Home | This Week's Contents | Classified Ads | Search C&EN Online

SCIENCE/TECHNOLOGY

June 19, 2000
Volume 78, Number 25
CENEAR 78 25 pp.41-47
ISSN 0009-2347

[Previous Story] [Next Story]

JoMcCulty, Ohio State University Photo Services

Story Links
Going the long way around
Jonathan J. Wilk
Heather C. Allen
Stephanie L. Br
Paul T. Jackson
Andre F. Palmer
Bridget R. Roge
Peidong Yang

Related Stories
See our Career Archives
No Big Changes Pay or Jobs For Chemistry Grad [C&EN, Mar. 1 2000]
How-To Manual Elucidates Lab Design, Construction Pr [C&EN, May 22 2000]

Related People
Jonathan J. Wilk
Heather C. Allen
Stephanie L. Br
Paul T. Jackson
Andre F. Palmer
Bridget R. Roge
Peidong Yang

Sophie L. Wilkinson
C&EN Washington

New professors exude an almost giddy joy. Fired with enthusiasm and confidence, they are keen to demonstrate that they have the right stuff. At the same time they voice some self-doubts and admit to being astonished by their workload.

Students and postdocs who have worked in an academic lab may believe they have a pretty good handle on what the life of an assistant professor is like. But faculty indicate that those impressions hardly reflect the intensity of the experience. Seven assistant professors who came onboard at their institutions within the past year or two agreed to share their stories with C&EN so they could provide an eyewitness account for others considering this career path.

Public or private, large or small, Ph.D.-granting or focused on undergraduates, famous or less well known, the colleges and universities where these professors teach demand many of the same characteristics from their new faculty. Creativity, a knack for multitasking, skillful budgeting, and salesmanship are all mandatory.

E-mail this artic
a friend
Print this article
E-mail the edito

One requirement needed right from the beginning is stamina. The economy may be roaring, but finding that first academic job is still an endurance contest. And don't presume that institutions that aren't right at the top of the heap will be less exacting.

Jonathan J. Wilker , an assistant professor in the chemistry department at Purdue University , West Lafayette, Ind., interviewed at a range of places from the top-20 schools down to those ranked in the 70s and 80s by *U.S. News & World Report.* Wilker expected that below the top five or 10 schools, "people wouldn't have so much of an edge and would be more laid back and reasonable. In my experience that wasn't the case. You constantly have to be on and selling your chemistry."

Indeed, Heather C. Allen , assistant professor of environmental chemistry at Ohio State University , Columbus, recommends that candidates treat every on-campus interaction as an interview, whether it's an official appointment or not. "It's not just your seminar; it's not just the committee," she says. "Every single person you talk to has a say in whether or not you get an offer."

Allen says that the institutions where she applied for an academic position attracted anywhere from 85 to several hundred applicants for each opening. Those odds aren't as daunting as they appear, however, because applicants generally approach several schools at once.

For instance, Stephanie L. Brock , assistant professor of inorganic chemistry at Wayne State University , Detroit, says she "applied everywhere that had a Ph.D. program that was looking for an inorganic or materials chemist." She got her leads by reading the job ads in*Chemical & Engineering News* , and ended up going on seven interviews.

Allen applied to about 40 colleges and universities, of which 19 invited her to come in for an interview. She went on 16 of those interviews, including visits to the University of North Carolina, Chapel Hill; Duke University; Florida State University, Tallahassee; the University of California, Riverside; and Ohio State.

Allen says the one- or two-day visits typically included a round of half-hour appointments with individual professors to discuss research. In addition, she would generally present a talk on the research she had been doing over the past few years and another about the work she was proposing to do as a professor. "It's a trying experience to go week after week--16 of these from November through the beginning of March," she says. "And I was trying to fly back home to see my husband on the weekends."

Although she found this exhausting, she isn't sorry she did it. "If I had not taken so many interviews, maybe I wouldn't have interviewed here. I didn't really know much about Ohio State before I came, and it would have been a big mistake if I had not" interviewed.

