

The 2003 *Spectroscopy* Survey of Salaries and Employment Issues

A Look at Spectroscopists' Incomes and Attitudes about Their Jobs

Michael MacRae

Are you dissatisfied with your paycheck? Does your boss make you want to go postal? Do you wish you could just pack up your samples and find work in a completely different setting altogether?

If so, then you're part of a minority of spectroscopists who say they feel they could be doing better. Most spectroscopists are, by and large, satisfied with their employment situation, according to *Spectroscopy's* 2003 annual salary and employment survey. Buoyed by modest pay raises, especially among midcareer workers, spectroscopists on average are looking past today's tough economic climate to focus on the positive aspects of their job, compensation, and prospects for the future.

In the wake of high unemployment, a deflated stock market, and changing business dynamics across several key industries, job satisfaction is a relative term. Employed scientists who were itching to make a move in the boom years of the late 1990s may feel lucky to have a job at all these days. The *Spectroscopy* salary survey provides evidence that job security is a stronger factor in the decision to stay or go than ever before. It also indicates that the situation for older spectroscopists may be getting more challenging as retirement beckons.

Of course, drawing meaningful interpretations from our admittedly small and heterogeneous group of readers (see "Methodology," page 21) is tricky business. The purpose of the *Spectroscopy* survey is more to provide an informal, non-

372 respondents to our survey. In the 2002 survey (3), readers registered an increase of 5% higher salaries, which followed a meager 1.2% increase in the 2001 survey (4) and an 8.2% jump reported in the 2000 survey (5).

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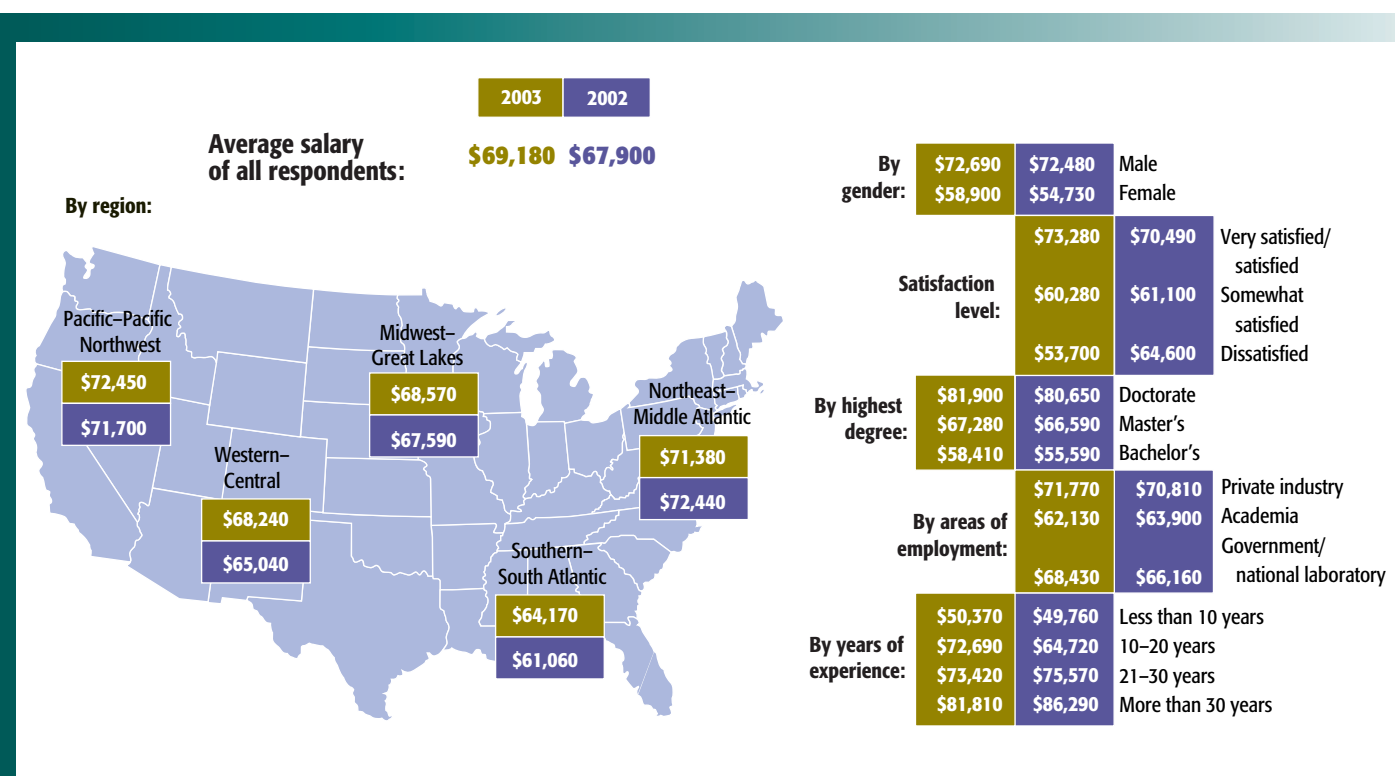
scientific glimpse into the working lives of your fellow spectroscopists. As the only widely circulated publication read exclusively by users of spectroscopic instrumentation, *Spectroscopy* has a unique vantage point from which to define this group as a profession and to assess its growth and change over the years. This information, along with other, more broadly constructed employment surveys (1, 2), can give you a basis for comparing your particular situation with that of other scientific professionals with comparable education, experience, and skills.

