Baytown refinery, returned to Rice University to pursue a Ph.D., and served as an Army Corps of Engineers officer at the NASA Johnson Space Center, highlighted by the Apollo 13 rescue. Following his discharge and Rice graduation, Gibson worked for nine years with Exxon on Research on synthetic fuels development from coal, oil shale, heavy oil, and tar sands. When this work was halted for economic reasons, Gibson and his partner started their own contract research and manufacturing business, which they operated for 20 years until its sale. He now works for the buyer and other clients as an independent consultant.

“Among my many positive experiences with faculty in Olin Hall, my one-on-one conversations with Prof. Raymond Thorpe stand out in my memory. His unselfish dedication to his
students led him to keep his office open many extra hours for students with questions about his subject matter and for broader advice about career and life choices. He was an outstanding teacher and mentor.

Throughout my career, the training I received at Cornell has been highly valuable. I have used and benefitted from materials from every chemical engineering and science course I took at Cornell. The hands-on work ethic, inspired by my Olin Hall experiences, was especially valuable when my partner and I started our own business.”

Fred Naider  
(B.S. ChE. ’65, M.S. ’67)

After graduating with a B.S. and M.S. in Chemical Engineering at Cornell, Fred Naider went on to do a Ph.D. in Polymer Chemistry from the Polytechnic Institute. This led him to the field of polypeptides and eventually to become a professor of chemistry and biochemistry. His laboratory has been awarded over $10 in grant support for studies on peptide chemistry and biology from NSF/NIH and others and has published over 250 journal articles and chapters. Fred became a Distinguished Professor at CUNY in January 2000 and has been Interim Provost and Senior Vice President for Academic Affairs since August 2012.

“It was at Olin Hall that I learned to think and that I learned how to be an Academic. My mentor Professor Rodriguez and my Advisor Professor Julian Smith were role models as teachers and advisors. I have taken their lessons with me as I proceeded through my academic career. I am very proud that I have mentored numerous undergraduates - 20 Ph.Ds and about 30 post-doctoral fellows and that I have taught organic chemistry, biochemistry to thousands of students.

My training at Cornell Chemical engineering was excellent and the education at Cornell was seminal in my life. At Cornell I learned how to think and how to write. Two skills that have followed me throughout my career. I often mention the outstanding teachers that I had. In addition to those above Peter Harriott was an outstanding instructor who was demanding but fair, in fact all of the faculty including Director Winding gave memorable performances both inside and outside the classroom. Just as important were my classmates who supported the ship that helped us float through our degrees. I am grateful to the School of Chemical Engineering, the professors and my fellow students. They all served to mold me into whatever I have become.”

Class of 1966

Martin Schwartz  
(B.S. ChE. ’66)

After graduating from Cornell in 1966 with his Bachelor’s in Chemical Engineering, Martin Schwartz’s career began with seven years at Chevron Corp. in refinery engineering and logistics and supply, while simultaneously obtaining an MBA at night; followed by 14 years at Raychem Corp. in management positions in manufacturing, finance, marketing, international sales, and as general manager of the company’s operations in Mexico; then 10 years as vice president of operations and then CEO of Southwall Technologies, a publicly traded thin-film deposition company; and finally five years as CEO of Therma-Wave Inc., a company that designs and manufactures metrology equipment for the semiconductor industry, during which time he managed the IPO of the company. Since retiring in 2003, Schwartz has been a volunteer counselor for the Silicon Valley chapter of SCORE (Service Corp for Retired Executives), sponsored by the U.S. Small Business Administration, providing counseling and support to small businesses and start-ups. He has been married for 45 years to fellow Cornellian Roberta Bernstein Schwartz. They have two sons, Bryan and Kevin, who are both Cornell alumni.

“It is difficult to cite any one Olin Hall experience that had a unique impact on my career/professional development. Overall, I believe the rigor and analytical nature of the program provided an excellent foundation. The outstanding level of the student body offered a challenging environment that made it easy to adapt to the corporate world. On more than one occasion in my early career, Olin Hall and other Cornell alumni were personally helpful in my development.

The Cornell ChemE education has always sought to provide not only science and engineering fundamentals, but an understanding of economic and commercial influences and impact as well. Students, while focused on their engineering studies, are generally well rounded, diverse, and interested in the world around them. I believe this is one reason that so many Olin Hall alumni have been successful in both the corporate world as well as academia.”

Class of 1969

David S. Weaver  
(B.S. ChE. ’69)

Sewell David Weaver entered Cornell’s Ph.D. program after receiving an M.S. degree in chemical engineering from Lehigh and spending four years as a research engineer with DuPont. His DuPont work, at that time, involved pilot plant synthesis of monomers, equipment evaluation studies of polymer isolation techniques, related scale up, and safety issues in support of a project to build a commercial facility for the production of synthetic elastomeric materials. After receiving his Ph.D. in 1969, Weaver returned to DuPont, and was assigned to a research and development program in the general area of fluorocarbon monomer synthesis and commercialization of new fluoroeiasticomeric compounds. His research in that area led to several U.S. and international process patents in his name. In the subsequent years, his responsibilities expanded in scope to include new plant design, safe handling techniques, profitability analysis, and training of new engineers, in addition to consultation assignments in Europe and Japan. He retired in 2004 as a DuPont Research Fellow.

“I was assigned as a graduate assistant to Dr. Robert York in his Plant Design and Economics course, a position which I held for about three years. Dr. York was a dedicated instructor and, not only was he totally prepared for his formal lectures, but he also spent quality time with both his students and graduate assistants. We agreed that I would do my thesis and research under his guidance, which helped to continue my path towards a lucrative career in chemical engineering.

My Olin Hall experience was tailored for my professional assignments, and this training had a significant impact on my career and professional development. I believe that my chemical engineering training was completely versatile, and that while I chose research and development, I could have taken any available career path.”

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Robert Langer, B.S. ChE. ’70

Robert Langer, B.S. ChE. ’70, is the David H. Koch Institute Professor at MIT. He has written over 1,200 articles and has 815 patents, issued or pending. His many awards include the U.S. National Medal of Science, the U.S. National Medal of Technology and Innovation, the Charles Stark Draper Prize, Albany Medical Center Prize, the Wolf Prize for Chemistry, the Priestley Medal, and the Millennium Technology Prize.

“I remember studying in the Olin Hall library many times with all my friends, studying mechanisms of blood damage with Bob Finn (for my bachelor’s thesis), being a TA for George Scheele’s Heat and Mass Transfer course, as well as taking Peter Harrriott’s Unit Operations course, which taught me not only about research but technical writing. These experiences shaped my entire career.

My experience in chemical engineering was very versatile, and I learned a lot. The professors were great teachers.”

Class of 1971

Katherine Ku (B.S. ChE ’71)

Katherine Ku, B.S. ChE ’71, has been living in California for 35 years now, 30 of which she has worked at Stanford University in technology licensing, where she takes inventions and software arising from university research and transfers the results to industry via an intellectual property license agreement. Ku loves her work, has a daughter who is the love of her life, has traveled extensively, and has been very lucky throughout her life.

“I transferred into chemical engineering my junior year and was the only woman in my ChemE class of about 40 men and probably one of about 4 women engineering students in the whole school – the guys didn’t know what to think of me! I had a great Fluid Mechanics teaching assistant (Robert Langer) and did really well in the class; we still keep in contact. I did a senior project with Robert Finn who, in retrospect, probably led me to more of a bioengineering focus in my early career.

I really like to hire chemical engineering graduates because the training is very broad and chemical engineers know a little about a lot of things. We used to call ourselves “jack of all trades” because we can understand the physical and biological sciences. It’s a fabulous background for people who have many interests. My ChemE background has helped me my entire career and I am eternally grateful for it.”

Class of 1972

Charles Brown, Jr. (B.S. ChE. ’72, M.Eng ChE. ’73)

Following graduation from the M.Eng program in June 1973, Charles “Charlie” Brown joined Eastman Kodak as a process engineer in its synthetic organic manufacturing operation in Rochester, New York. Kodak’s increasing reliance on complex organic compounds provided an early opportunity for him to demonstrate his technical leadership skills. Through a series of promotions within Kodak’s manufacturing, research and development, and consumer business unit, Brown ultimately became Kodak’s director of global manufacturing and logistics and a corporate senior vice president. He retired from Kodak in 2006 as the chief administrative officer and went on to serve as the inaugural director of the Rochester Area Colleges Center for Excellence in Math and Science, created to assist in addressing the crisis in science, technology, engineering, and math (STEM) education.