Paul T. Jackson , an assistant professor of chemistry at St. Olaf College , Northfield, Minn., used *U.S. News & World Report* 's annual college rankings and the Washington, D.C.-based Council on Undergraduate Research's "Directory of Chemical Research at Predominantly Undergraduate Institutions" to narrow down his search for an academic home. He also consulted " Baccalaureate Origins of Doctoral Recipients ," a report published by Franklin & Marshall College, Lancaster, Pa., that ranks private four-year institutions by the number of their graduates who go on to earn Ph.D.s in all fields, as well as in subcategories such as the sciences and chemistry.

Then, Jackson says, "It was a matter of seeing who had openings." He kept an eye on C&EN's classified ads, the *Chronicle of Higher Education's* classified ads, and job listings posted on individual colleges' websites. Electronic-based services such as the Council on Undergraduate Research's listserv "provided quite a few good opportunities, because most of the time those electronic postings were published a couple of weeks prior to the print versions, so it gave you a little bit of a head start," Jackson says.

Chasing all these job leads down takes a huge investment in time, but the search pays dividends beyond the obvious. The job hunt is "a wonderful opportunity to see how things work at different institutions and to meet your colleagues," Brock says. "I knew so many more people after my interviewing, and you run into these people again at meetings. Take as many interviews as you can, because you may find mentors who are very interested in your progress."

New professors base their final choice of institution on a wide range of motivations. Andre F. Palmer , assistant professor of chemistry at Howard University in Washington, D.C., chose the institution in part because he got his B.S. degree in chemical engineering there. "I wanted to come back and contribute to the school by training black students," he says. He turned down a postdoctoral position at Massachusetts Institute of Technology in order to teach and do research at Howard. Palmer adds that Howard's hospital cancer center and sickle cell center allow him to focus on biomedical engineering projects that may ameliorate medical problems that disproportionately affect minority populations, including sickle cell anemia and prostate cancer.

In making his selection, Peidong Yang , assistant professor of chemistry at UC Berkeley , focused on the quality of the graduate student pool and the facilities available to professors that they might not be able to provide themselves. "We are very extensively using electron microscopes, which a small group can't support," he says. "And here we have a fantastic facility at the National Center for Electron Microscopy, part of Lawrence Berkeley National Laboratory."

St. Olaf's Jackson wanted to teach in a liberal arts environment, because he had enjoyed that atmosphere as an undergraduate and because teaching was a core interest. He also says he "didn't want to create a huge Ph.D. research program. I helped cowrite a number of grant applications through my Ph.D. work, and it didn't sit well with me, pandering for big money and trying to maintain support of a very active group in terms of publishing. I didn't need to get a couple of $100,000 grants. A few tens of thousands of dollars can be just fine. You can still tackle some very interesting questions."

The wherewithal

Money is an ever-present concern for newly minted professors, who first have to settle on the terms of their start-up offer and then have to pursue grants. The start-up package generally provides funds to get a lab equipped and running and to tide it over until the professor has drummed up grant money. At some institutions, this package might include support for postdocs and grad students and a salary for the professor's first nine months. Once those funds are used up, the professor may be wholly reliant on grants for salaries and supplies. Other universities may pay the professor a nine-month salary every year, in addition to providing initial start-up funding.

It can be hard for a job seeker to get a reading on what's fair in a financial package. "When I got my offer from Purdue, I didn't know where I stood," Wilker recalls. He sought perspective from friends and colleagues at other institutions, but "nobody wanted to talk about it. It's like asking somebody what their salary is."

Wilker has heard of chemists' start-up packages above $1 million at the top 5 research schools, particularly in cases where a new professor needed an expensive piece of equipment in order to start research. Palmer estimates that start-up packages at big institutions more generally range from $200,000 to $400,000.

Start-up packages for engineering departments tend to be smaller, says Bridget R. Rogers, an assistant professor of chemical engineering at Vanderbilt University, Nashville. "Even at the best schools, you would be lucky to get $200,000. A more typical range is $100,000 to $150,000."

This scale of funding is typical of larger graduate institutions. But smaller universities or colleges that focus on undergraduates offer considerably less. At Howard, for instance, start-up packages are around $40,000, "so it can be difficult to obtain major equipment," Palmer says.

Jackson says $10,000 to $50,000 "is about what you can expect for a predominantly undergraduate institution to offer as a start-up package."