The Numbers

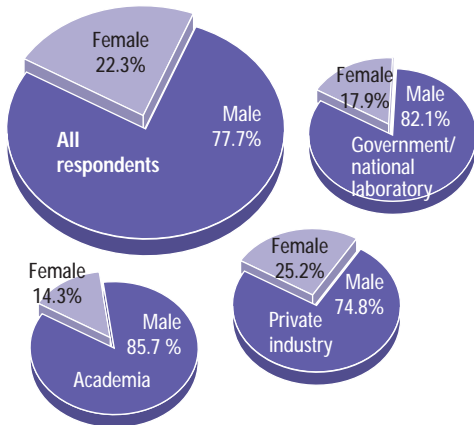
During the past year, the average salary in the field of spectroscopy rose almost 2%, from \$67,900 to \$69,180, according to the

As in previous surveys, responses indicate a significant disparity among spectroscopists working in private industry, academia, and the government. However, after the healthy gains registered in each category last year, average salaries remained relatively flat in these three core sectors. Academic spectroscopists, on average, actually saw their paychecks shrink in this year's survey, from last year's \$63,900 down to \$62,130. Industrial spectroscopists' annual salary rose from \$70,810 last year to \$71,770, while government employees posted an increase from \$66,160 to \$68,430 over the past year.

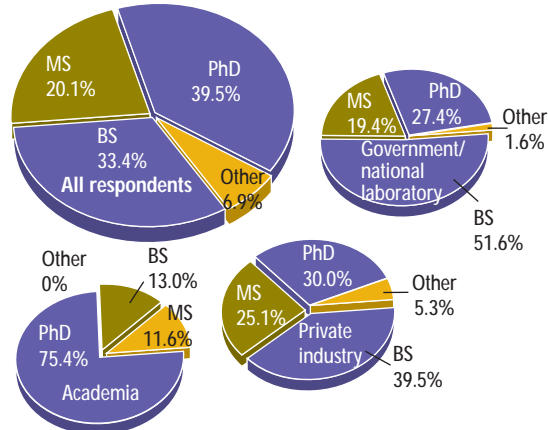
Geographically, this year's survey found the traditionally highest-paying regions showing low or no growth in average salaries, while the regions generally trailing



Gender balance by area of employment



Highest degree by area of employment



employment. Here the results were not particularly surprising, with men dominating the largest share of the spectroscopy labor market in academia (85.7% male, 14.3% female), private industry (74.8% male, 25.2% female), and government (82.1% male, 17.9% female). The government category is, however, significant in that the female work force there was by far the highest of all sectors last year at 31.4% female, plummeting in one year to 17.9%.

