Finding and hiring new employees used to be called recruiting. Now it is called talent acquisition, a new name that signals a change of philosophy by large corporations. Talent acquisition reflects the recognition that hiring is a cost, susceptible like other costs to analysis to determine how to maximize return on investment. In the past, companies cast their talent acquisition nets widely, but today many find it more cost-effective to concentrate on a limited number of universities. They offer internships only to students from these target schools, send recruiters on to job fairs there and hire only those schools’ graduates.

While such an approach may seem to put smaller engineering programs at a disadvantage, U.Va. is finding a way to stay on the targeted list by demonstrating the quality of both the students and program.

Our students are of exceptional quality. When corporate recruiters meet our students, they find the combination of technical and leadership skills irresistible. The challenge has been to get our students in front of recruiters and company executives — and in this regard our students, assisted by our alumni, often play a decisive role.

Take the case of Halle Yungmeyer (ChE ’16). Halle (pictured above) grew up in Kingsport, Tenn., the home of Eastman Chemical. A transfer student from the College of Arts & Sciences, Halle thought that a summer internship at Eastman Chemical after her first year would be the ideal way to confirm her decision to become a chemical engineering major. She enlisted the help of Professor Roseanne Ford, who contacted recruiters at Eastman Chemical. The response Professor Ford received was discouraging. Halle could submit her resume, but because U.Va. was not a target school, her chances of being awarded an internship were slim.

Coincidentally, the University was pursuing closer ties with Eastman Chemical through its Strategic Corporate Partners program. Pace Lochte, the University’s assistant vice president for strategic initiatives, learned of Halle’s background and made a point of enlisting Halle, a University Guide, to lead tours for Eastman senior executives. “They were impressed by how articulate she was, especially in explaining why she enjoyed being an engineering student at U.Va.,” Lochte says. “She was one of the reasons that Eastman added us to their list of target schools.”

This year, Eastman Chemical attended the Engineering
LETTER FROM THE CHAIR

"Do you have a minute?" As department chair, that’s the question I hear most often, whether I’m on my way to class or working in my office. Of course, it’s never just a minute, but I’m happy to give my time. As I prepare to step down as chair, I’m aware that these minutes, taken together, have added up to four of the most challenging years of my career.

One of the most exciting parts of being chair has been the opportunity to guide the renewal of the department. In the past four years, several of our distinguished faculty retired or accepted positions elsewhere. To replace them, we have gone through a careful selection process, finding faculty with the talent and energy to make their mark in our field. It’s been a pleasure to welcome Josh Choi, Geoff Geise, Gary Koenig and Kyle Lampe.

It has also been a great pleasure to reconnect with the department’s alumni, encountering them at professional meetings or, quite often, in the corridor of the ChE building, peering intently at their class photographs. It is very satisfying to learn that they attribute some of their successes in life to tools they gained here, and that they feel their connection to the department strengthen with the passage of time.

As these remarks indicate, one of the most important things I’ve gained as chair is a sense of the department as a community, one that serves society through research and education, and that has been built and sustained by many hands over the past century.

It seems like just yesterday that I arrived here as a newly minted assistant professor. Now I’m looking forward to teaching the daughters and sons of my first students — and devoting a few more minutes to my research program as I conclude my term as chair.

Roseanne M. Ford
Professor and Department Chair
Pure water and clean energy: Abundant supplies of each are essential for meeting the needs of the growing global population intent on industrializing and raising its standard of living. In both areas, custom-designed polymer membranes are emerging as an enabling technology. Polymer membranes are already being used in desalination plants around the world. They are also essential in emerging flow battery technologies and could make possible the large-scale introduction of salinity gradient power generation, a method of energy generation that capitalizes on the difference in salinity between seawater and fresh water.

“To create optimized membranes for these applications and others, we must build a better understanding of how to design polymers with specific combinations of properties,” says Assistant Professor Geoffrey Geise. “We must also link these properties, such as selectivity and permeability, to functional qualities like chemical stability. Our long-term goal is to learn how to tune polymer transport properties for specific applications.”

Geoff is exploring the influence of polymer backbone rigidity on salt and water selectivity. He is also investigating the energetics of ion interactions with polymers. “By changing the electrical properties of the polymer, we can either enhance or restrict transport,” he says.