It can be misleading to compare packages at different schools without analyzing what's included. Vanderbilt, for instance, provides its new engineering faculty with summer salary, travel funds, and up to a half-dozen "student years" of support on top of the start-up package. "I was also lucky that my lab renovation did not come out of my start-up funds," Rogers says. "I talked to a number of new faculty members at last year's American Institute of Chemical Engineers meeting, and a number of them had to pay to renovate their space out of their start-up funding. So they had a bigger package to begin with, but if I add in those kinds of things, it was very comparable."

It's important to take into account the difference in expenses at different institutions, Brock adds. "When you interview, you hand the chair a list of what you need, what your start-up request is. You have to know whether they pay for faxes and how much it costs to run an NMR experiment. Do you need to purchase your own powder diffractometer, or is there one available in the department? You have to find out about all of that stuff in advance so you can have a reasonable package."

That may sound difficult, but professors are used to planning ahead, says Purdue's Wilker. "Even before you arrive on campus, you know the very first experiment you're going to do, because you've been thinking about this for months and months." By the time "you're a late postdoc, you should have a handle on what it's going to take to get that science done. Once you have your ideas, you know what experiments are going to be required." Wilker's list of what he needed to get his lab going ran to 30 pages and ranged from equipment such as a UV-visible spectrometer and a high-performance liquid chromatograph (HPLC) down to details such as pipette bulbs and paper towels.

Of course, professors can't buy all the equipment they would like to have. "If it's very expensive and I'm not routinely going to use it, I will use a colleague's," Berkeley's Yang says. And sometimes even if a piece of equipment is needed on a regular basis, it may still be out of reach financially. "I spend a large amount of time on atomic force microscope and photoluminescence equipment in chemistry professor A. Paul Alivisatos' lab," Yang says. But an AFM costs $140,000, he points out, which would have made a huge dent in his start-up funds.

It's not always necessary to burden a colleague with frequent equipment-loan requests. Much of the equipment at Purdue--which has one of the biggest chemistry departments in the country, with 47 faculty members and more than 300 graduate students--is owned by the department rather than an individual professor.

And sometimes there are resources that are languishing forgotten. Jackson suggests that incoming faculty "go on an equipment hunt around the department. Look in those dark, quiet places in the corners, the storage closets. You never know what gold mine you can find that's not being used." Jackson's own hunt at St. Olaf turned up some old HPLC components.

Faculty at smaller institutions may need to turn to other universities for resources they don't own. Jackson says professors can take advantage of contacts developed during their years of education, as well as their colleagues' contacts and networking at professional meetings, as a source for collaborative opportunities.

Working up the wish list of equipment and supplies can take weeks, and the wait for the packages to arrive can seem endless. "If you start in August, you're not doing your first experiment at the end of August," Wilker says. In fact, it wasn't until October that Wilker first got some small experiments going. In the meantime, he concentrated on teaching and on "writing a whole bunch of grants."

Going after grants

Professors are generally expected to use up most of their start-up funding within two or three years. While they are burning through this initial funding, they have to chase down future support from outside sources--a tall order when they are just getting their research underway.

However, some grants are designed specifically for faculty in this situation. Wayne State's Brock won an American Chemical Society Petroleum Research Fund Type G grant , which is geared toward young professors. She has also recently applied for a Research Corporation-sponsored Research Innovation Award , which accepts applications from faculty even before they officially begin their appointment. Brock also recommends that incoming professors ask their department chair to nominate them for the Camille & Henry Dreyfus Foundation's New Faculty Awards , which generally needs to be done before they arrive on campus.

Wilker figured that an award geared toward young investigators would be just the ticket, but discovered that he is "still too young for a lot of them. They still want some results." He also went after some grants that he realized he wouldn't get, but that could make his name familiar to the powers-that-be--potentially smoothing the path for future applications. Wilker received a grant from the Cancer Research Foundation of America.

