



PAUL EFLAND/UNIVERSITY OF GEORGIA

**IN DEMAND** Medicinal chemistry graduate student Hyunah Choo synthesizes active drug compounds at the University of Georgia.

## NEW GRADUATES FACE SOFTENING DEMAND

Industrial offers will be fewer, particularly for Ph.D.s, while schools eagerly seek junior faculty

REBECCA L. RAWLS, C&EN WASHINGTON

**W**HAT A DIFFERENCE A YEAR makes. Last fall, when C&EN was asking employers of chemical professionals to size up the job market for the students who would be entering the workforce in 2001, consensus far and wide was that job prospects could hardly be better.

"For the fourth consecutive year," C&EN reported, "the job market looks rosy."

And it did, in November. But by spring, when many from the class of 2001 were entering the job market, chemical companies were well into their fourth consecutive quarter of earnings declines, and growth of the U.S. economy overall was unmistakably slowing down. Although firm data on the job offers and salaries of last year's graduates won't be available for several months, those graduates almost certainly entered a much less rosy job market than anyone expected a year ago.

Consider hiring at Procter & Gamble as just one example. A year ago, the company expected to hire about 70 Ph.D. chemists, bioscientists, physicians, and en-

gineers from the class of 2001, a number that was down slightly from the previous year. In fact, it hired between 35 and 40, according to Ron Webb, the company's manager of doctoral recruiting and university relations.

Those numbers need some context, Webb suggests. In the past 30 years, P&G's need for new doctoral-level employees has ranged from as few as 13 in one year to as many as 120 in another. "The year we hired 120, we opened up a very big new research facility," Webb explains. "The year we hired 13, we were not looking to grow very much, only replacing people who were retiring." With that perspective, hiring 35 to 40 new Ph.D.s last year represents a time of growth, but growth that was definitely scaled back from the heady period of the late 1990s.

This year's graduates can expect mixed signals about the robustness of the job market they will be entering, Webb says. "It's very clear that a lot of companies have announced downsizing, and that sends the signal that hiring should be low," he points out. But P&G "will hire as many people this year as we did last year, maybe even a

few more. We are just as active in our campus recruiting effort as we have been in the past. We are continuing to go out there this fall and look for good people."

**MIXED SIGNALS** is a good way to describe this year's employment outlook. Several snapshots taken at the beginning of this year's fall recruiting season present a picture much like that at P&G. Although the employment outlook for newly minted chemists and chemical engineers is not as bright as it seemed a year ago, there are jobs to be filled, and in quantities that represent more than just replacement of retirees.

Yet this mildly upbeat outlook is tempered by unease. The economic outlook for the U.S.—and, indeed, the world—is uncertain, and uncertainty almost always translates into caution in recruitment. And the political outlook is uncertain as well. The U.S. is at the start of a lengthy but as yet ill-defined war, and few are willing to even guess the long-term effects of that effort on chemical employment.

At the same time, academic employment opportunities abound. Lately, 50 or more openings for assistant professors in tenure-track positions have been appearing each week in the pages of C&EN, and a recent survey conducted by the Council for Chemical Research found that the 69 chemistry departments surveyed collectively were seeking 89 new junior faculty members.

It's against this backdrop, and with a fresh memory of last fall's overstated optimism, that the class of 2002 will be entering the job market.

Signs of some slowdown in industrial recruiting are easy to find. For example, Barry K. Carpenter, chairman of the department of chemistry and chemical biology at Cornell University, says: "I think it's pretty clear that the economic downturn has had some impact on industrial hiring. When I've spoken to our industrial recruiters coming through, some of them are looking to hire a smaller number of people than they thought they would have a year or so ago. On the other hand, there are still plenty of them coming through."