“I would identify three Olin Hall ‘experiences’ that influenced my professional career.

First, I realized my own capacity to respond to an enormous workload and the discipline required to achieve seemingly un-accomplishable amounts of work.

Second, I realized how important clear verbal and written communications were to my success through UO lab reports and my M.Eng. design project.

Third, I realized—the creation of a new Olin Hall tradition of convening for lunch at a College Town bar to “celebrate” another successful week—the importance of enjoying your work and the company of your colleagues.

The versatility of my Cornell chemical engineering education was instrumental in shaping me and my career. The School of Chemical Engineering provided the technical depth that served me well, first as a manager and then ultimately as a senior executive of a major technological

Class of 1973

Carol Nolan (B.S. ChE. ’73)

After graduating from Cornell with her B.S. in Chemical Engineering, Carol Nolan received her M.S. in Chemical and Biochemical Engineering from the University of Pennsylvania. She has since spent over 30 years in the biopharmaceutical industry and is currently an independent consultant. Her career started in research and development and expanded to manufacturing operations, quality, and project management positions. A highlight was managing the start-up of Amgen’s Rhode Island manufacturing facility to produce Enbrel®, a novel therapeutics for rheumatoid arthritis.

“My Olin Hall experience that was influential in my career was the Unit Operations Laboratory. I can remember going into the lab the first time with a one sentence description of the goal of the experiment and we all looked at each other and said “but what are we supposed to do?” It was the first time we had a lab course where we weren’t following a recipe. We had to figure out for ourselves what data to take to achieve the goal. It taught me how to approach an experimental problem and then how to communicate the results through written reports. I probably never worked harder in a course than in UO Lab, but it paid off in many ways. I still cringe every time I see a dangling participle thanks to Prof. Charles Winding!

Chemical Engineering training above all taught me how to solve problems: how to organize the information available, how to attack a problem, and how to persevere to solve it. From the first Material and Energy Balances course through to UO Lab, this skill was practiced over and over and over. Problem solving is now permanently part of my psyche. Time management skills are also developed because of the sheer volume of work.”

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Class of 1975

Richard Hauptfleisch (B.S. ChE. '75, M.Eng. ChE.'76)

A native of Endicott, New York, Richard Hauptfleisch '75,M.Eng.'76 recently retired from ExxonMobil Chemical after a 32+ year career. During his career, he was involved in technical and managerial assignments supporting ExxonMobil's chemical manufacturing facilities around the world. He has been a consistent, generous supporter of the Industrial Practitioner (IP) program in the School of Chemical and Biomolecular Engineering. For over two decades, the IP program has brought chemical engineers with significant experience in engineering practice to the Cornell campus to teach seniors and masters of engineering students.

My teaching assistant position while a Masters of Engineering candidate was very influential in showing me how to mentor people, and it honed my communication skills.

The practical aspects of my degree that I learned from the Cornell professors with industrial experience allowed me to relate to a wide variety of engineering students.

“The discipline and quantitative rigor of my Chemical Engineering was a quintessence experience that shaped my ability to think and compete in various analytic environments. I often use my educational experiences as an equity stock manager. Principles of calculus and chemical engineering still apply. In particular, I always think about the second law of thermodynamics when thinking about the evolution of technology markets and product cycles.”

Class of 1976

Howard Greenberg (B.S. ChE. ‘76)

Howard E. Greenberg (B.S. ChE. ’76) is a senior clinical pharmacologist, with education and experience in chemical engineering, business, clinical medicine, and biopharmaceutical clinical research. Over the past 15 years, he has conducted over 100 early-phase clinical pharmacology studies and, more recently, engaged in pharmacovigilance and drug safety. In addition, he has served on institutional review and data safety monitoring boards, pharmacy and therapeutics and medication quality committees, and several professional societies and committees dealing with drug development, regulatory science, and drug safety. He is currently a global medical safety physician at Janssen R&D (Johnson & Johnson, Inc), in Titusville, New Jersey, and adjunct associate professor in the Department of Pharmacology and Experimental Therapeutics of Thomas Jefferson University in Philadelphia, Pennsylvania.

“My experiences in Unit Operations lab and Senior Design were probably the most influential in my career, overall. The lab reports taught me how to write concise and cogent reports that effectively convey data and interpretation, whether in chemical engineering, financial business analysis, or clinical pharmacology. The design project taught me how to work on teams, be it collaborating, or dividing and conquering, again, something I have used in many venues over the past decades in various forums. I have also kept in close touch with several Cornell ChemE colleagues over the years. I have also participated in the Cornell Club of Greater Philadelphia, CAAAAN, and Cornell Council.

I have interviewed high school students for Cornell within CAAAAN for decades, and given several presentations to college-bound students, as well as discussed the flexibility of undergraduate engineering education in job interviews and other professional forums. My “take home message” has consistently been, “engineering, and in particular chemical engineering, is a wonderful background for just about ANY future career endeavor. It basically teaches one to analyze problems, assess what data you have and what data you need to collect, and come up with practical solutions; which are needed in engineering, business, law, or medicine.” Following my undergraduate education in ChemE, I received graduate degrees in ChemE, an MBA, and an MD, with training in internal medicine and clinical pharmacology. I have found my chemical engineering education valuable in both my studies and my practice, in the general approach to problem solving, as well as some specific concepts (e.g., reaction kinetics in ChemE translates well to pharmacokinetics in clinical pharmacology).”

Class of 1977

William Steers (B.S. ChE. ’77)

After graduating from Cornell University, William Steers, B.S. ChE. ’77, pursued a career in academic medicine, with urology training at the University of Texas and MD Anderson Cancer Center and a post-doctoral fellowship in neuropharmacology and neurophysiology at the University of Pittsburgh. With over 300 publications and guest lectureships around the world, he has served as the president of the American Board of Urology and University of Virginia’s physician group practice. Currently, Steers is the Paul Mellon Professor and Chair of Urology, editor in chief of the Journal of Urology, and an HHS Secretary Kathleen Sibelius and NIH Director Francis Collins appointee to an NIH Advisory Council at NIDDK.

“The discipline and quantitative rigor of my Olin Hall experience and the enthusiasm of its faculty led to a successful academic research career. Courses in physical chemistry, biophysics, and pharmacokinetics were especially valuable in neuropharmacology and my work with the pharmaceutical industry. In fact, NOVA filmed in my laboratory during the period I was co-investigator on Viagra in the mid-1990s. Team projects as a fourth-year ChemE student were a great introduction to team approaches to problem solving, which are critical in medicine and biomedical research.

The versatility of my chemical engineering degree can be gleaned not only from my urologic research (think plumbing, fluid mechanics, and what we call urodynamics with pressure-flow studies), but also from the fact that my wife and I own a vineyard. My background in fermentation has allowed me to pursue a passion in winemaking.”
Mark Holtzapple earned his chemical engineering degrees from Cornell University (B.S. Ch.E. '78) and the University of Pennsylvania (Ph.D. '81). From 1981 to 1985, he served as an officer in the U.S. Army and developed a miniature air conditioning system to cool soldiers. In 1986, Holtzapple joined the Department of Chemical Engineering at Texas A&M University, where he has received numerous awards for both teaching and research, including the Presidential Green Chemistry Challenge Award given by the President of the United States (1996) and the Walston Chubb Award for Innovation given by Sigma Xi (2006). His research interests include fuels and chemicals from biomass, food and feed processing, water desalination, high-efficiency engines and air conditioners, high-power electric motors, and vertical-lift aircraft.

Holtzapple developed his first invention as an undergraduate at Cornell, describing it in a seminar attended by faculty and students. He has continued inventing and now has over 40 U.S. patents issued. His Cornell education was incipient in developing his widespread interest in various engineering disciplines. His inventions span many fields including chemical engineering, mechanical engineering, electrical engineering, aerospace engineering, biotechnology, and medical technology.

Dr. David Allen, B.S. Ch.E. '79, is the Gertz Regents Professor of Chemical Engineering, and the director of the Center for Energy and Environmental Resources, at the University of Texas at Austin. His career has been dedicated to improving air quality and incorporating environmental concepts into chemical engineering education. His efforts in these areas have earned him national recognition for both research and teaching. Allen has also served as an advisor to multiple governmental agencies; most notably, he is currently the chair of U.S. EPA’s Science Advisory Board.