In going after funding, he says, a balance needs to be struck between the subjects dear to a professor's heart and the interests of financial backers. "The most important thing in picking what you want to work on is that *you* think it's the coolest thing in the world," Wilker says. "But there are a lot of neat things out there that could be worth studying but are not necessarily fundable or salable to anyone. So you have to pick things that have some 'catch' with people. They have to say, 'Yeah, that *is* cool, and there *is* a reason to do it.' "

Wilker practically stumbled across one of his projects. At the beach one day he saw a rock covered in barnacles and mussels and wondered how the creatures stuck on the rock. "It could have been a big suction cup for all I knew," he admits. "I did some reading, and it turns out that the glue is based on protein. Mussels seem to take transition metals from the water and concentrate them." Wilker believes the mussels then "shoot the metals into the protein, and it crosslinks and hardens up, and they stick. Whether or not metals are playing a direct role in the adhesive formation is what we're trying to figure out."

His mussel project--and the insight it will provide into the important components that make up the adhesive--offers multiple attractions to funding providers, Wilker believes. "It's an adhesive and it's biological. So, what if you, say, had a tendon or a ligament rip off a bone? You could use this to glue it back on." The research could also result in the development of more environmentally friendly substitutes for the copper-based antifouling compounds presently used to keep ships clear of mussels and barnacles.

Another way to find subjects that are likely to be funded is to leaf through a newspaper for mention of projects such as the Clinton Administration's National Nanotechnology Initiative, Wayne State's Brock suggests. "And if you do anything that has to do with medicine or disease, you have potential to access the

National Institutes of Health," she says. "You can go to different Department of Defense agency Web pages and see what their interests are. You can call them up and talk to them about your area and what you're interested in doing."

In addition, Brock notes, "you want to be working in an area that is clearly separate from what you have done as a postdoc and as a graduate student. You don't want to be a clone of your former advisor. So you need to move into a different area that will be associated with you rather than with your former mentors. But at the same time, you obviously have some areas of expertise that you don't want to wander too far away from." She eventually chose three projects that "went in different directions that I could target to different funding agencies and that were distinct from anything that I had done before."

Wilker adds that "there's a game you have to play. You have to be associated with something. I partly picked the mussel project because there aren't a lot of people working on it. It's something that I think is cool that other people will think is cool, but it also can be identified with me."

Once the project is picked, it's time to settle into the lab. "That's the scary part of the job," Wilker says. "The lab is empty; it's your own ideas, your own work. Maybe it will work, maybe it won't."

Just getting the lab can be an adventure. Palmer's experience when he interviewed at Howard was ideal. The chair walked him around the department and showed him all the vacant spaces. "So I immediately said, 'I want this space and that space.' And I got it," he recalls. Of course, "it helps if you're interviewed first and you can put your two cents in."

Trust but verify

But not everyone gets what they expect. Wilker has heard tales from friends at other schools that lead him to recommend getting everything in writing so that lab space and other offers come through as promised. Half of the places at which he interviewed didn't yet have a vacant lab available. At those institutions he would be told, "We'll find you space somewhere."

But several new professors emphasize that isn't good enough. "You should ask to see the specific space that they have in mind," Brock advises.

Wilker says he has "heard a lot of horror stories of people showing up and their office is a broom closet, or a little bit of the space is available, but not all the space that they were promised."

These new professors may be told the space will be available soon, "but 'soon' extends out to two or three years. And you're on that tenure clock. You have got to get stuff going as soon as possible, and you don't want to be delayed."

Some schools Wilker visited offered to renovate a lab for him. "Basically, you have temporary space for 18 months, and then you have to move your lab. It's pain enough as it is to set up a lab--you don't want to do it twice."

Rogers has been wrestling with lab renovation since she arrived at Vanderbilt a couple of years ago, although the project is finally coming to a close. The long wait to get up and running concerns Rogers, but she will soon submit for publication a few papers based on the work of a master's degree student who uses borrowed space in another professor's lab. She has also spent the interlude presenting papers at a number of conferences in order to raise her profile.

Rogers has also used the time to refine her vision of her research focus--thin-film growth via chemical vapor deposition processes. Once that was settled, she realized she needed an ultra-high-vacuum chemical vapor deposition reactor, which costs about $250,000. Rogers figured she had better enlist some collaborators to make the acquisition feasible. She teamed up with a physicist and a chemist on the Vanderbilt faculty, and the trio won a $200,000 grant from the university.