At the University of Illinois, Urbana-Champaign, Debe Deeb Williams, director of placement and student services in the School of Chemical Sciences, says: "I'm feeling fairly positive about the recruiting season, and I don't think I'm Pollyanna. We are still having a goodly number of companies coming through who are saying, 'Yes, we really do have openings.' They might have a reduction in the number of openings, and some are indicating that they

## Chemistry degrees

The number of graduates at all levels is dropping

YEAR	BACHELOR'S	MASTER'S	PH.D.
1981-82	11,062	1,751	1,722
1982-83	10,796	1,622	1,746
1983-84	10,704	1,667	1,744
1984-85	10,482	1,719	1,789
1985-86	10,116	1,754	1,908
1986-87	9,670	1,738	1,976
1987-88	9,052	1,708	1,995
1988-89	8,625	1,774	2,037
1989-90	8,132	1,682	2,183
1990-91	8,321	1,665	2,238
1991-92	8,641	1,780	2,280
1992-93	8,914	1,842	2,261
1993-94	9,425	1,999	2,353
1994-95	9,722	2,099	2,273
1995-96	10,713	2,254	2,287
1996-97	10,926	2,268	2,143
1997-98	10,582	2,141	2,217
1998-99 <sup>a</sup>	10,500	2,100	2,134
1999-00	na	na	1,990

**NOTE:** Data collected from degree-granting institutions. **a** Bachelor's and master's estimated from ACS 1999 Starting Salary Survey. **na** = not available.  
**SOURCES:** National Center for Education Statistics, National Science Foundation, American Chemical Society Department of Career Services

might be hedging their bets by being open to the possibility of spring recruiting, which they haven't done before."

Williams cautions, however, that the view from the University of Illinois, which has a large and well-respected chemical sciences program, might be brighter than it is elsewhere. In the past year, companies have reduced the number of schools they focus on in their recruiting efforts, she says. That means that although recruiters are still coming to Illinois, "if you are at a small school, you are more likely to be out of a company's focus now."

And even at the schools where companies are sending their recruiters, several companies tell C&EN that this year they will be more selective in the candidates they interview and eventually hire. At P&G, that's because on-campus recruiting now complements Internet recruiting via the company's home page. Totally electronic job applications are strong on quantity, Webb finds, but unscreened in their

quality. That means campus recruiting needs to be just the opposite. "I'm challenging our recruiting team to pay much more attention to quality than to quantity this year," he says. "I would be much happier, for example, for any given recruiter to interview one-third fewer people if they felt confident that this lower number translated into the better candidates. That means not conducting an on-site interview with everyone who might seek one."

"This year, the bar has been raised significantly higher than before," says John MacKinnon, manager of Dow Chemical's R&D recruiting in North America. "We are now looking for the best candidates, where before we would have taken very good to excellent ones." He adds, "I would assume that we are very much in line with the rest of the chemical industry."

**"EVEN BEFORE SEPT. 11,** there were a lot of worries in industry," says James D. Burke, an adviser to the American Chemical Society's Department of Career Services. Prior to his retirement earlier this year, Burke was manager of research recruiting and university relations at Rohm and Haas. Not only basic chemical companies, but also pharmaceutical and even petrochemical firms are worried about their profitability in the face of uncertain world markets. Consumer products companies, Burke suggests, may be the single bright star so far among the chemically based industries.

"The real concern comes about because the pace of business changes has been awfully rapid for many years," Burke suggests. "It's been hard for people to keep up with, much less anticipate, what's going to happen." In the past 10 years, he notes, many of the companies that have made acquisitions and divestitures haven't had the good result that they had hoped for from them. That, he believes, will translate into a "wait and see" attitude toward current economic conditions. Although Burke sees many signs that business is likely to recover within a year, he doesn't expect many companies to be hiring now in anticipation of the recovery so as to be ready for it when it arrives. With too many disappointments behind them, he predicts, companies will wait

to see their earnings begin to pick up before they start expanding their workforces.

Such an assessment seems borne out at DuPont. Last month, company Chairman and Chief Executive Officer Charles O. Holliday Jr. said DuPont was "experiencing one of the most challenging business environments the company has faced in decades," as he announced dismal third-quarter earnings (C&EN, Oct. 29, page 10).