“The while at Cornell, I took as many electives as I could from Prof. Mike Shuler because I found him a particularly engaging and effective instructor. When I started my own teaching, I imitated (the sincerest form of flattery) Mike’s approach to classroom delivery and classroom material preparation. The teaching awards that I have won should probably have his name on them too, so thank you, Mike.

In my career, I've worked on topics ranging from heavy-oil chemistry and petroleum refining to atmospheric chemistry and the interface between engineering and public policy. At every stage, I've used the foundational principles I learned as a chemical engineer.”

Kent Göklen earned his BS in Chemical Engineering at Cornell in 1979. Kent Göklen went on to obtain his M.S. and Ph.D. at MIT. He then returned to New Jersey to work at the Merck Research Laboratories, where, for the next 21 years, he worked on the development, scale-up, and tech transfer of purification processes for natural products and biopharmaceuticals, including the processes for Mevacor™ and Cancidas™. Göklen moved to GlaxoSmithKline in King of Prussia, Pennsylvania, in 2008, where he has continued to focus on biopharmaceutical development. He is active in the ACS Division of Biochemical Technology, and enjoys returning to Cornell a few times a year to assist with the Biochemical Engineering and Senior Process Design courses.

“Reflecting on the years I spent in Olin Hall, I am thankful for the many formative experiences I had and the patient mentorship of several professors, George Scheele, Peter Harriott, and Mike Shuler key among them. From my experiences in Unit Ops Lab and Senior Process Design, I learned the importance of making steady progress toward an important goal, and that such a goal could not be achieved in one night, no matter how long. And I will always remember the words of Julian Smith—words that I have repeated to many of my younger colleagues over the years—when I asked about the chances of being awarded a prestigious graduate fellowship for which I was thinking of applying—"the only thing that you can be sure of is that if you don’t apply, you won’t get it."

My career has taken many turns since I graduated from Cornell. I’ve always been very pleased to find that I could adapt to new roles and deal with new technologies, thanks in no small part to the chemical engineering fundamentals and the importance of teamwork that I learned at Cornell.”

Michael Weill, B.S. ChE. ’79, is currently CEO and founder of Global Deepwater Partners, LLC, a startup company formed to work with national oil companies in the areas of exploration and early development. Weill retired from BHP Billiton Petroleum, Inc. after 11 years during which he served in various roles, including vice president strategy for the Americas, VP Americas operations and development, president integrated business development, and president operations and technology. He was responsible for building BHP’s businesses in the Gulf of Mexico deepwater and Trinidad from scratch. Prior to BHP Billiton, Weill spent 16 years in various managerial and technical roles with Shell in New Orleans, Houston, and The Hague.

“Arguably, my most significant experience at Cornell, the one that laid the groundwork for what would be a successful career, was the discussion at the end of my junior year with Prof. Julian Smith; a discussion where he suggested that I needed to take a year off. I had been struggling with my studies, understanding what would come after Cornell, and over-focused on rowing and fraternity. I was lucky that a summer job for Hoffman La Roche turned into a full-year project experience. I returned a year later, having learned several lessons that one only learns from failure, with renewed vigor to finish my ChemE degree.

To this day, I would argue with anyone about the versatility of a chemical engineering degree. Working in the upstream oil and gas business, I have seen ChemEs work in every specialty, something that can’t be said for some of the other engineering degrees. The degree also exposes you to a level of mathematics, chemistry, project work, and economics that were lacking in other specialties. I never cease to be amazed when I run into ChemEs in banking, law, private equity, and other such unconventional professions undertaken by engineers.”

Marshall Watson, B.S. Ch.E. ’81, is chair of the Bob L. Herd Department of Petroleum Engineering and holder of the Endowed Roy Butler Chair. He has been a
professor at Texas Tech University serving on the Petroleum Engineering faculty since 2006. He was the Society of Petroleum Evaluation Engineers International 2012 President. Watson has two patents, one for horizontal drilling and the other for hydraulic fracturing. Prior to arriving at Texas Tech, his industry experience was with both major and independent oil companies, beginning with Shell Oil Company.

Watson, who has been the recipient of multiple teaching awards while at Texas Tech, credits his teaching abilities to Cornell Prof. Raymond Thorpe. “I remember one of Prof. Thorpe’s exams had a question on relative humidity. Several of us worked the problem by simply plugging into an equation, which resulted in huge percentages of water vapor. Prof. Thorpe just shook his head and said, based on the classes’ answer, we should be drowning right now. From that point on, I was determined to understand the physical meaning of the theory behind the lectures and equations. Today, I teach based upon what I learned from that experience.” Watson also appreciated Dr. Julian Smith for allowing him to substitute Structural Geology for Physics III, as that course gave him the rest of the tools to be extremely successful in his petroleum engineering endeavors. Watson notes that his Cornell ChemE experience gave him the ability and confidence to tackle any engineering problem.

Class of 1982

Jeffery Jensen (B.S. ChE. ’82)

Following graduation, Jeffery Jensen, B.S. ChE. ’82, worked in engineering and management roles for materials science companies Pall and Raychem before catching the start-up bug in the mid-90s. Since then, he has co-founded and provided leadership to a number of technology companies in Silicon Valley, including Eksigent Technologies (acquired by Danaher), Fluxion Biosciences, and Porifera. Jensen is currently the CEO of life sciences and diagnostics firm Fluxion and the chairman of nano-materials company Porifera. He is a graduate of the Program for Management Development at Harvard Business School.

“One of my lasting memories is pulling multiple all-nighters with project partners Ken Acker and Mike Cuccurullo to finish our senior design project. The experience taught me the power of perseverance and the pain of procrastination. I’m still learning the latter lesson on a regular basis...

Regardless of the industry or discipline, managing a business today is all about dealing with complexity. At its root, that is exactly what we learned through the chemical engineering program at Cornell. The methodology for designing, optimizing, and managing complex, integrated systems applies regardless of the area of work, whether focusing strictly on technology development, or something as seemingly far removed as sales and marketing. And let’s face it, after successfully surviving the challenging Cornell ChemE curriculum, graduates come away feeling pretty confident that they can handle just about anything.

In my own case, the specific technical training still has direct relevance. Even though the microfluidic systems I now work with are about a billionth the scale of a typical chemical plant, the same fundamentals still apply. I only wish I could have gone through the program now, the curriculum has really evolved and I am extremely envious of the current students!”

Class of 1983

Bobby Tsai (B.S. ChE. ’83)

Born and raised in Taiwan, Bobby Tsai, B.S. ChE. ’83, is the first of his family to receive a college education overseas. He now lives and works in Hong Kong, and is the owner/operator of a garment manufacturing company with multiple factories inside China. Besides work and family, Tsai volunteers his time for his local church, as well as for Cornell. Bobby and his wife, Fifi, have three children, two of whom are also enrolled in Cornell: Shawn ’13 and Kevin ’15.

“Nothing prepared me for the real world quite like our senior-year design project. It illustrated for me that real-life problems do not always have black-and-white answers, so we have to manage the unknowns and risks. At the same time, it also taught me the importance of team work: managing business is more about managing people than just managing tasks. I consider both lessons critical for my professional development.

As I have not spent a single day working as a chemical engineer, I can testify that my four years at Olin Hall helped prepare me to be a capable professional, not just a good engineer. From Olin Hall, I learned how to think creative-
Class of 1985

Margaret Wilde Frey  
(B.S. ChE. ’85, M.S. Fiber Science ‘89)

After earning a B.S. in Chemical Engineering in ’85, Margaret Wilde Frey followed a winding career path through an M.S. in Fiber Science from the Cornell College of Human Ecology, a stint in the personal care industry, a Ph.D. in Fiber and Polymer Science from North Carolina State University, and more work in polymer extrusion for industrial applications, before returning to Cornell. She is currently associate professor and director of graduate studies in Fiber Science and Apparel Design in the College of Human Ecology. Frey teaches courses in fiber and textile science and conducts research leveraging functional nanofibers for pathogen detection, signaling, and environmental remediation applications. She lives in Ithaca with her husband, son, and dogs.

“I first discovered polymers in Prof. Rodriguez’s course. We ran experiments in the basement of Olin Hall and somehow mine would always go a bit haywire. I remember emulsion polymerization beads the size of large pearls. Nonetheless, I was hooked and have continued to focus on polymer processing ever since.