Rogers' next challenge was to plan space to house the reactor, paying particular attention to safety issues, as the research involves hazardous metal organics. "I had to look at the exhaust system in the building and the air conditioning capabilities and make-up air," she says. "If I had an accident in my lab, I didn't want this stuff going out into the halls and killing a bunch of students." She also wanted a clean room in the lab. But she had to scale back the project when the preliminary cost estimate approached $1 million. She decided to do without the clean room, found a more suitable lab space than the one initially proposed, and limited the renovation work, bringing the total to a more affordable $150,000.

In some cases, incoming professors can avoid delays in getting a lab up and running by getting a jump on things even before they officially arrive on campus. Because Brock's start-up funds were available before she got to Wayne State, she was able to make advance purchases of large pieces of equipment that typically take several months to deliver. She ordered a dry box, a thermal gravimetric analyzer, and computers so they would be ready to use when she arrived. The university cleaned a lab for her and kept it locked so that equipment and glassware left by the previous occupant didn't "evaporate."

Recruiting season

Once they have set up a lab, professors need to recruit students.

Students can end up picking a group "for the strangest reasons--not necessarily based on the science, or the advisor, or how employable they will be afterwards," Wilker says.

Professors recruit students to work in their labs by several different routes. In some cases, professors meet these students while finishing their own educational training. Other professors have attracted students who were enrolled in the classes the professors were teaching, or who heard them present a talk. Computer-savvy students approach professors whose websites are of interest.

Working on the graduate student admissions committee at Purdue, Wilker has access to student applications. "As I go through the folder, if I see somebody who has got some interests similar to mine, I can start to recruit them," he says.

Jackson, who has two undergraduates working with him at St. Olaf, recommends that professors hang a poster describing their research outside their offices to attract students. And he notes that "the best recruiters you can have are the students who have worked with you. Encourage them to take advantage of opportunities to present some of their work with you at a collegewide event or a regional event, or, if you can secure funding, at a national event."

Some institutions formalize the student recruitment process. Grad students at Wayne State, for instance, are required to talk to five different faculty members before selecting a group to join, Brock says.

At Ohio State and Purdue, faculty members give a talk to the new grad students, and the students then make the rounds of those professors who interest them. The students will find out more about the professor's research and personality, and quiz others in the group about what the professor is like to work for. That aspect of the screening process can make it tough for a new professor to attract grad students, Wilker says, because no one can give feedback yet.

Yang says senior colleagues can help by mentioning a new professor's group to incoming students and by telling them not to be concerned about joining a young group. That sort of assistance can be invaluable, particularly when there aren't that many students to draw on.

UC Berkeley, for instance, has only a small pool of inorganic students--last year there were just six. So immediately after Yang accepted his job with the university, he began contacting students through e-mail and also through visiting days for prospective students. He ended up with one student from the inorganic division and two from the physical chemistry division, because much of his work falls in that category.

Even after the students sign on, professors should make sure they are content, Yang believes. "The most challenging thing about this job is how to organize a happy and productive lab and research group," he says. "I work with the students along the whole process in terms of making samples and characterizing them." He notes that this is an effective way to motivate them to do the research, to make them realize what is important and what is less important in research directions. "It is very helpful if you guide them during the experiment, not after they do the experiment and tell you the results, and then you tell them that's probably not the right direction," he says. "We do experiments together."

Busy, busy, busy

All these responsibilities add up to an overwhelming schedule. "I've never been so busy in my life," Wilker says ruefully. "Everybody told me how much work it was, and I was like, 'Yeah, yeah, yeah, whatever. I got a Ph.D.; I did a postdoc. I know what a lot of work is.' But oh my goodness, it's even more than I could have imagined. Two weeks ago, I took a weekend off, and that was the first time I took a weekend off since January."

Brock agrees. "You know you'll be busy, but you don't understand that when you're a postdoc, maybe all you worried about was your research," she says. "Now you have students to manage, responsibilities within the department, you have seminar speakers coming in whom you need to go to dinner with, along with teaching."