"We will be hiring next year, but we will be very cautious," says Albert S. Tam, DuPont's Ph.D. and science recruiting consultant. "The number we hire will depend on the business environment ahead, and that can turn on the drop of a hat, upwards or downwards." The company will be actively and aggressively recruiting on campuses, he says, for bachelor's, master's, and Ph.D. candidates.

For each of the past five years, DuPont has hired some 70 to 80 scientists and engineers for its U.S. facilities. Chemistry and chemical engineering are the biggest single disciplines, but people in fields such as biotechnology and mechanical and electrical engineering are sought as well. Although DuPont sold its pharmaceutical division last month, the company is looking for synthetic organic chemists interested in biotechnology. In fact, "any chemist or chemical engineer who also has a biology background will have a bright future," Tam predicts. Also in demand at DuPont are polymer chemists and analytical chemists.

**AT DOW CHEMICAL,** "we are continuing our solid program of recruiting on campus," MacKinnon says. However, "the number of opportunities is significantly less, compared to last year. Our needs are probably 60% of what they were last year."

Last year, the company hired some 120 chemists, chemical engineers, polymer scientists, materials scientists, and others for its R&D effort. This year, MacKinnon says, the company "will be going after very much the same group of people. We feel that it's extremely important for the long term that we continue to get the best scientists and engineers from universities to come to Dow."

According to R. Douglas Bounds, manager of staffing at Eastman Chemical, "next

# The economic outlook for the U.S.—and, indeed, the world—is uncertain, and uncertainty almost always translates into caution in recruitment.

year is not going to be the best year ever to be seeking a job, but it certainly won't be the worst year ever. The chemical industry is in a bit of a trough right now, but the projections are that next year will look better."

Eastman traditionally hires far more chemical engineers than chemists, and that will be particularly true in the coming year, since recent acquisitions have brought chemists into the company, thereby filling needs that otherwise might have been met through recruiting.

This year, Bounds wants to increase the number of chemical engineers Eastman hires. "We're not going to double or triple what we've done in the past, but we hope to move a little higher," he says. That's partly in anticipation of an economic turnaround, but it also reflects the company's own demographics, in which many long-time employees are now reaching retirement age.

In the past few years, Bounds notes, chemical engineers have been highly sought after by nontraditional employers, such as consulting firms and dot-com start-up companies. With the downturn in the economy, he's expecting some of these opportunities to decline, making this a good year for traditional chemical companies like Eastman to be in the market for chemical engineers.

Sharyl M. Hackett, campus relations and diversity manager for ExxonMobil, has noticed fewer companies recruiting on campuses for chemical engineers this year. However, she says, petrochemical companies and support industries continue to be well represented. "The environment is still quite competitive for the high-quality candidates we recruit," she says.

ExxonMobil will be seeking some 200 chemical engineers this year, almost all of them at the bachelor's or master's level. That's an increase of less than 10% over last year, Hackett notes, although it's about 30% more than Exxon and Mobil used to recruit for before their merger in 1999. Now that the merger is complete, "business opportunities have greatly increased," she says, creating "added demand for people resources." In addition to engineers, ExxonMobil will be looking for about 15 Ph.D. candidates in polymer science, analytical chemistry, and organic chemistry.

For the past decade, big pharmaceutical companies have been among the fastest growing employers of chemists. This year,

too, chemists who have the skills that pharmaceutical employers are looking for are likely to be very much in demand. Whether the large pharmaceutical companies will hire these graduates in quantities similar to recent years is harder to predict.



PHOTO BY KEITH WELLER/ARS

**JOINING HANDS** Biochemist Kevin Young (left) of the Agricultural Research Service and plant breeder David Ertl of Pioneer Hi-Bred International analyze hybrid corn samples.