Experience: Boon or Burden?

Last year's salary survey found a clear pattern of employers handsomely rewarding their most experienced and educated employees. Based on this year's results, however, this may be changing. Certainly, salaries are still highest for those veteran spectroscopists with PhDs. But if this year's survey results are a true indication, employers may be shifting their attention at raise time to spectroscopists in the early-to-middle phase of their careers. Bucking several years of solid growth, spectroscopists with 20 or more years of experience are suddenly showing actual reductions in average annual compensation, while those on the upward side of the learning curve posted decent raises in this year's survey.

Last year, spectroscopists with 21 to 30 years of experience averaged a salary of \$75,570 per year, up from \$70,870 the prior year. Compare that with the average salary of \$73,420 from this year's survey. The trend continues with the true veterans (those having more than 30 years in the profession). This group posted an average salary of \$81,810 this year, a cut of about 5% from last year's average of \$86,290.

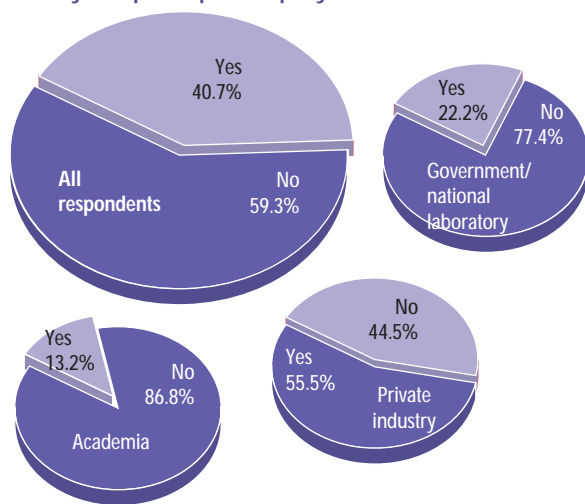
The reductions affecting that demographic group are balanced by robust growth among spectroscopists with fewer than 20 years' experience. Newcomers with 10 years or less on the job made an average of \$50,370 this year, up from \$49,760 last year. Spectroscopists working between 10 and 20 years enjoyed the largest average spike in pay, up nearly 11% from \$64,720 last year to \$72,690 in this year's research.

Despite these possible changes, it remains obvious that spectroscopists looking to earn the big bucks should seriously consider going the distance and earning their doctorate. The average salary for all PhD holders (37.8% of respondents) this year was \$81,900, up from \$80,650 the prior year. Fewer than 50 of the 138 PhD scientists responding to the survey made less than this year's overall average salary of \$69,180, while 30 PhD holders said they made more than \$100,000 per year. Spectroscopists with master's degrees (22.1% of respondents) made an average of \$67,280 this year, up from \$66,590 last year. And, although still at the bottom of the compensation totem pole, spectroscopists with bachelor's degrees (36.4% of respondents) earned \$58,410 on average last year, a healthy jump from the prior year's average of \$55,590.

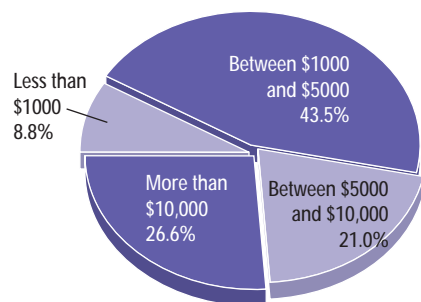
Supplemental compensation (bonuses, commissions, and so forth) remain a relatively uncommon phenomenon in the spectroscopy job market. However, for

Bonuses

Do you receive supplemental income (bonus, commission, etc.) from your principal employer?