Completing the chemical engineering degree was the hardest thing I have ever done. Compared to that, earning a Ph.D. and promotion to tenure were a walk in the park. The problem-solving methods, rigorous fundamentals, and endless workload have all contributed to my ability to dive into new projects and manage multiple priorities.”

Class of 1994

Kathleen Vaeth  
(B.S. ChE. ’94)

Kathleen Vaeth earned her B.S. degree in chemical engineering from Cornell University in 1994, where she was a Kodak Fellow, and her M.S. and Ph.D. degrees in chemical engineering from the Massachusetts Institute of Technology, where she was a Hertz Fellow. She is currently the vice president of engineering at MicroGen Systems Inc., a tech startup company based in Rochester, New York, focused on developing Micro Electrical Mechanical (MEMS)-based piezoelectric energy harvesting technology. Prior to joining MicroGen Systems, Vaeth spent 12 years at Eastman Kodak as a senior research scientist in the Kodak Research Labs, where she worked in the areas of MEMS microfluidics, organic electronics, controlled release chemistry in thin films, barrier coatings for flexible substrates, vapor deposited polymers, and piezoelectric materials and actuators. She also served as the director of future technologies for the Functional Printing Business Unit. Vaeth’s research interests spans the design, fabrication, and characterization of devices, relating their performance to the materials used in their construction. She has 20 publications and 16 issued U.S. patents.

“During my senior year, I performed research in Prof. T. Michael Duncan’s lab on supported catalysts for gas phase reactions. The experience helped reaffirm my strong interest in research, as well as my decision to attend graduate school and pursue my Ph.D. in chemical engineering. The project also gave me valuable experience in defining research problems and performing independent work in a university lab, which helped prepare me for my thesis work at MIT.

What separates chemical engineering from other types of training is the ability to combine chemistry, physics, biology, transport phenomena, thermodynamics, and unit operations at a systems level to solve complex problems. This broad training enables chemical engineers to have an impact in a wide variety of fields, and indeed, in my own career I have worked on technologies ranging from OLED displays, photothermographic X-ray film, inkjet printing, flexible barrier films, sterilization of food and medical instruments, and energy harvesting.”

Class of 1991

Bobby Bringi  
(Ph.D. ‘91)

Bobby Bringi, Ph.D. ’91, is a successful biotechnology innovator and entrepreneur. Right out of grad school, he cofounded the start-up company Phytion Inc. with fellow Cornell alums to develop and commercialize a breakthrough bioprocess route to the plant-derived anti-cancer drug Taxol. Since 2007, he has served as CEO of MBI, a Michigan not-for-profit company that focuses on accelerating the development and commercialization of bio-based technologies for fuels, chemicals, and materials applications. Bringi also served on the school’s Advisory Council from 2007 to 2012.

“Surviving the tough oral qualifying exams prepared me well for later tribulations! I remember Prof. Peter Harriott honing in quickly on a problem I had not thought about (how a slow adsorption step would affect the apparent order of a surface reaction), and expecting me to think and reason on my feet. I have since been through many high-pressure situations, with corporate collaborators, Food and Drug Administration experts, even irate shareholders, and none of them fazed me as much!

Biotechnology innovation is a transdisciplinary sport. Cornell’s great tradition and freedom allowed me to delve deeply into plant biology and biochemical sciences alongside my chemical engineering major. I could not have been successful without the intellectual versatility afforded by such deep and broad training. I also value the interactions with my mentor Prof. Mike Shuler, and so many terrific Cornell faculty, including my thesis advisors, plant biologist Prof. Lisa Earle and the late Prof. Bob Finn.”

Margot Vigeant  
(B.S. ChE. ’94)

Margot Vigeant, B.S. ChE ’94, is the oldest of five siblings from Stratford, Connecticut. After graduating from Cornell, she went to UVA for her M.S. and Ph.D. in chemical engineering, working with Roseanne Ford on bioremediation and bacterial adhesion. After graduation, she began teaching at Bucknell University, where she is currently a full professor of chemical engineering and associate dean in the College of Engineering, working on engineering education research. She’s married to her high-school sweetheart Steven Stumbris ’94 MechE and they have two sons, Gabe (11) and Simon (8). She’s also happy to report that her youngest brother is also a Cornell engineer.

“My most memorable moments at Olin Hall were:

When Dr. Harriott walked into our fluid mechanics course at the request of Dr. Koch and sang the Reynolds Number Song for the first time. I still (usually silently) sing it to myself any time I need to use it, it’s how I remember it!

Speaking with Professors Shuler and Rodriguez (my advisor) in their offices and just looking around at all the cool stuff they were working on was immensely inspiring.”
Chemical engineering is the best engineering field there is; when you come down to it, everything’s a chemical process. From classic applications like petroleum refining to food production to the development of medicines to specific careers such as patent attorney, physician, or musician, chemical engineers are everywhere, doing good work and making a difference."

Class of 1996

Linda Lee
(B.S. ChE. ’96)

Linda Lee (B.S. ChE. ’96) has spent her career in the consumer food industry, starting in research and development at Procter & Gamble and moving into marketing, innovation, and general management roles at General Mills, Cadbury, Kraft, and Mondelēz International. Most recently, she returned to the United States after two years in Shanghai leading the launch of Stride gum; she is now leading America’s favorite snack, Ritz crackers, a business that is nearly $1B. She has guest lectured at the Johnson Business School and is an active member of the President’s Council of Cornell Women. She lives in Hoboken, New Jersey, and enjoys cycling in Europe, hiking in New Zealand, and figuring out what she wants to do when she grows up.

“At the time, I didn’t realize that the senior-year group projects would foreshadow my career path. I loved working with a team of smart and fun people, designing a plant holistically from commercial opportunity to technical solutions to operational plans, and presenting each week to a leadership team. And, of course, being a part of a team where two women were in charge of two of the smartest men I’ll ever know. Essentially this has been my role as a marketing director and general manager 15 years later!

While I never had an engineering role beyond my engineering co-op assignments at P&G, there is no question that I’ve been successful in my career progression and management roles because of my Cornell Chemical Engineering experience. ChemE at Cornell requires exceptional development of critical-thinking and problem-solving skills. It was never about memorizing equations, answering a quantity of multiple choice questions to perfection, or training to be a number cruncher at a desk. In my industry, it is rare for someone in my generation to ascend to marketing leadership without an Ivy League MBA; this speaks volumes to the value and versatility of my Cornell ChemE experience.”

Class of 1999

John Murphy
(B.S. ChE. ’99)

John Murphy, B.S. ChE ’99, is a patent attorney with Woodcock Washburn LLP, focusing primarily on patent and other forms of intellectual property litigation. He appears regularly in federal courts around the country on behalf of his clients, and also counsels his clients on every aspect of the intellectual property life cycle. Murphy clerked for the Honorable Kimberly A. Moore of the U.S. Court of Appeals for the Federal Circuit, co-authored the leading textbook on patent litigation and strategy, and now teaches patent litigation as an adjunct professor. After graduating from Cornell, he completed his Ph.D. under Mark Davis at Caltech. He then went on to get a law degree from Harvard Law School, where he was editor in chief of the Harvard Journal of Law & Technology. John and Kate Aichele Murphy (Cornell ’95) are married and raising three children (and future Cornellians?) outside of Philadelphia.

“What made my experience at Olin Hall remarkable and influential was the real mentorship: the conversations (some of which I vividly remember) after class, in hallways, in offices, at parties, and even after graduating, with professors who were not just great teachers, but good people who genuinely cared about the students. Professors Duncan and Anton helped me figure out how I wanted to approach problems, my career, and ultimately, my life. This influence carries over. Eventually, after bonding over years of problem sets, my friends and fellow students became my mentors too (and hopefully, vice versa).

It has been said before, but I’ll say it again: the problem solving skills you learn as a chemical engineer will serve you in any endeavor. My job requires sifting through confusing and conflicting information, finding patterns, and inventing strategies for getting the client to where it wants to go quickly and affordably. From my first exposure to chemical engineering in Prof. Duncan’s introductory class, all the way to my thesis defense at Caltech, this is effectively what I have learned how to do.”