At Pfizer, for example, the market for bachelor's- and master's-level chemists is "extremely robust," according to Martin R. Jefson of Pfizer Global R&D in Groton, Conn., who has responsibility for chemistry recruiting at that site. "People we interview and feel are attractive candidates are often getting multiple offers from other companies," Jefson says. Pfizer is looking for bachelor's- and master's-degree candidates who want to do laboratory work in fields like medicinal chemistry or process research, analytical R&D for pharmaceutical development or formulation development, drug metabolism and biotransformation studies, and pharmacokinetics.

The demand for Ph.D. chemists is also strong at Pfizer. "This is going to be a typical year for Ph.D.s, with multiple opportunities at all three sites," Jefson says. In addition to Groton, Pfizer has research facilities in Ann Arbor, Mich., acquired through the company's merger last year with Warner-Lambert, and in La Jolla, Calif., at the former Agouron Corp., which also became part of Pfizer last year. The

mergers and subsequent shifting of jobs made last year's recruiting a little light at Pfizer, Jefson says. This year, he expects recruiting to be closer to its earlier levels. As always, synthetic organic chemists who are looking to do medicinal chemistry research will be among the most sought after candidates.

The picture seems a little different to David M. Floyd, vice president for discovery chemistry at Bristol Myers Squibb's Pharmaceutical Research Institute. "Things seem a little slow this year, most likely associated with the general state of the economy," he says. "From what I've been hearing, it's going to be a relatively light recruiting year for the pharmaceutical industry, compared to a few years ago."

Bristol-Myers Squibb is in the midst of assimilating employees brought into the company by acquisition of DuPont Pharmaceuticals last month. The company has announced that about 3,000 of DuPont Pharmaceuticals' roughly 5,000 employees will be let go (C&EN, Nov. 5, page 13).

"We are going to hire for both discovery and process positions in chemistry, although our recruitment will be somewhat lighter than in the past several years," Floyd says. Bristol-Myers Squibb has completed on-campus recruiting visits at the same level as in

previous years. "It's very important to us to stay in contact with our academic colleagues and also to continue to interface with students," Floyd says. "There is an excellent group of graduate students and postdocs this year, and I certainly do not want to miss the opportunity to have some of these people join the Bristol-Myers Squibb chemistry organization."

**SMALL COMPANIES**, particularly small drug discovery companies and biotech firms, have been significant and reliable sources of employment for new graduates in chemistry and chemical engineering year in and year out for the past decade. In 2000, for example, 46% of chemistry graduates going to work in industry took their first job at a company with fewer than 500 employees, according to ACS's annual Starting Salary Survey. That's quite different than the situation for chemical engineers, where only 18% found their first job at a company of this size.

A spot check by C&EN finds that some small companies will continue to offer opportunities for new graduates this year as well.

"We have plans for expansion and for hiring that are pretty much consistent with the way we've been progressing for the past few years," says Michael E. Strem, president of Strem Chemicals, a Newburyport, Mass.-based firm that sells research chemicals to universities as well as research labs in government and industry. However, he adds, "something could happen tomorrow, and we'd have to change our plans. The beauty of small business is that it can stop quickly and change direction."

"Small companies reflect the stock market almost instantly," says Rita R. Boggs, president of American Research & Testing Inc., in Gardena, Calif. "After the market went down at the beginning of the year, we were coming back very nicely, only to have the phone sort of stop ringing after Sept. 11. Now things are starting to go back up."

Because American Research & Testing serves a mix of clients, some of them defense related, Boggs expects the company will be all right. Hiring new chemists, however, is unlikely this year. "Right now, just like large companies, we are trying to cut back on our expenses to make sure that we are running pretty lean," she says.