Geoff developed his interest in polymeric materials for desalination applications as a master’s and doctoral student at the University of Texas. While in Austin, he also experienced firsthand the consequences of water shortages, as municipalities across central Texas, in the grip of the most severe drought on the record books, imposed water restrictions. “It really brought home to me how society has come to depend on bountiful supplies of clean water,” he says.

One reason that Geoff chose to come to U.Va. after completing a postdoctoral fellowship at Penn State was the critical mass of faculty interested in soft materials and water and energy issues, both in the School of Engineering and Applied Sciences as well as in the College. “I’ve found a supportive professional environment of people doing research in complementary areas,” he says.

As a new faculty member, Geoff also appreciates the collegial atmosphere in the department — a half-dozen faculty members have lunch together on a regular basis, for example — and the care with which the Engineering School conducts orientation for new faculty. “I’ve been exposed to a lot since I came here in August,” he says. “It’s great to have a group of people you can turn to for insight and advice.”
School's career fair, and Halle was the first student offered an internship. “It will be great working for a hometown company that played such an important role in my daily life growing up,” she says.

Eastman Chemical also offered full-time positions to a number of students, three of whom will be working there after graduation. As we continue to build these partnerships, we anticipate helping to pave the way for more students to start careers and gain experience with our industrial partners.

The efforts of AIChE members have also played an important role in raising the profile of our students. Companies like Axalta, ExxonMobil, Invista, Merck and Syngenta attend the chapter’s annual Fall Networking Night, and in March 2014 the chapter hosted the AIChE Mid-Atlantic Regional Student Conference, an event that brought many companies to the Engineering School.

Having a highly regarded alumnus or alumna serving as an exemplar or internal advocate also makes a difference. Diana Hiser (ChE ’13) first met with recruiters from Eli Lilly at the University’s Diversity Career Fair. Diana joined Eli Lilly immediately after graduation. Once it had its eyes opened to the quality of U.Va. students, the company offered Mitchell Slovin (ChE ’15) an internship and then offered him a position, which he enthusiastically accepted. “It’s an opportunity to work on projects that could benefit patients around the world,” he says. “It was an easy decision for me.”

Former graduate students have also served as ambassadors for our program. Shailendra Bordawekar (ChE ’96, ’99), the director of development sciences at AbbVie, recently recruited Joanna Adadevoh (ChE ’16) (pictured above) for an internship in his department. “We offered Joanna the internship because her skills were well suited to our needs,” Shailendra says. “When we have openings, I reach out to U.Va. as well as to other schools to see if we can find good candidates.” AbbVie has hired Nupur Dutta (ChE ’11) and Yige Wu (ChE ’14).

“We know we’re producing exactly the kind of graduates that industry is looking for,” Roseanne says. “Our challenge is to persuade corporations to give us an opportunity. Once they meet our students, their decision to include us among their target schools is easy.”

CONNECTING TALENT TO OPPORTUNITY

ERIK FERNANDEZ

When Erik Fernandez retired in 2014, his research — on topics ranging from protein adsorption and purification for biopharmaceutical compounds to their misfolding and aggregation in Alzheimer’s disease — had earned him a series of professional honors. Erik was elected a Fellow of the American Institute of Medical and Biological Engineering in 2006 and a Fellow of the American Chemical Society in 2011. The honor that is most meaningful for him, however, is hearing about the accomplishments of his former students. They pay him the highest compliment on a daily basis by incorporating lessons they learned from him into their own lives.

Rob Deitcher (ChE ’10), one of Erik’s 18 doctoral students, provides a case in point. Rob is a process robustness diagnostic lead at GlaxoSmithKline (GSK), operating at the interface between R&D and manufacturing groups. One of the things that struck him most about Erik’s approach to mentorship was the way he adjusted his style to the needs of individual students. “In my case, Erik served as a coach,” Rob says. “He respected my abilities and helped me find my own path, guiding me along the way.” In his rotations with GSK, Rob has had the opportunity to lead small teams. “Like Erik, I try to tailor the way I interact with people to put them in a position to succeed,” he says.

Erik’s influence on John Tsavalas (ChE ’96), an undergraduate student, was even more profound. “I was at a time in my life when I knew I liked engineering and science, but I wasn’t sure what I wanted to do,” John says. “Erik persuaded me to write an undergraduate thesis — and that experience, and the paper we published from it — ultimately led me to becoming a faculty member myself.” John is a professor at the University of New Hampshire, where he is codirector of the Nanostructured Polymers Research Center and the Latex Morphology Industrial Consortium. “The way I try to work with my students and the rapport I try to build with my colleagues owe a lot to Erik’s example,” he says.