Class of 2000

Michael Filler
(B.S. ChE. ’00)

Dr. Michael A. Filler is an assistant professor in the School of Chemical & Biomolecular Engineering at the Georgia Institute of Technology. He received his doctorate in chemical engineering at Stanford University and was a postdoctoral scholar in the Department of Applied Physics at the California Institute of Technology. Dr. Filler’s research program lies at the intersection of chemical engineering and materials science, focusing on the synthesis and characterization of next-generation electronic and photonic materials. The application of in-situ spectroscopic techniques to understand relevant interface phenomena and rationally engineer nanoscale semiconductors is a major component of his work. Filler has received several honors and recognitions, including the National Science Foundation CAREER Award, Dorothy M. and Earl S. Hoffman Award from the American Vacuum Society, and the Georgia Tech Sigma Xi Young Faculty Award.

“As someone who presents his work to a range of audiences on a regular basis, I fondly remember Prof. Miriam Ackley showing me a video recording of me from a recent design presentation. I was shocked to find out that I repeatedly walked forward and backward in front of the screen. The motion was so quick that I looked like a ball on the end of a stiff spring. Talk about eye opening. The skills Miriam and the remainder of the design team (i.e., Ken, Al, etc.) taught me still form the foundation of my presentation style.

To date, my research career has included topics ranging from semiconductor processing, device physics, nanomaterials, photovoltaics, and most recently thermal materials. The basic chemical and transport fundamentals learned during my chemical engineering training inform my approach to all these topics and constitute the engineering “intuition” that continues to serve me in good stead.”
Class of 2002

Stephen Cypes  
(B.S. ChE. ’02, M.Eng ’03, MBA ’12)

Stephen completed his Bachelor of Science degree in 2002 and his Masters of Engineering degree in January 2003, both at Cornell’s School of Chemical Engineering. Stephen additionally received his Masters of Business Administration degree through the S.C. Johnson School of Business at Cornell in 2012. After completing his Masters of Engineering degree in 2003, Stephen Cypes ’02, MBA ’12, became a chemical engineer at Merck & Co. in Rahway, New Jersey, where he was responsible for the development and scale-up of the pure step for Januvia, a blockbuster oral medication for the treatment of Type 2 diabetes, which included the discovery and development of the final polymorph form of the drug. In 2004, Cypes joined Symyx Technologies in Sunnyvale, California, where his positions included chemical engineering group leader, catalysis product manager, director of life sciences research, and director of business development. Currently he is vice president of life science sales for the same company (now Freeslate, Inc.) and is responsible for business development activities with life sciences companies in North America and Europe. Cypes lives in the Boston area with his wife of nine years (also a Cornell graduate) and two sons, ages 4 and 1.

“As a member of the Cornell Presidential Research Scholars, I had the opportunity to be involved in undergraduate research as soon as I arrived on campus as a freshman. Without having set my major as chemical engineering, I initiated research within the Materials Science & Engineering department that year related to certain types of nanocomposite materials. As a junior, after having exposure to chemical engineering topics and research within the department, a link was made to apply the nanocomposite materials research to the field of drug-delivery applications being led by Prof. Mark Saltzman within Olin Hall. Having the opportunity to bridge research across engineering programs, and being exposed to the field of biomaterials and drug delivery technologies within chemical engineering, I became passionate about drug product development.

The versatility of the Chemical Engineering degree from Cornell is perhaps exemplified by the range of projects chemical engineers led at Symyx Technologies, a company which supported a broad array of customers with diverse applications. Projects required development of technology to support petrochemical and refining applications—perhaps the so-called “traditional” chemical engineering discipline (e.g., design of novel high-throughput reactors for hydroprocessing catalyst discovery and development)—as well as designing experiments and workflows to support new ways of developing challenging drugs (e.g., microscale experiments to enhance bioavailability of poorly soluble compounds). Supporting such a diverse array of applications is only possible with a strong foundation in scientific fundamentals, a key aspect of the chemical engineering curriculum. Finally, the versatility of the ChemE degree at Cornell goes beyond the theoretical because students are taught how to apply the foundational principles to real-world problems. Such application is critical to ensuring graduates have “learned how to learn.”

Class of 2003

Ingu Song  
(B.S. ChE. ’03)

Ingu Song grew up in the suburbs of Dallas, Texas. After graduating from Cornell in 2003, he received his Ph.D. in Chemical and Biomolecular Engineering at the Georgia Institute of Technology in 2007. He is a fabrication engineer managing semiconductor processes at Texas Instruments; he also supervises process and equipment technicians. Song has been mentoring Chemical and Biomolecular Engineering student Tian Chien (ChemE 2013), which has allowed him to stay in touch with the school.

“At Cornell I stayed up studying all night only once, which was for a unit operations lab presentation. I wanted it to be perfect. Unfortunately, I ended up over sleeping and was late to my one-on-one presentation. The professor graciously squeezed me in between two other presentations, but I failed miserably when he questioned my work. I had focused on the wrong points. I met with the teaching assistant, and he helped me prepare my presentation again, but this time with the audience in mind. Now, I always think of who the audience is when I create my presentations. Currently, I review all my module’s major engineering changes before they are presented to branch-level management for final approval.

Senior design prepared me for broad, large-scale projects working with many people and in depth research projects working alone. Through senior design, we worked as a team and had to persuade the professors. This is similar to what I do in fabrication, where I work with manufacturing, engineering, and development and then present my project to managers. On the other side of the spectrum, without formal lectures and a guide book, I became an expert in my senior design project, which prepared me for my Ph.D. research where again I had to figure things out on my own in a new research topic.”

Class of 2004

Eric Margelefsky  
(B.S. ChE. ’04)

At Cornell, Eric Margelefsky, B.S. ChE. ’04, was an active member of Alpha Chi Sigma, the professional chemistry fraternity; additionally, he was a Goldwater Scholar, and completed two internships with Merck on an Engineering & Technology fellowship. After graduating in 2004, Eric went on to Caltech and received a PhD in Chemical Engineering in 2008, where he worked in Mark Davis’s lab on the synthesis and characterization of mesoporous silica catalysts with cooperative organic functionalization. Eric then returned to Merck in 2009 as a full-time employee, and is currently working in Chemical Process Development & Commercialization.

“There were many formative and influential courses and moments during my time in Olin Hall, but a few that stand out are:

Professor Mike Duncan’s Intro to ChemE course cemented my desire to be a chemical engineer and taught me to figure out what the real problem statement should be.

Fernando Escobedo’s Thermodynamics class taught me to think in terms of thermo. I actually began to develop an intuition for things like entropy and heat, which still influence my problem-solving and thought processes.

The many hours spent working on the first ever Cornell ChemE Car for the AIChE competition, which led to much late-night mayhem in the basement lounge and hallway.

Between my chemical engineering degree, my applied math minor, and an excellent general coursework, I was very well prepared for both graduate research and a career in the highly technical and fast-paced pharmaceutical sector. This training prepared me for the complex scientific and technical challenges ahead.”
Class of 2006

Stephanie Glass (B.S. ChE. ’06)

Stephanie Glass, a proud member of the ChemE Class of 2006, marked her college tenure by giving back to the Cornell and Ithaca communities through leadership positions in numerous public service and campus organizations. Her commitment to work, service, and scholarship earned her a Cornell Tradition Fellowship. After graduation, Glass left Cornell and her hometown of Pittsburgh, Pennsylvania, to pursue a career in Houston, Texas, as a refining engineer with ExxonMobil. While balancing her responsibilities as lead technical support for her refinery’s crude distillation units, Glass continues giving back to the community through active participation in non-profit dog rescue organizations and as a yoga teacher. She regularly returns to Cornell to recruit students for ExxonMobil and participate in the junior-year Non-Resident Lectures program.

Glass credits her time in Olin Hall with giving her the perspective, skills, and confidence to make meaningful contributions and effect organizational changes—first in student groups, then in the classroom as a teaching assistant, and finally in her professional career. Early in her Cornell ChemE career, she felt that the school’s chapter of AIChE (American Institute of Chemical Engineers) could do so much more to support and serve students. After thinking “someone should help reform this organization,” it was the “real world, kick-in-the-pants encouragement” from her professors that led her to realize that “someone” can be anyone with drive and resolve. By applying engineering fundamentals—defining the problem, gathering data, forming a plan, testing multiple approaches—outside of the classroom, Glass was able to organize her fellow students to collectively turn Cornell AIChE into a thriving organization that is an integral part of the ChemE community. A key part was just believing that a solution was possible and that she and the ChemEs were capable of providing it. Being able to move past what Prof. Mike Duncan calls the “imposter syndrome”—the feeling that “I’m not smart enough and I’ve fooled everyone into thinking that I am”—made all the difference. “I still have these moments where I have to stop myself and say, ‘I haven’t fooled anyone. I am capable of fixing these problems,’” Glass says. “I know that my Cornell ChemE education is what has prepared me to do just that.”