If you receive supplemental income, what is the average annual amount?



the nation saw the biggest pay hikes. Spectroscopists in the Southern-South Atlantic region posted nearly a 5% jump from \$61,060 to \$64,170 per year. Salaries in the Western-Central states grew by a similar percentage, from \$65,040 to \$68,240. On the other side of the coin, the part of the nation with the highest concentration of spectroscopists, the Northeast-Middle Atlantic region, was the only area to experience reduction in annual average salary, from \$72,440 last year down to \$71,380. It is impossible to determine to what extent, if any, this trend is tied to events such as the dot-com meltdown and the 2001 terrorist attacks, but that region's economy was hit particularly hard by both of these calamities.

Salaries elsewhere were reported to be more stable. In the Pacific-Pacific Northwest region, average salaries grew from \$71,700 to \$72,450 last year. This growth rate, though modest, was sufficient for the Pacific states to reclaim the position as highest-paying region, which they lost to the Northeast-North Atlantic region in the 2002 survey. After a healthy surge of 7.8% growth last year, salaries in the Midwest-Great Lakes flattened out a bit, increasing only from \$67,590 to \$68,570.

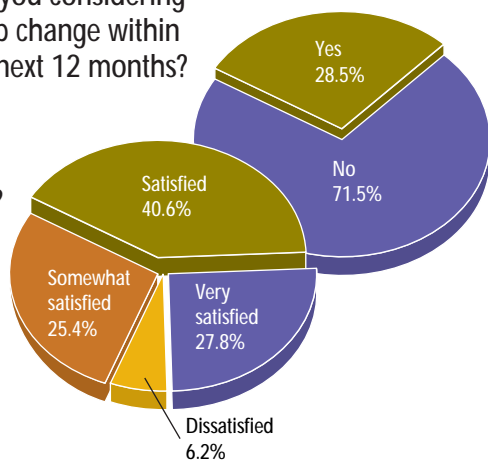
The *Spectroscopy* salary survey also compares the average salaries of males and females. This is not exactly an apples-to-apples comparison, in that we do not factor in years of experience, highest degree, management responsibility, and various intangibles that can affect a paycheck. However, it is interesting to measure, longitudinally, the proportion of males to females in the field as a whole and in each of its major segments. In this year's survey, 77.7% of respondents were male and 22.3% were female, a breakdown basically consistent with last year's results. The average salaries for males and females, however, showed essentially no growth in males' wages, while females' pay rose 6.5% from \$55,080 in 2002 to \$58,900 this year.

The survey also measured the gender balance of males and females by area of

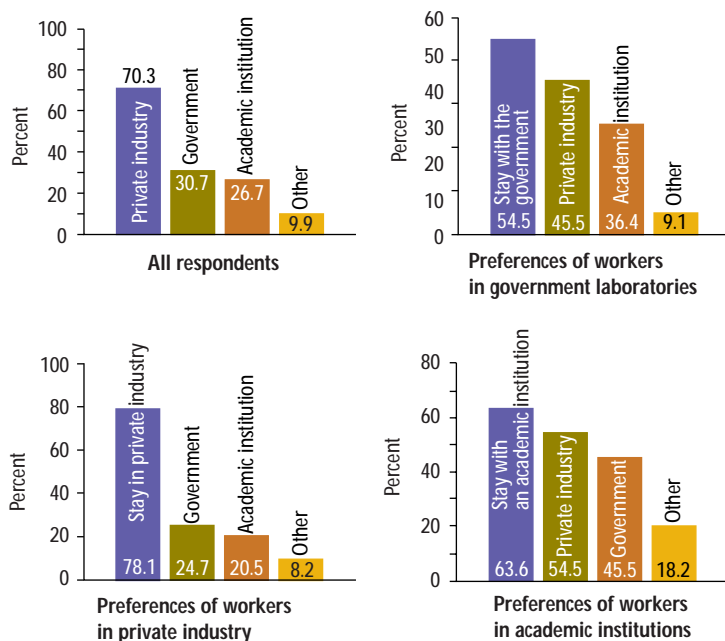
Satisfaction

Are you considering a job change within the next 12 months?