The professors interviewed for this article who are based at graduate institutions are generally responsible for teaching one course per term. In some cases they are permitted to skip teaching for one term during their first few years so they can get their lives organized.

The story is different at undergraduate facilities or institutions with smaller budgets, however. St. Olaf chemistry professors teach a course or two per term, in addition to two or three labs.

"And we're in the labs," Jackson points out. "We don't have teaching assistants to run them for us."

Palmer teaches two or three courses per semester at Howard. Although the teaching load is heavy, Palmer says, "it helps that I have students performing research in the lab under my direction."

In addition to teaching responsibilities, professors are called on to serve as committee members. Rogers, for instance, is in charge of bringing in speakers for her department's seminar series. She also serves on a safety committee and a committee that runs Vanderbilt's student center. Rogers is active in the American Vacuum Society as a director of the Vacuum Technology Division and as a liaison between the board of directors, the technical divisions, and local chapters. She notes that such service can raise the profile of a professor's institution among peers--which could ultimately raise the institution's ranking in surveys of academic quality.

How can professors keep all these balls in the air? Jackson says one of the best tips he picked up from his St. Olaf colleagues is to "think about everything counting at least twice. If you are going to develop some aspect of your research, can you take that into your teaching laboratory? Or if you give your students an assignment on chemistry in the media, that may form the foundation down the road for a course about chemistry in society." Likewise, environmental samples collected by students for a course could be used in a professor's research.

So what makes the life--which demands so much from its participants--so appealing? "Because it's your career and your lab and you're not working for anyone else, it's so much easier to come in," Wilker says. "There are probably not a lot of jobs where you are quite so independent as I am at the age of 30."

The joy these professors find in their work bubbles over. Allen recalls talking to a graduate student who was looking around for a group to join at Ohio State. "I think I scared him away because I get so excited about my research. My heart starts beating fast, and I have a difficult time containing my enthusiasm."

Allen says she and other new professors are determined to convert that enthusiasm into significant contributions--not just to science, but also to their institutions. "The universities invest in us," she says, "and therefore I believe we all feel a responsibility to succeed."◀

[Previous Story] [Next Story]

Top

Going the long way around

Not all the assistant professors profiled in this article took the traditional path to their current positions. Their histories show that it is possible to move into academia even after a delay of several years.

"Going to college wasn't something my parents expected or promoted," says Heather C. Allen, assistant professor of environmental chemistry at Ohio State University, Columbus. "I was an okay student in high school, but I did the minimum to get by. My goal was to get out and be on my own at 19 and support myself."

Allen dabbled in a few courses at night school over the next several years. But then her father passed away, and she began to think more seriously about where she was heading. "I found out after working for about 10 years that education really was important for the job and for self-esteem, and it's something that no one can ever take away from you."

At 28, Allen enrolled in Saddleback College, a community college in Mission Viejo, Calif. Allen had been thinking about going into environmental science, a route that required a chemistry course as a prerequisite. During class the professor mentioned that fellowships were available for students who completed their science and math courses at Saddleback with high GPAs. The Science Scholarship Foundation Fellowship provided a stipend of $350-750 per month, permitting the student to transfer to the institution of his or her choice to earn a chemistry or chemical engineering degree. Allen applied for a fellowship and won one.

Allen chose the University of California, Irvine, where she became an undergraduate researcher in the lab of chemistry professor F. Sherwood Rowland, who later won a Nobel Prize in Chemistry. Allen combined her junior and senior years and graduated with a B.S. degree in chemistry in September 1993.

While she worked toward a Ph.D., also at Irvine, Allen was careful to make sure she had a contingency plan in place in case her goal of becoming a professor at a research university didn't pan out. "I wanted to have an atmospheric chemistry type of Ph.D. in physical chemistry, but I also wanted to have other options if I couldn't find a position in atmospheric chemistry." She chose her advisor, surface scientist John C. Hemminger, in part because he offered her the chance to collaborate with atmospheric chemist Barbara J. Finlayson-Pitts, but also because his lab was a good training ground for nonacademics. "A lot of people in his group end up working for places like Los Alamos National Lab doing surface science or in Silicon Valley in the semiconductor industry," Allen says. As it turned out, Allen successfully landed her coveted academic spot.