“As a team leader for ExxonMobil recruitment at Cornell, Glass believes that the ChemE program stands out above others in terms of being able to provide exceedingly well-prepared students to professional industry. She maintains that its students have a greater understanding of application instead of just theory. “It’s not just about a student’s ability to calculate a number. Cornell ChemE sets students apart by teaching them to THINK about that number: Will a less-rigorous estimate method yield me just as useful a number as a complicated formula? Does that number make sense? Is it high? Low? Insignificant?” Glass says that Cornell ChemE professors have an uncanny ability to develop an “instinct” within students that is not normally achieved in other classrooms. “It’s a mark of the quality of the program that Olin Hall is able to produce not just graduates with engineering degrees, but true Engineers.”

Class of 2008

Rachel Barton (B.S. ChE. ’08)

Rachael Barton, B.S. Ch.E. ’08, is currently a graduate student in chemical engineering at Lehigh University where she studies protein structure-function relationships. At Cornell, Barton served as class representative, professional development director, and vice president of the Cornell student chapter of AIChE, was a teaching assistant for Introduction to Chemical Engineering, and participated in the co-op program through Merck Pharmaceuticals.

These experiences, the Cornell professors, and chemical engineering curriculum helped prepare Barton for her current studies and for her previous industrial work as a process development engineer at Regeneron Pharmaceuticals. Barton’s chemical engineering training has provided her with the adaptability and competence to contribute to a variety of projects, from molecular biology to process scale-down, from process optimization to product characterization. In addition, she learned the communication skills necessary to interact with researchers and mentors from numerous fields, ranging from biological sciences to electrical engineering.

Nicholas Hoh (B.S. ChE. ’08)

After graduating from Cornell, Nicholas Hoh (B.S. ChE. ’08) completed his Ph.D. in chemical engineering in 2013 under the guidance of Professor John Brady at California Institute of Technology. While there, he conducted theoretical and computational studies of the effects of particle size ratio on the motion of a single particle through a colloidal dispersion, presenting results at a short course in Cargèse, France and at the International Congress on Rheology in 2012. At Caltech, Nick earned recognition for his classroom pursuits with two teaching assistant awards: the Associated Students of C.I.T. Teaching Award in 2010 and the Graduate Student Council Teaching & Mentoring Award in 2011. Nick is eagerly anticipating his return to Cornell in the fall of 2013 for postdoctoral work with Professor Roseanna Zia in Chemical Engineering.

“I was bit by the teaching bug while serving as a teaching assistant for Professor Mike Duncan’s Introduction to Chemical Engineering and Kinetics courses. I remember that, even while sitting in on other lectures, my mind would wander towards coming up with interesting problems, including a particular ternary phase diagram that could lead to a clever process design question. Professor Duncan’s insight and expertise helped this germ of an idea develop into an exam-worthy question.

My time in Olin Hall made me well equipped to pursue an education-inspired career. I feel that I have picked up a lot about effective teaching strategies from the Cornell ChemE faculty. After completing my postdoc, I hope to either teach at an undergraduate-focused engineering college, or work with one of the up-and-coming Massively Open Online Course (MOOC) consortiums (for example Coursera or EdX) to develop high quality, interactive online teaching modules so that students of all backgrounds can enjoy a Cornell caliber education.”
Class of 2009

Michael Myers (B.S. ChE. ’09)

Michael Myers (B.S. ChE. ’09) is currently the Waterborne Coatings Process Engineer for Axalta Coating Systems, formerly DuPont Performance Coatings, in Front Royal, VA. He is responsible for the implementing a new fill line to meet the company’s growing demand for its waterborne refinish coatings. Prior to joining Axalta Coating Systems, he worked for three years at Dow Corning in Midland, MI as a Process Design Engineer working primarily on large capital projects.

“I can remember 6-words that Professor Center stated once in an 8:40AM lecture of Advanced Process Controls, “Keep it simple. Don’t over-complicate it.” I remember looking at my design right after that and thinking to myself what was I thinking as that was exactly what I had done. That moment has served a constant reminder as I have progressed through my career to look for the simple solutions that solve the real problem and not to overcomplicate things.

My chemical engineering training has served me well in this early part of my career. I have been able to utilize the critical thinking skills I learned throughout my years to solve problems over a vast array of engineering fields, including chemical, mechanical, controls, and electrical. Also the writing skills instilled upon me during Nonresident Lectures and Unit Operations has allowed me to effectively convey my ideas and opened opportunities for me in project management and capital planning.”

Class of 2010

Daniel Brown (B.S. ’10, M.Eng ’11)

Following his undergraduate graduation in 2010, Dan Brown went to work at Dominion Engineering, Inc. (DEI) as a summer intern, which proved to be a pivotal experience. He returned to Olin Hall that fall to pursue a Master of Engineering degree in chemical engineering, and then, upon completion of his degree he returned to work at DEI full time. Now, Brown works on technical consulting projects covering a range of topics, including the phenomenon of nuclear steam-generator top-of-tubesheet denting, materials reliability, and primary and secondary water chemistry. He has also been heavily involved in both field and lab support of steam-generator deposit-removal campaigns.

“As I decided to work at DEI based on advice and input from Professors Duncan and Anton, I would have to say that was the most direct impact on my career development.

I have been asked to work on many different projects since starting at DEI, but the one thing they all have all had in common is that I could always tie something back to what was covered in my undergraduate and graduate classes. From mass balances to thermodynamics and the ability to think about how to solve a problem to the ability to write about how you solved the problem, the skills I learned during my time in Olin Hall have been instrumental in my success after leaving Cornell.”

Adrian Rami (B.S. ChE. ’10)

Since graduating from Cornell in 2010, Adrian Rami has worked for ExxonMobil as a Process Design Engineer within its downstream major capital projects division, focused mainly on international projects for ExxonMobil refineries and third-party licensees. Initially based outside Washington, DC, he now oversees technical quality of contractors in Houston, TX. Adrian will be pursuing a full-time MBA at the Stanford Graduate School of Business starting Fall 2013.

“My undergraduate research experience at Cornell in the Hanrath Energy Laboratory strongly influenced my choice of research projects in graduate school. While working to develop tandem quantum dot solar cells in the Hanrath Lab, I became interested in better understanding fundamental processes that make these devices work, and so in my graduate work, I am studying the charge transfer processes from quantum dots to bulk semiconductors that are crucial to the efficient operation of quantum dot solar cells.

To study these charge transfer processes, I am using nonlinear optical techniques traditionally used in other disciplines such as physical chemistry or electrical engineering. However, my chemical engineering training has prepared me well for further study on the specific techniques, and leads me to approach problems in unique ways for the benefit and advancement of science.”

Class of 2011

Rachel Hoffman (B.S. ChE. ’11)

Rachel Hoffman (B.S. ChE. ’11) has just completed the second year of her Ph.D. program at Massachusetts Institute of Technology’s chemical engineering department. She also received her Master of Science in Chemical Engineering Practice in June 2013 after completing Practice School projects at Cabot in Billerica, MA and Novartis in San Carlos, CA. For her Ph.D., she is working with Assistant Professor William Tisdale to study charge dynamics at nanostructured interfaces using pump-probe spectroscopy. Rachel is a recipient of a National Science Foundation Graduate Research Fellowship.

“My undergraduate research experience at Cornell in the Hanrath Energy Laboratory strongly influenced my choice of research projects in graduate school. While working to develop tandem quantum dot solar cells in the Hanrath Lab, I became interested in better understanding fundamental processes that make these devices work, and so in my graduate work, I am studying the charge transfer processes from quantum dots to bulk semiconductors that are crucial to the efficient operation of quantum dot solar cells.

To study these charge transfer processes, I am using nonlinear optical techniques traditionally used in other disciplines such as physical chemistry or electrical engineering. However, my chemical engineering training has prepared me well for further study on the specific techniques, and leads me to approach problems in unique ways for the benefit and advancement of science.”