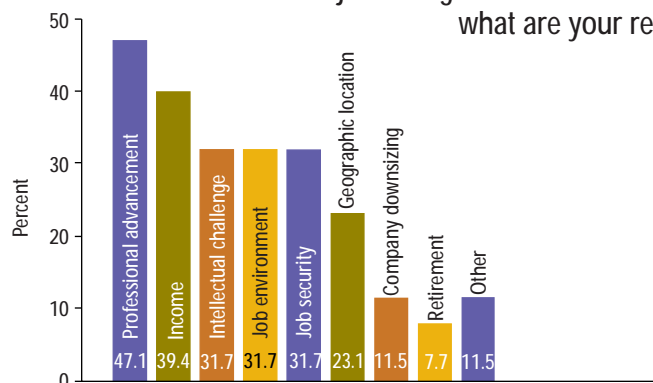
How satisfied are you in your current position?



If you are considering making a job change, which type of employer would you prefer to work for in your next job?*



If you are considering making a job change in the next 12 months, what are your reasons?*



*Percentages total more than 100% because of multiple responses.

those fortunate enough to have the opportunity to earn them, bonuses can become a significant portion of the overall pay package. Out of all respondents, only 40.7% said they are eligible to earn supplemental pay from their principal employers. Most of those receiving bonuses are employed by private industry, where

and unhappy in your current situation can take heart that satisfaction increases dramatically over time. Of the 79 respondents with 30-plus years of experience, only 2.5% said they were dissatisfied; of the newcomers with less than 10 years' experience, 12.4% expressed dissatisfaction with their jobs.

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55.5% of spectroscopists said they have some form of program. Far less oriented toward this form of monetary compensation are government labs, with only 22.6% of respondents eligible, and academia, with only 13.2% of its employees reporting a bonus plan. For those who do get bonuses, 43.5% said they can expect anywhere from \$1000 to \$5000 a year; 26.6% said they collect more than \$10,000; 21% receive from \$5000 to \$10,000; and 8.8% earn less than \$1000.

Satisfaction

These statistics are of interest, but are secondary in most respects to the simple qualitative question we ask each year: "How satisfied are you with your current position?" Traditionally, the overwhelming response is that most respondents are content, and this year is no exception. Respondents who expressed positive feelings about their jobs amounted to more than 70%, with 28.5% reporting they are "very satisfied" and 43.8% indicating they are "satisfied." A slightly more uneasy 21.5% said they were only "somewhat satisfied," while 6.3% are outright "dissatisfied" with their jobs. Those of you new to the field

Despite overall satisfaction, a 28.5% segment of the field is considering a job change within the next 12 months. Consistent from year to year, this phenomenon is due to several factors. The most common reason (47.1%) is to seek professional advancement, while 39.4% are seeking more money. Three factors — greater intellectual challenge, a better job environment, and greater job security — were each cited by 31.7% of respondents, while the search for a different geographic location is motivating 23.1%. Company downsizing accounts for 11.5% of the possible job changes, while retirements showed a slight upturn at 7.7% of respondents, up from 5.3% last year.

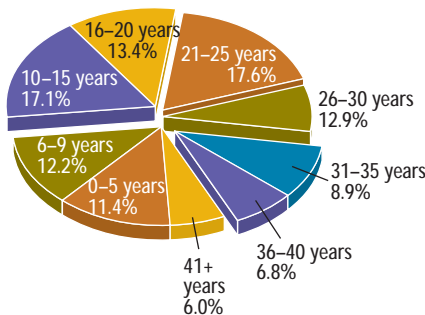
Of these trends, perhaps the most notable is the leap in respondents who say they are considering a move for increased job security, up from 23.9% last year to 31.7% this year. Although the three top reasons for a change — advancement, income, and challenge — dropped significantly this year, the quest for security and a new location registered powerfully in this year's results. A closer look at the data shows that those seeking security are located predominantly in the Northeast-Middle Atlantic and Midwest-Great Lakes regions, the bastions of traditional U.S. heavy manufacturing industries.