Bridget R. Rogers took a different approach to her ultimate position as an assistant professor of chemical engineering at Vanderbilt University , Nashville. She joined Motorola's Semiconductor Product Sector in Phoenix after she earned a B.S. degree in chemical engineering in 1984. She continued to work full-time for the firm as she pursued an M.S. degree in chemical engineering over the next five years, and then concentrated on work for a few years to catch her breath. She then went after a doctorate in chemical engineering and signed on as an adjunct faculty member at Arizona State University in Tempe while continuing her Motorola work. By the time she completed her Ph.D. in 1998, she was a technical staff scientist at the company.

But although she had evolved, her image had not. "One day you don't have a degree; the next day you do," Rogers says. "If you stay in the same job as you get your degree, they really have a hard time justifying giving you a raise or promoting you because of that. So I knew if I wanted to take advantage of my degree I probably would have to move."

Thus Rogers found herself pursuing a job as an assistant professor at the age of 36. She applied to six schools, was interviewed by four, and chose Vanderbilt "because they really made me feel like they wanted me." She was drawn by the school's relatively small size and intimate atmosphere and the opportunity to do collaborative research. On top of that, "the chemical engineering department was in a rebuilding era. I knew we would be looking for six faculty members within the next few years. I saw it as an opportunity of being quite a senior person in a fairly short amount of time," and, she adds with a chuckle, "being able to contribute to the development of a department without having to wait until everybody died off."

Rogers had braced herself for some lifestyle changes when she switched from industry to academia, but found she hadn't anticipated everything she should have. "I took a lot of things for granted--little things like running deionized water in the labs," she says. "It just didn't dawn on me that that didn't exist here. Or an exhaust system that could handle the kinds of gases that I was going to be working with." If she had known this ahead of time, she might have asked that installation of these types of amenities be completed before she came to campus.

The support structure in academia is much less extensive than in industry, she finds. When an industry program starts up, Rogers says, there is staff available "to make sure that all the facilities are there, that things get bought and get delivered on time, and that the money is there. Here you have to find your own money and figure out what kind of facilities you need, and you have to be an expert in all different areas."

On the positive side, Rogers finds the freedom to set her own schedule and research focus delightful. In addition, "promotions aren't decided one person over another like they are in industry," she says. "When you go up for tenure, you have your publications, your list of sponsored research, and your letters of support. You either make it or break it on those standards, and not because they like somebody else better."

[Previous Story] [Next Story]

Top

Heather C. Allen

History: 1993 B.S., chemistry, University of California, Irvine

1997 Ph.D., physical chemistry, UC Irvine

1997-2000 postdoc, University of Oregon, Eugene

2000 assistant professor, environmental chemistry, Ohio State University, Columbus

Institutional characteristics: Ohio State is a public, doctorate-granting research university with about 48,000 students on the main campus and 45 chemistry faculty members.

Research: atmospheric and environmental chemistry. Allen will use lasers and spectroscopy to study air-liquid and liquid-solid interfaces in order to understand aerosol and cloud chemistry and soil-pollutant interactions. One example is sulfur dioxide oxidation at air-liquid interfaces, which forms sulfuric acid, a component of acid rain.

[Previous Story] [Next Story]

Top

Paul T. Jackson

History: 1992 B.A., chemistry, St. Olaf College, Northfield, Minn.

1997 Ph.D., analytical and organic chemistry, University of Minnesota, Minneapolis

1997-99 postdoc, St. Olaf

1999 assistant professor, chemistry, St. Olaf

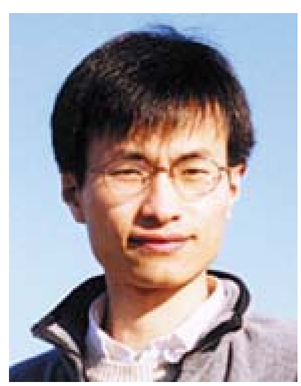
Institutional characteristics: St. Olaf is a private, liberal arts college offering bachelor's degrees. The college, which is affiliated with the Evangelical Lutheran Church in America, has 3,002 students and 10 chemistry faculty members.