Albany Molecular Research, Albany, N.Y., is looking for entry-level scientists at all academic levels, says Andrea Schulz, the company's director of human resources. Because most of the company's business is pharmaceutical research and development, most of its openings are for synthetic organic chemists. "We expect our business will continue to grow in 2002," she says, so the company also plans to hire analytical chemists, microbiologists, and computational chemists. In particular, they are looking for bachelor's-level applicants with "as much practical and diverse chemistry experience as possible," Schulz says. It's also important for applicants to present their qualifications clearly. "The more difficult it is to decipher what an individual has done, the less likely we are to take note of that individual," Schulz says.

Signature bioscience a start-

up company with facilities in Hayward and Richmond, Calif., is "developing from an instrumentation company into a drug discovery company," according to Human Resources Director Lori Wilkinson. That change, she says, leads to a need for chemists, particularly synthetic organic chemists. With just over 100 employees

now, the company may hire as many as 100 more in the coming year. In addition to synthetic organic chemists, the company is looking for computational chemists and molecular and cell biologists, and has openings at all degree levels, Wilkinson says.

The ChemRx division of Discovery Partners International in South San Francisco is looking for bachelor's,

master's, and Ph.D. chemists with synthetic organic or medicinal chemistry experience for entry-level positions. The company plans to hire about as many chemists this year as it did last year, according to the firm's human resources manager, Frank Spada. Although the company prefers to receive résumés online, "getting to know our staff directly via job fairs, on-campus recruiting, or academic networking can greatly improve the chances of getting noticed," Spada says.

## Chemists looking for positions in academic research and teaching may be even more sought after this year than they have been in the past.

### Opportunities

Roughly 2,000 candidates used ACS's National Employment Clearing House this year

	TOTAL CANDIDATES	EMPLOYERS	POTENTIAL INTERVIEWS OPENINGS	SCHEDULED
<b>1996</b>				
New Orleans	1,217	133	480	1,527
Orlando	856	127	494	1,469
<b>1997</b>				
San Francisco	1,374	196	729	2,395
Las Vegas	1,021	154	549	1,996
<b>1998</b>				
Dallas	1,039	164	967	2,405
Boston	1,637	228	1,168	3,141
<b>1999</b>				
Anaheim	1,018	118	1,628	2,178
New Orleans	964	134	829	3,049
<b>2000</b>				
San Francisco	1,052	169	1,069	3,367
Washington D.C.	1,057	156	1,616	3,479
<b>2001</b>				
San Diego	897	209	1,429	4,299
Chicago	1,112	169	1,392	4,377

SOURCE: American Chemical Society Department of Career Services

Zyvex Corp., a molecular nanotechnology company based in Richardson, Texas, is looking for doctoral chemists with degrees in surface chemistry, surface science, computational chemistry, or chemical physics, according to Human Resources Director Laura J. Phillips. Although the company is growing rapidly, Phillips says, for a small company like Zyvex, that means they will probably only hire one or two chemists in the upcoming year.

**IN TIMES OF** economic uncertainty, another option is to seek temporary chemical employment. When the economy begins to recover, "companies will more likely look at staffing on a contingent basis, wanting to make sure things are really going in the right direction before making full-time commitments" to new employees, says Rolf E. Kleiner, senior vice president of Kelly Scientific Resources, based in Troy, Mich.

Kelly Scientific Resources currently has about 900 "open orders" for scientists in temporary positions on any given day, Kleiner says. That's significantly fewer positions than the company had a year ago, he notes. The most sought after employees are analytical chemists, analytical biochemists, and molecular biologists with bachelor's degrees.

"The bulk of the people we have working, by far, are chemists," Kleiner says, with jobs primarily in pharmaceutical, biopharmaceutical, and biotechnology firms.

The company also has significant placements with petrochemical, chemical, consumer products, and environmental companies. The economic slowdown seems to have primarily affected the larger companies to whom they supply temporary workers, Kleiner explains. The number of smaller companies using Kelly's workers is actually growing.

"Chemists are being used in many different areas," Kleiner notes. "They can accept and be given training to bring them up to a competent level in many different industries." Although 20 years ago, 80 to 90% of chemists' jobs in companies were in research, he says, "today, it's probably more like 50%. There's widening opportunity in areas like quality control, manufacturing, and environmental health and science." Typically about half of the com-

pany's placements convert to full-time employees.