As Erik himself describes it, the essence of that example is “teaching with a serving attitude.” Erik has always tried to serve his students, “by listening carefully, recognizing their contributions, respecting their time and effort by crafting truly helpful homework problems, and encouraging their contributions by connecting to their comments later in class or later in a course.” For Erik, connecting with students in this way is a fundamental part of facilitating learning and well worth the effort. “One of the things that gave me the most satisfaction as a faculty member was seeing the eyes of students light up when they understood something,” he says.
CELEBRATING THE ChE COMMUNITY

DISTINGUISHED SERVICE AWARD

For 23 years — 18 as the chair’s administrative assistant — Vickie Faulconer has been the linchpin of the chemical engineering department. Thanks to her exhaustive knowledge of University processes and procedures and her extensive network of contacts, there’s virtually no problem that she can’t solve for students or faculty. “She’s incredibly resourceful and well-organized,” says Roseanne Ford, the fourth chair she’s served.

Equally important, Vickie sets a warm and friendly tone. She manages the department staff with great skill and sensitivity, keeping the department running smoothly. And she leads by example. Vickie is known for completing correctly and in advance of deadlines, all the paperwork required for human resources, new faculty startup commitments and a host of other issues. It is for these reasons and more that the Engineering School presented her with its Distinguished Service Award for 2014.

While she is gratified by the honor, she has served the department for so long because, as she puts it, “it’s been a lot of fun. Each day is different, and there is always a new challenge.” At the same time, she relishes the opportunity to watch students — graduate students as well as undergraduates — mature. “It’s a privilege to watch them find their direction,” she says.

DISTINGUISHED ALUMNI AWARD

“I got off the plane in Charlottesville with two suitcases and $500 in my pocket,” recalls Vivek Joshi (ChE ’88), the recipient of this year’s Distinguished Alumni Award. A graduate of the Indian Institute of Technology in Bombay, Vivek came to the University of Virginia to study biochemical engineering. “Being able to work with Elmer Gaden and Don Kirwan was a huge deal for me,” he says. “The practical emphasis of the program at the time and the tight-knit chemical engineering community that welcomed me had an enormous influence on my career.”

With a master’s degree from the department and an MBA from the Darden School of Business, Vivek went on to have a successful career as an entrepreneur. He founded LumaSense Technologies, serving as its CEO from 2005 to 2013.

Vivek has also been a dedicated supporter of the department. He served on the department’s advisory board for four years. He recently accepted an invitation to join the Engineering School Trustees. “I owe my start in this country to the chemical engineering department,” he says. “For me it’s a no-brainer to give back.”

ELMER GADEN AWARD

Thanks to the generosity of the department’s alumni and friends, contributions to the Elmer L. Gaden, Jr., Excellence in Doctoral Studies Award now exceed $25,000, allowing us to make our inaugural award to a graduating doctoral student. In the process, we are continuing Elmer’s legacy of encouraging and supporting young people as they embark on their professional lives.

Simpson Gregoire (ChE ’14), the first Gaden award winner, graduated in January 2014 and took a post as a process engineer with Bristol-Myers Squibb in Devens, Mass. “The funding was really helpful in making the transition,” Simpson says. “For someone in my field, it was an honor receiving an award named for Professor Gaden.”

CANTY RESEARCH AWARD

Joe Pearring (ChE ’15) received the inaugural Gregory J. Canty Research Award. Working with David Green, Joe is using click chemistry to make patchy gold and silver nanoparticles, research that can have applications for catalysis, sensing and optics. Named after a 2012 graduate of the department, the Canty Research Award is given to second- or third-year students who demonstrate creativity in translating knowledge and skills into practical engineering solutions or products and who are known for their caring and helpfulness toward others.
ELYSE McMILLEN
UNDERGRADUATE STUDENT

When Elyse McMillen (ChE ’16) toured the Engineering School as a high school junior, her guide mentioned that chemical engineering majors formed a close-knit group known for working together through challenging projects and coursework. “That comment stuck in my mind,” she says. “I thought, ‘That’s the type of community I’d like to be part of.’”

Two years later, Elyse became a chemical engineering major. “Everything I heard on my tour turned out to be true,” she says. “The major is tough and the people are spectacular.” She looks forward to such AIChE activities as the ChemE Thanksgiving Potluck and the ChemE Semi, an annual semiformal dinner and dance. She can reach most of her classmate community through the use of a single text-message group. And she also finds the faculty extremely accessible.