The Economic Picture

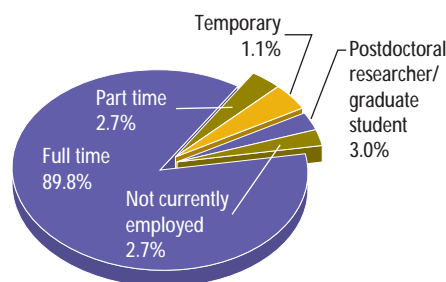
The U.S. Department of Labor's Bureau of Labor Statistics (BLS) predicts that employment of chemists in general will grow about as fast as the average for all occupations for the remainder of this decade (2). BLS expects growth to be concentrated in the pharmaceutical manufacturing, R&D, and testing services. The pharmaceutical, biotechnology, and chemical industries are both shifting to outsourced research and analytical services, and employment growth in the contract laboratory segment should increase as a result, even as major companies downsize their in-house scientific capabilities.

Among *Spectroscopy's* survey respondents, only 2.7% said they were not currently employed, down from 3.4% last year. Part-time and temporary employees accounted for an additional 4.6% of the responses, graduate students and postdocs made up another 3%, and, finally, full-time regular employees accounted for 89.8%. According to the American Chem-

Years of experience



Current employment status



Methodology

The 2003 *Spectroscopy* Salary and Employment Survey was mailed to 2000 randomly selected subscribers of *Spectroscopy* magazine. The surveys were mailed on December 2, 2002. Of those, 22 were undeliverable and 372 were completed and returned, resulting in a response rate of 19%. Certain percentages add up to more than 100% because respondents were allowed to provide multiple answers; some totals are more or less than 100% due to rounding. All phases of the study were conducted and supervised by The Wayman Group (Cedarhurst, NY), an independent research firm. To encourage participation, *Spectroscopy* informed survey recipients that \$1 would be donated to a charity group for each survey completed. Charities that respondents could select from were the American Cancer Society, the American Heart Association, and the AIDS Foundation.

management (9.4%), pure research (6.1%), and method development (5.8%). Other specialties comprising fewer than 5% of the respondents included production/manufacturing, marketing/sales, process control/monitoring, project management, corporate management, and "other."

References

1. *Chem. & Eng. News*, November 25, 2002, p. 28-45.
2. U.S. Department of Labor, Bureau of Labor Statistics web site, www.bls.gov/oco/ocos049.htm.
3. *Spectroscopy* **17**(3) 18-23 (2002).
4. *Spectroscopy* **16**(3) 20-24 (2001).
5. *Spectroscopy* **15**(3) 18-22 (2000).

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ical Society, chemical employment is a "lagging rather than a leading indicator" of the U.S. economy (1), so it could take awhile before the field fully experiences and bounces back from the impact of the protracted economic downturn.

Survey Facts and Figures

Here are some additional details of who responded to the survey and what they had to say.

The average age of all respondents was 46.92 years old. The males responding to the survey averaged 48.75 years old, while the females averaged 39.97.

There were numerous fields of specialty represented in the survey. Most of the respondents (61.2%) earned their highest degree in chemistry, followed by biology (6.3%), biochemistry/biophysics (4.6%), physics (4.4%), pharmaceutical science (2.7%), chemical engineering (2.2%), environmental engineering/science (2.2%), and "other" (16.4%).

The best-represented job title was laboratory manager/director, with 16.1% of respondents filling that role in their workplace. Senior scientists/researchers/research fellows accounted for 13.4% of the response pool, followed by chemist/spectroscopist (12.8%), staff scientist/researcher (10.1%), full professor (6.5%), and analyst (6.5%). A host of other titles applied to fewer than 5% of the respondents.

In terms of job specialty, the top functions were applied research and development (26%), general testing and analysis (15.2%), quality control/assurance (11.6%), teaching/education (9.4%), lab