Dana E. Hallberg, senior vice president and general manager for On Assignment, of Calabasas, Calif., says the rate of conversion of contingency workers to full-time employees has slipped somewhat over the past year. That's an indication that the demand for scientifically trained professionals has softened. But opportunities are definitely still out there, she says.

Companies are looking for analytical chemists, in particular, to work in quality control, Hallberg says. Chemists with a good basic understanding of microbiology are also highly sought after. "Some companies—particularly in the food and biotechnology areas—are trying to do more with less," she explains. "Rather than hiring two people when 20% of the workload is in microbiology, they are giving the job to a chemist who can figure it out."

Since Sept. 11, Hallberg says, "companies tend to be a little more jittery. But there still is a demand, particularly in chemistry, for intelligent, highly motivated, and flexible individuals to come on board and learn the task at hand. We are finding orders and need across the board—pharmaceutical, biotechnology, chemical, and food companies are still hiring."

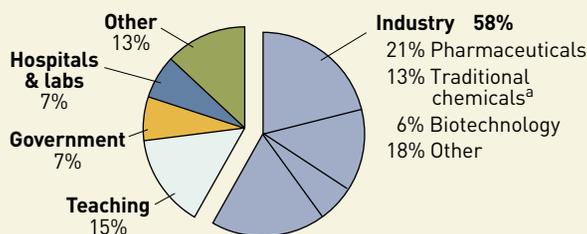
If there's one employment sector where the events of Sept. 11 may ultimately increase demand for chemists and chemical engineers, that would be the federal government. Yet, so far, consensus seems to be that it's too early to tell when and where this demand may develop.

**THE FEDERAL BUREAU** of Investigation's scientific analysis section, for example, is always hoping to hire more chemists, according to FBI spokesman Paul Bresson. Budget constraints have limited hiring in recent years, however, so that the laboratory has hired only 10 chemists in the past three years. Congress has yet to decide whether to provide additional funding for scientific personnel in the aftermath of the terrorist attacks.

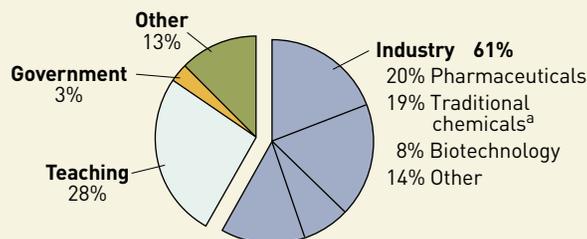
Nearly all federal employers of chemists and chemical engineers are waiting for Congress to approve a federal budget for the current fiscal year, which

## WHERE THE JOBS ARE

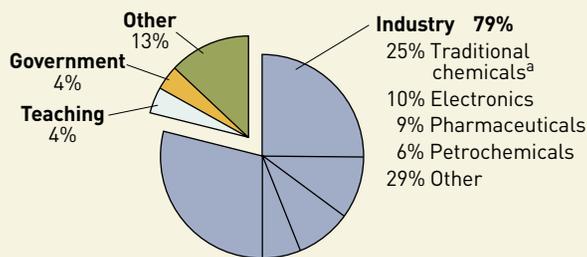
**Industry is the largest employer of newly graduated chemists and chemical engineers**



**Chemistry bachelor's degrees = 1,934**



**Chemistry Ph.D. degrees = 368**



**Chemical engineering bachelor's degrees = 1,611**

**NOTE:** For newly graduated chemists and chemical engineers working full time. Based on combined results from 1999 and 2000 ACS Starting Salary Surveys. <sup>a</sup> Includes agricultural chemicals, basic chemicals, personal care products, petroleum (except for chemical engineers), plastics, rubber, soaps and detergents, specialty chemicals, and textiles.

began Oct. 1. Since the new budget will include tax cuts and major increases for Sept. 11-related recovery efforts and defense, federal spending in many areas of science and technology is uncertain. That makes recruitment managers at many federal laboratories cautious.