October 2013 • Olin Hall News
Michelle Wein  
(B.S. Ch.E. ‘11)

Before she blossomed into the avid chemical engineer she is today, Michelle Wein grew up in a small suburb in northern New Jersey. She thoroughly enjoyed her time at Cornell and graduated in 2011 to pursue the working world. Currently, Wein lives in the gorgeous, but not-as-gorges-as-Ithaca, Saratoga Springs, working as a process engineer for Globalfoundries.

“There were many Olin Hall moments that influenced my professional development, but one that really sticks with me is the first week of senior design presentations . . . and the second week . . . and the few weeks following. I recall hearing the intimidating stories from upperclassmen about design, so to prepare for that first presentation, my group worked tirelessly to make the perfect presentation and answer all the questions. We pulled up our shiny Power Point presentation that Thursday and got utterly ripped to shreds. With bruised egos and terror in our hearts we scrambled to gather every possible bit of information ever published on the topic so that our next presentation could be perfect and atone for the previous disaster. Second-week presentation: bombed. From that moment I realized that we were making things harder than they needed to be. It still took a tremendous amount of commitment and effort to finish assignments, but I learned to analyze the problem more closely, prioritize which items were most important, speak with confidence about the facts we knew were right, and to ask for help with those we could not figure out. These qualities have all been helpful in my work life as well.

As a Cornell chemical engineer I feel that I have a great amount of versatility in what I can do. Chemical engineering in general is applied in so many different industries, and with the work ethic and problem-solving skills I honed in Olin Hall, I’m confident that I can excel in almost anything.”

Class of 2012

Alexandra Bishop  
(B.S. Ch.E. ‘12)

Growing up in a small town in Florida, Alexandra Bishop, B.S. Ch.E ‘12, always knew she wanted to attend a prestigious school far from home. She liked chemistry and calculus in high school, but only learned about chemical engineering through Prof. T. Michael Duncan’s introductory class. Now, five years later, Bishop works at Kraft Foods, lives in Manhattan, and does musical theatre on the side. She recalls how much she loved her four years at Cornell and the School of Chemical and Biomolecular Engineering.

“I remember every morning in Prof. Al Center’s Process Control Strategies class, he would have a question or a problem written on the board when we came in. It would be a practical question that should only take five minutes or less to work out. It would be something like “What pressure would this tank need to be kept at?” or “What power would be required for this pump?” This was very different from my other classes because normally I would need to pull out a textbook or notes to answer something and it would take me awhile. This method of getting you thinking first thing in the morning was incredibly useful for me. Every day at work I have to think about something quickly and estimate an answer because I don’t always have time to work it out. This taught me that having an overall understanding can sometimes be better than a detailed understanding.

My chemical engineering training taught me how to work hard, redefine problems, believe in myself, and work incredibly well in teams. No two professors in Olin Hall had the same method of teaching or background. I was able to get different perspectives on ChemE and life every semester. I think what makes this program shine is the dedication from the faculty and the practical aspect of many of the courses. The ChemE department really felt like a family and fully prepared me for the working world.”

Qinyi Chew  
(B.S. Ch.E. ‘12)

Qinyi Chew, B.S. Ch.E. ‘12, is currently studying for a Masters in Chemical Engineering Practices at MIT and will be doing an internship in Switzerland during the summer of 2013. She is returning to Singapore to work at the Ministry of Defense later this year.

“Ohlin Hall was the place I spent most of my waking hours, especially during senior year, and it was also the place that honed my engineering intuition and presentation skills. My chemical engineering training has taught me logic and discipline; both of which I have applied to my further studies and internships to great results.”
On October 22, 2012, Marjorie Hart ChE ’51, delivered the Raymond G. Thorpe Lecture entitled, “A Career in Energy: Window on Many Worlds.” Marjorie received the Bachelor of Chemical Engineering degree from Cornell in 1951. After graduation, she went to work for the Esso (now ExxonMobil) Research and Engineering Company, where she spent a distinguished thirty-year career as an engineer, and business executive. At Exxon, Marjorie rapidly rose through the ranks to become a Senior Adviser in the gas, energy policy, and corporate planning divisions of the company.

Marjorie is a lifetime member of the Cornell University Council and served as the council’s vice-chair from 1979 to 1982 and as chair in 1986-87. She also served on the Cornell Board of Trustees as an alumni-elected member from 1979 to 1984 and was reappointed for an additional year. In October 1996, she was named a Cornell University Presidential Councilor.

March 25th and 26th, Professor Pablo Debenedetti of Princeton University presented the Julian C. Smith lecture series. Professor Debenedetti is the Class of 1950 Professor in Engineering and Applied Science, Professor of Chemical and Biological Engineering, and Vice Dean in the School of Engineering and Applied Science at Princeton University. Debenedetti’s talks were titled, “Drying and Hydration of Model and Biological Substrates” and, “Thermodynamic and Kinetic Models of the Emergence of Biological Homochirality.”

Lynden Archer with Rachel Gray, Elizabeth Erickson, and three generations of Grays in dedicating room 274 Olin Hall the Charles Gray ’60 Board Room in fond memory of our late friend, Charlie Gray.
American Chemical Society honored 96 members for their outstanding contributions to science, research, education, and public service. Included in the honorees were David T. Allen (BS ChE ’79), University of Texas, Austin and Kent E. Göklen (BS ChE ’79), GlaxoSmithKline.

Catherine Bierner Donovan (BS ChE ’00) graduated from Cornell with her Bachelors in Chemical Engineering in 2000. She immediately began working for Stepan Co. in its sales department, and advanced into the position of the company’s Global Business Manager for Systems and Flexible Polyols in 2006. She received an MBA from Northwestern University in 2008. In January 2013, she was promoted to Stepan Co.’s Polymers Innovation Program Manager.

Rami Madadin (MEng ’08) an Operation Manager of polyethylene plant in Arabian Petrochemical Company (SABIC Affiliate) and his team has celebrated the combined production of one million metric tons of polyethylene with a cake-cutting ceremony at its facilities on January 14, 2013. This production level is the highest since the startup of the plant in 2004. This event was covered and recognized on SABIC level across the globe.

Richard Eccles (BS ChE ’54) recently self-published, a book entitled “A Memoir”. He is entering his 60th year of chemical engineering practice, and 30th year as “Princeton Process Engineers”. Richard specializes in hydrocarbon process technology, specifically the ebullated-bed-reactor process for hydrocracking residual oil. He created a kinetic model of the reactor operation and has licensed it to 10 companies.

Endowed chair established in memory of Stanford H. Taylor (BS ChE ’50). The Chair in the Sage School of Philosophy is held by Professor Scott MacDonald. Stan wanted to provide a resource for philosophy to contribute to the ability of young people to engage in rational discourse and critical thinking, regardless of their career path. Stanford Taylor greatly valued his engineering background and in the last part of his life reflected on what about his Cornell education contributed to his success.

In October 2013, Eric Degenfelder (B.S. ChE. ’86) Chem E 1986, moved back to the US after five years working in Shanghai, most recently as VP of Asia Pacific for DuPont Performance Coatings. The $4.5 billion Performance Coatings business was purchased by the Carlyle Group in February, and now has the new name of Axalta Coatings Systems. Eric is the VP of Business Transformation, working to complete the separation from DuPont and fully establishing Axalta as a stand-alone company with headquarters in Philadelphia.

John M. Prausnitz (BS ChE ’50) received the Lifetime Achievement Award in ChE Pedagogical Scholarship from the American Society of Engineering Education; cited for a sustained career of contributions to pedagogical practice, scholarship, and mentoring.

In Memoriam

We are sad to note the passing of a number of alumni this year. They live on in our hearts.