Research: separations science. Jackson is developing new stationary phases for liquid chromatography and studying why chemicals are retained and separated on various column media. He is also studying chemical cycles in wetlands and chemical markers of wetland health.

[Previous Story] [Next Story]

Top

Peidong Yang



History: 1993 B.S., inorganic chemistry, University of Science & Technology of China, Hefei

1997 Ph.D., chemistry, Harvard University

1997-99 postdoc, University of California, Santa Barbara

1999 assistant professor, chemistry, UC Berkeley

Institutional characteristics: UC Berkeley is a public, doctorate-granting research university with 31,347 students and 52 chemistry faculty members.

Research: self-assembly and physical properties of one-dimensional nanostructures. Yang is growing silicon-germanium nanowires, for example. These and other one-dimensional materials are important for the development of nanoscale electronic devices.

[Previous Story] [Next Story]

Top

Stephanie L. Brock

History: 1990 B.S., chemistry, University of Washington

1995 Ph.D., inorganic chemistry, University of California, Davis

1995-99 postdoc, University of Connecticut, Storrs

1999 assistant professor, inorganic chemistry, Wayne State University, Detroit

Institutional characteristics: Wayne State is a public, doctorate-granting research university with 31,025 students and 30 chemistry faculty members.

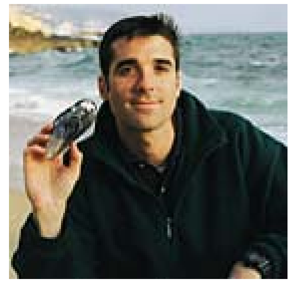
Research: synthesis and structure/property correlations of inorganic solid-state materials. Brock is studying nanoparticles, aerogels, and low-dimensional extended solids in which covalent linkages form chains or planes within the structure. Potential applications include information storage and transmission, sensing, and catalysis.

[Previous Story] [Next Story]

Top

Jonathan J. Wilker

History: 1991 B.S., chemistry, University of Massachusetts, Amherst



1996 Ph.D., chemistry, Massachusetts Institute of Technology

1996-99 postdoc, California Institute of Technology 1999 assistant professor, chemistry, Purdue University, West Lafayette,

Institutional characteristics: Purdue is a doctorate-granting, public research university with 37,762 students on its West Lafayette campus. The campus has 47 chemistry faculty members.

Research: bioinorganic chemistry. Wilker's projects include a study of the chemistry of marine adhesives such as the glue produced by blue mussels to stick to rocks and other surfaces. This work could lead to synthetic glues for medical applications and to environmentally friendly antifouling substances to keep mussels and barnacles from attaching to ships.

[Previous Story] [Next Story]

Top

Bridget R. Rogers

History: 1984 B.S., chemical engineering, University of Colorado, Boulder

1984-98 range of jobs at Motorola, Semiconductor Products Sector, Phoenix

1990 M.S., chemical engineering, Arizona State University, Tempe

1993-97 adjunct faculty, Arizona State 1998 Ph.D., chemical engineering, Arizona State

1998 assistant professor, chemical engineering, Vanderbilt University, Nashville

Institutional characteristics: Vanderbilt is a private, doctorate-granting research university with 10,127 students and 14 chemical engineering faculty members.

Research: thin-film growth via chemical vapor deposition processes. When her lab is complete, Rogers will study how processing parameters affect growth of films so she can create films with desired properties.

[Previous Story] [Next Story]

Top

Andre F. Palmer

History: 1995 B.S., chemical engineering, Howard University, Washington, D.C.

1998 Ph.D., chemical engineering, Johns Hopkins University

1999 postdoc, Johns Hopkins

1999 assistant professor, chemistry, Howard

Institutional characteristics: Howard is a private, historically black, doctorate-granting research university with 10,248 students and 22 chemistry faculty members.

Research: novel drug, protein, and gene delivery vehicles; tissue engineering. Palmer is developing a blood substitute that can withstand the shear forces of the circulatory system, and is studying growth of other artificial tissues to replace damaged or diseased organs.

[Previous Story] [Next Story]

Top

Home | Table of Contents | News of the Week | Cover Story

Business | Government & Policy | Science/Technology

Pubs Page / chemistry.org / ChemPort / CAS