"Certainly we hire chemists, but right now, these are difficult times," says David R. Rupert, director of staffing management and diversity programs at Oak Ridge National Laboratory. There will be some areas of strong activity at Oak Ridge and other labs, but some programs are definitely vulnerable to budget cuts, he says. "There's not the stability that any organization would like to see" when it comes to recruiting, Rupert says. "We just can't say, yes, we expect to have this number of jobs in this particular area. However, while our overall activity may not be as lively as we would like to see, we are still doing a good

deal of targeted recruiting for some disciplines."

"We always have needs in our critical skills areas, which include chemistry, physics, and engineering," says Carol Hogsett, college recruiting coordinator at Los Alamos National Laboratory. "So the outlook is certainly going to continue to be good for those with chemical engineering and chemistry degrees."

Students this fall seem particularly interested in learning about jobs at Los Alamos, Hogsett says. She attributes this interest in part to expectations that companies will be hiring fewer scientists and engineers this year. But she thinks there's another reason as well. "Since Sept. 11, there's been a sparked interest in an organization like Los Alamos that has a mission regarding global security," Hogsett says. "I see this interest, in particular, in biologists, biochemists, and chemical engineers, who are really interested in working on the threat of bioterrorism."

**PH.D. CANDIDATES** and post-docs heading for academic careers face a dramatically different job market. Unlike their classmates who are looking for jobs with companies or the federal government, chemists looking for positions in academic research and teaching may be even more sought after this year than they

have been in the past.

A quick look at the classified advertising pages in C&EN will show that from California to Massachusetts, Wisconsin to Texas, departments of chemistry, biochemistry, and chemical engineering are looking for junior faculty.

A survey of chemistry departments conducted annually by the Council for Chemical Research helps provide some perspective on the demand for new chemistry faculty. In early September, the 69 chemistry departments responding to the survey were collectively seeking to fill 89 full-time tenure-track positions. This compares with last year's survey, in which 69 departments—though not exactly the same 69—had 56 tenure-track openings.

But departments also often have vacancies that they are not authorized to fill. This fall, for example, the 69 chemistry departments had 126 vacancies at the as-

sistant professor level and another 35 vacancies for senior faculty. Nearly one-third of the vacancies at each level are in the field of organic chemistry.

One factor that undoubtedly contributes to the chronic demand for chemistry faculty is the substantially lower salaries that colleges and universities generally pay their starting faculty compared with what chemists with similar education can earn in industry. According to ACS's most recent salary survey, the median annual salary for a Ph.D. chemist starting out in a tenure-track position at a college or university in 2000 was \$42,000, compared with \$68,000 in industry and \$50,000 in government jobs.

Several of the larger chemistry departments now hire new junior faculty essentially every year. That's the case at Pennsylvania State University, for example. "It's constant renewal," says the department chairman, Andrew G. Ewing, as people retire or leave for other reasons. The department has hired two people in each of the past two years and hopes to hire one or two more this year.

Ewing has been delighted with the quality of applicants in each of the past two years. Each search has brought in hundreds of applicants, he says. More important, "the handful of people at the top that you want to interview has been very strong," he says. This year's applicant pool also looks strong, he adds. "If I sound like an opti-

mist, I guess I am. If we could hire another one or two people this year of the quality of the four we've hired in the past two years, I'd be ecstatic."

**RECRUITING HAS BECOME** a constant for Cornell University's chemistry and chemical biology department, as well, according to department Chairman Carpenter. The department changed its name to include chemical biology several years ago, Carpenter explains, and since then it has been working to strengthen its program at the interface of chemistry and biology. That need, combined with hiring to replace people who either don't make tenure or retire, means "we will be needing to hire pretty much continuously for the foreseeable future," he says.