Mr. Robert J. Fritz
BS ChemE
1943
3/1/2013
Pembroke, NH

Michael Rudolph Sfat
BS ChemE; MS ChemE
1943; 1947
10/16/2012
Manitowoc, WI

Dr. John P. Fraser
BS ChemE; MS ChemE; Ph.D ChemE
1945; 1947; 1949
2/23/2013
Houston TX

Mr. Richard B. Sainburg
BS ChemE
1948
4/26/2013
Stamford/New Canaan, CT

Mr. Curt Reinhold
BS ChemE
1949
11/21/2012
Indianapolis, IN

Mr. Donn E. Skoog
BS ChemE
1950
5/15/2013
Wilmington, DE

Mr. Somerled Macdonald
BS ChemE
1950
12/21/2012
Southern Pines, NC

Mr. Donald D. Threlkeld
BS ChemE
1950
10/26/2012
Webster, TX

Mr. Vincent A. Walker
BS ChemE
1952
12/16/2012
Phoenix, AZ

Mr. James F. Ackerman Jr.
BS ChemE
1953
8/10/2013
Harford CT

Mr. Theodore F. Olt
BS ChemE
1958
6/9/2013
Davenport, IA

Mr. Ross J. Wood
BS ChemE
1958
11/15/2012
Woodway, WA

Mr. Ivan G. Szanto
MS ChemE
1961
7/1/2013
Wilmington, DE

Mr. David Sheldon Kleger
BS ChemE
1963
9/1/2012
New York City, NY

Mr. Craig F. Stead
BS ChemE; MS ChemE
1965; 1966
2/15/2013
Putney, VT

Mr. Donald I. Townsend
BS ChemE
1965
3/10/2013
Lansing, MI

Mr. Dennis C. Dakin
BS ChemE
1972
7/1/2013
Lincoln University, PA
CBE announces two outstanding faculty hires, Christopher Alabi and Matthew Paszek, who will bring complementary expertise in the area of biomolecular engineering. Alabi received his PhD from Caltech (Thesis Advisor: Mark Davis) and was a postdoctoral associate in the Langer group at MIT. Paszek received his PhD from the University of Pennsylvania (Thesis Advisor: Daniel Hammer) and was a postdoctoral scientist at the University of California San Francisco in Valerie Weaver’s group. Alabi started his appointment at Cornell on July 1, 2013; Paszek will begin his appointment on January 1, 2014.

CBE Director Lynden Archer was appointed for a second three-year term as Director. Archer was also recognized by the National Science Foundation with an Award for Special Creativity for his research on Nanoscale Organic Hybrid Materials (NOHMs).

Recent research by Paulette Clancy was featured on the cover of the March 15 2013 issue of Journal of Computational Chemistry. The article is titled: “Solvent-Driven Symmetry of self-assembled nanocrystal superlattices – A computational study.”

Claude Cohen received the College of Engineering’s Mr. & Mrs. Richard F. Tucker Excellence in Teaching Award. Cohen was recognized for his contributions to teaching CBE’s Polymer Science course (ChemE 6400) to rising numbers of seniors and graduate students. Following the retirement of Emeritus professor Ferdinand Rodriguez in 2001, Cohen took over this course and implemented several reforms, which transformed the course’s emphasis on polymers fundamentals and updated its connections to contemporary polymer forming and fabrication processes. Despite the more challenging content, ChemE 6400 has for several years become one of the most highly rated technical elective courses by CBE students. Cohen’s course not only meets a growing need for a polymers education among CBE’s graduates, but preserves a tradition of creating Cornell Chemical Engineers proficient in polymer science that dates back at least to Chuck Winding’s appointment as a member of the faculty in 1935.

Susan Daniel received the 2012 Denise Denton Emerging Leader Award from the Anita Borg Institute for Women and Technology for her excellence in research and precocious leadership of the graduate group “Women” at Cornell.

Matthew DeLisa received several notable awards this year. In April 2013, he was promoted to the rank of Full professor and, subsequently, by vote of the Cornell Board of Trustees, DeLisa was named the William Lewis Professor of Engineering, effective July 1, 2013. He was also named a member of the 2014-2015 class of the Defense Science Study Group (DSSG); a program of education and study that introduces selected scientists and engineering professors to the challenges facing national security and encourages them to apply their talents to these issues either as government advisers or in their own research. Finally, DeLisa was selected as the 2013 Biochemical Engineering Journal Young Investigator. He delivered an award lecture titled lecture entitled “Bacterial glycoengineering: from cellular enzymes and pathways to human therapeutics and vaccines,” at the ECI’s Biochemical and Molecular Engineering XVIII conference, held in Beijing, China this June.

T. Michael Duncan, Raymond G. Thorpe Professor of Chemical and Biomolecular Engineering, was selected to receive the Tau Beta Pi Professor of the Year Award for 2013. Since its inception in 1965, the Tau Beta Pi award has been given each year to a single engineering faculty member, nominated by their students and voted by members of the Tau Beta Pi engineering honor society to be one of the college’s outstanding teachers. With his selection for this year’s award, Duncan now has the distinction of being the first three-time winner of this prestigious award.

Fernando Escobedo, Marjorie L. Hart Chair of Chemical Engineering, has been selected as the recipient of the 2012 CoMSEF Impact Award. This annual award recognizes outstanding research in computational molecular science and engineering. Escobedo will also present a talk on his research at the CoMSEF Plenary Session at the AIChE Annual meeting.
Faculty Awards & Honors

Alan Feitelberg was hired to fill one of the two Senior Lecturer/Industrial Practitioner positions in the department. These positions are designed to bridge the retirement of the School’s duo of current Industrial Practitioners, Al Center and Andrew Hunter.

Tobias Hanrath was promoted to the rank of Associate Professor with indefinite tenure effective July 1.

Julius Lucks also received multiple awards this year. He was named a 2013 Sloan Research Fellow. These two-year fellowships are awarded yearly to 126 researchers in 8 fields in recognition of distinguished performance and a unique potential to make substantial contributions to their fields. Lucks, along with Jeremy Thompson and Professor Keith Perry of Cornell Plant Sciences was also recently awarded a Gates Grand Challenge Exploration Grant from the Bill and Melinda Gates Foundation. Lucks was also named a 2013 Office of Naval Research Young Investigator Award recipient. The ONR Young Investigator Program (YIP) seeks to identify and support academic scientists and engineers who show exceptional promise for doing creative research.

Jefferson Tester received the College of Engineering’s Mr. & Mrs. Richard F. Tucker Excellence in Teaching Award. Tester was recognized for conceiving and teaching CBE’s Analysis of Sustainable Energy Systems course (ChemE 6660) to increasing numbers of seniors and MEng students interested in learning about energy systems engineering. The prototype for this course was a one-semester energy analysis class co-taught with Brad Anton in 2009. He had developed a similar course with colleagues at MIT that resulted in the publication of a unique textbook—Sustainable Energy – Choosing Among Options (MIT Press, 1st edition 2007, 2nd edition 2012) -- of which Tester is the lead author. Motivated by student interest in a course that provided a broader introduction to energy systems engineering, Tester re-engineered ChemE 6660 in a modular format that has proven as successful with students as with the CoE faculty who he has skillfully recruited to teach these modules.

Roseanna N. Zia has been named a James C. & Rebecca Q. Morgan Faculty Fellow, in honor of the Morgans’ generous gift aimed toward recruiting emerging “stars” to the Cornell Faculty, as part of the Faculty Renewal Sesquicentennial Challenge. Furthermore, Zia’s article titled, “Stress development, relaxation, and memory in colloidal dispersions: Transient nonlinear microrheology” was selected for the cover of Journal of Rheology. Another of Roseanna’s articles, “Microviscosity, microdiffusivity, and normal stresses in colloidal dispersions,” was selected for Journal of Rheology Publication of the Year Award.
On commencement the School awarded 98 Bachelor of Science degrees in chemical engineering. This is our largest class to date. As of the first week of May over 44% were employed in their professional careers and 30% planned to continue their studies in graduate school. Eighteen graduates were seeking employment, two planned to look for work in their home country and four were undecided about their future plans. We continue to receive updates as graduates find work. Only one month or two after graduation four students have secured job offers.

Forty seven members of the Class of 2013 accepted employment among a wide range of companies, 30 in all, the largest employers are Procter & Gamble, followed by Air Products & Chemicals, Automation and Control Specialists, ExxonMobil, Regeneron Pharmaceuticals, Samsung Electronics, Schlumberger, IBM and Phillips 66. The median starting salary was $72,000. Our recent graduates are employed largely in the areas of petroleum products, consulting and consumer products. Several entered positions in electronics & semiconductors, chemicals, pharmaceuticals and the design & construction industry.

Thirty in the class are continuing their academic pursuits: 10 have begun a chemical engineering Ph.D. program, two are attending graduate school in material science and engineering, one has sought a polymer science and engineering Ph.D., one has started a Master of Finance degree; 16 have entered Cornell’s M.Eng. program; two in engineering management, two in biomedical engineering, and twelve in chemical engineering.

Congratulations Class of 2013!
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