Elyse has pursued her interest in the biological side of chemical engineering by completing the optional concentration in biotechnology and biochemistry and as a member of the U.Va. team that earned a gold medal at a regional jamboree of the International Genetically Engineered Machine competition. The team used synthetic biology to create a standardized DNA molecule that permits the tunable production of bacterial minicells, which could be used to deliver medical therapeutics.

Elyse is convinced that her training in chemical engineering and her experience at U.Va. will open doors. “As a chemical engineer, you learn how to break large processes into smaller ones that you can analyze,” she says. “That’s a versatile skill to have. Combine that with the University’s emphasis on leadership and personal initiative and you come out as a highly employable person.”
ZACHARY FARRELL
GRADUATE STUDENT

Zachary Farrell (ChE ’15) locates his research at the intersection of three different fields: colloidal chemistry, nanotechnology and solid-state physics. It builds on work that his adviser, Associate Professor David Green, conducted with former graduate student Dan Sunday (ChE ’10). David and Dan noticed a discrepancy between the predicted and actual behavior of polymer-grafted silica nanoparticles and hypothesized that patterning on their surfaces caused this variation.

When Zack arrived, David decided that they should take a closer look at this phenomenon, but to do so they should switch from silica to gold and silver nanoparticles. “Their surface is much more regular and well defined than silica, giving us a better system to test different hypotheses,” Zack explains.

They initially set three progressive goals for their work: learning to control nanoparticle formation in a single step, producing ligand-patterned nanoparticles and grafting polymers from them. “We soon realized when we began this work that the fundamental physics of nanoparticle synthesis had not been well defined,” he says. “Before we could start on our goals, we had to develop a greater understanding of the colloidal physics of nanoparticle formation.”

Having accomplished this and applied it to nanoparticle synthesis, Zack and David began to develop ways to detect the ligand patterning of nanoparticles. Given the extremely small size of these nanoparticles — in the range of 3 to 5 nanometers — they had to adapt techniques like matrix-assisted laser desorption/ionization (MALDI) to determine whether the pattern formation happens at this size, to what degree and under what circumstances. They have complemented their experimental work with computer models based on self-consistent mean field theory, work performed in tandem with lab group member Steven Merz, who is coadvised by Sergei Egorov, an associate professor of chemistry. “This has allowed us to bring together our experiments with our theory and our simulations in a single package,” Zack says. This research is the basis for a paper that will be published in Angewandte Chemie, one of the most prestigious journals in the field.

JOHN REID
ALUMNUS

As a value stream leader at Procter & Gamble’s Greensboro facility, John Reid (ChE ’97) has recently embarked on the biggest challenge of his career. He is in charge of a team of more than 16 managers and 100 technicians starting a new skin-care brand operation. He attributes much of his ability to take on this challenge to lessons he learned during his four years at the University of Virginia.

“The technical training I received in the chemical engineering department was superb,” he says. “But I also benefited immensely from the business course that Robert Moore (ChE ’59) taught when he was the Halsey Distinguished Visiting Professor in 1997.” Bob organized the course around Harvard Case Studies that touched on such subjects as corporate culture and customer service, opening John’s eyes to the wealth of considerations required to lead a successful business.

John also praises the emphasis at the Engineering School on developing written and oral communication skills. “I can’t tell you how many times being able to speak or write clearly has been essential for me,” he says. And thanks to the University’s tradition of student self-governance, John did more than read about leadership. As a member of the Honor Committee, he worked hard to develop his leadership skills. “I was a young guy running trials and investigation panels, making weighty decisions,” he says. “Watching others, I gradually developed my own voice and learned how to influence others to drive change.”

John would not have been able to afford to come to U.Va. — and to benefit from these experiences — if he had not received financial aid. “That scholarship letter I received my senior year in high school changed my life,” he says. He is determined to pay this debt forward, establishing a scholarship fund for other deserving students. “I will always remember how I felt when I received that letter,” he says. “I want other young people to have the same opportunity.”
Make a gift online to the ChE department on our secure website: www.giving.virginia.edu/giving. Please designate “Chemical Engineering” in the Special Instruction Box on the form. If you have questions about giving to ChE, please contact Zak Richards at zr8n@virginia.edu or 434.924.6842.

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