The department is currently searching for one assistant professor and two senior faculty. Although the senior positions are in specific areas—chemical biology and phase science—the assistant professor position is more open. "One simply asks, Who's the best person out there?" Carpenter explains. In such a search, he says, "you can always find high-quality people." Additionally, filling entry-level positions in this way "also means that we can rely on the younger people in the department to guide what direction the department—and, indeed, the science—takes," he says. "That has been a very successful strategy for us."

The University of Texas, Austin, is having what chemistry and biochemistry department Chairman James A. Holcombe calls a bonus year. "We're looking for three people, and if we get strong candidates, we'll consider hiring a fourth," he says. The positions are to fill retirements and expand the department a bit, he explains.

The promise of chemistry's burgeoning hot areas may be rekindling student interest in academic careers, Holcombe suggests. Fields like biomaterials and nanotechnology are wide open for new ideas, he says. Students who might once have been reluctant about pursuing a career in academia—because of the pres-

ures of getting a viable research program started along with teaching and other academic responsibilities—are more interested now. "If you are in an area where there's a lot of good, clever research that you can do, I think you tend to be a little more optimistic that you can get the funding necessary to conduct the research and be successful."

The events of Sept. 11 have had a major impact on the recruitment efforts of at least one chemistry department. The University of Florida is searching to fill one position in the chemistry department. Last summer, the department hoped it would be filling as many as three.

The state is suffering a major shortfall in revenue because of the decline in tourism since early September, explains John F. Helling, associate chairman of the chemistry department. As a result, the university has been told to expect a call-back of 6% of the state funds it had been expecting

to receive this year. That will mean a significant change for the chemistry department, Helling says. Among other changes, the incoming graduate student class will be much smaller next year, reduced by perhaps a third.

But if Florida is cutting back, the University of California system is expanding. The nine-campus university system is trying to prepare for an expected increase by 50% of undergraduate students statewide by 2011. To meet this need, the system will add a 10th campus at Merced, as well as undertaking major expansions at many other campuses.

At UC San Diego, that translates into eight positions that the department of chemistry and biochemistry is currently trying to fill.

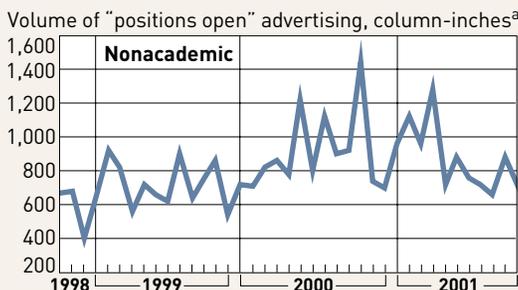
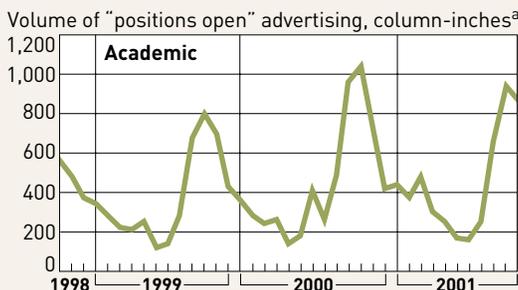
One position is for a senior professor in organic chemistry. Another is for a lecturer with secure employment, which is a person whose full responsibilities are for teaching and who has tenure-like job security. The remaining six positions are for assistant professors in the fields of organic chemistry, biochemistry, physical chemistry, and bioinformatics, says the department chairman, Edward Dennis.

The department has already hired five new faculty in the past two years, Dennis notes, including two assistant professors, both in inorganic chemistry. And Dennis expects the department to "continue to grow quite substantially" for several more years. ■

## Mixed signals is a good way to describe this year's employment outlook.

### HELP WANTED

C&EN's academic openings remain strong, but industrial employment is trending downward



<sup>a</sup> Column-inches published during consecutive periods of four weeks each.