

EMPLOYMENT & SALARY SURVEY

Uptick in the job market for chemists in 2006 and a routine salary boost for those with jobs

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THE LATEST VERSION OF THE AMERICAN Chemical Society's annual survey of the employment status and salaries of its members in the domestic workforce indicates an improvement in the job market as well as a higher-than-inflation gain in the salaries of individual chemists. The survey also takes the first look since 1998 at the fringe benefits received by working chemists.

The improvement in employment is small statistically. But, however slight, it is welcome after four weak years following the last good year for the employment of chemists in 2001. The 2005–06 increase in the median full-time salaries of those in their jobs for at least a year was 4.7%. This is exactly the same as the average year-to-year gain for the previous 10 years.

The percentage of survey respondents with full-time jobs moved up from 90.8% in 2005 to 91.3% in 2006. But it was still well shy of the recent high of 94.6% in 2001. The 3.0% of 2006 respondents who were unemployed but seeking employment was down only nominally from the 3.1% in 2005. But it remained below the all-time high jobless rates of 3.5% in 2003 and 3.6% in 2004. In 2006, 3.4% of respondents had part-time jobs and 2.3% were on postdocs or fellowships.

These incremental job gains for chemists came as overall employment in the U.S. was continuing to show considerable, if belated, improvement after a protracted difficult period.

The median full-time base salaries of chemists—those who responded to the 2006 survey, had not changed jobs since the previous survey, and reported their salaries as of March 1 of both 2005 and 2006—rose from \$83,000 in 2005 to \$86,900 in 2006 for the 4.7% increase. The consumer price

index for urban consumers rose by 3.4% over the period.

For those with a bachelor's as their highest degree, the change was from \$64,000 in 2005 to \$67,200, for a 5.0% increase. The gain for those with a master's was from \$75,000 to \$79,000, or 5.3%, and for Ph.D.s, from \$92,000 to \$96,000, or 4.4%.

For all chemists as a group, the median full-time salary of all respondents to the 2006 survey was \$85,000. This was up by 2.4% from the \$83,000 median for all respondents to the 2005 survey. This way of determining salary growth as the difference in the medians from separate surveys done one year apart yields lower rates of gain because it does not account for raises due to the growing experience and promotions of individual chemists.

Responses to the questions on benefits indicate that they are about as available to chemists in 2006 as they were in 1998. However, employers are tending to pay less of the associated costs, whereas chemists are needing to pay a little more.

The 2006 survey involved mailing questionnaires to a random sample of 24,000 ACS members who were most likely to be in the domestic workforce. They all resided in the U.S., were under 70 years of age, and were not in the emeritus, retired, or student member categories.

TOTAL RESPONSE was 8,580, for a 36% response rate. Almost 400 respondents, or about 4%, were either fully retired or otherwise unemployed and not seeking employment. This means that 96% of respondents were in the domestic workforce.

The 2005 survey was a census conducted once every five years. Questionnaires were sent to all 86,600 members believed to be in the domestic workforce at that time. Total response was a little more than 35,000, or 40%.

Of the 2006 respondents, almost 8,000 were chemists, about 300 were chemical engineers, and about 400 identified themselves as "other." With the exception of the box on chemical engineers, all of the data in this report are for chemist respondents only.

For survey purposes, ACS defines chemists as those who identify any one of 15 chemical disciplines or specialties listed in the questionnaire as being the most closely related to their current or latest employment. Also included as chemists are those with chemistry as their highest degree and who indicate business administration, computer science, law, or "other nonchemistry activities" as their specialty.

Chemical engineers are those who identify chemical engineering as being closest to their employment, including those whose highest degree is in chemistry.

Workforce chemists are defined as those who have full- or part-time jobs, are on postdocs or fellowships, or are unemployed but actively seeking employment. Respondents who are fully retired or otherwise unemployed and not seeking employment are not included in the analyses.

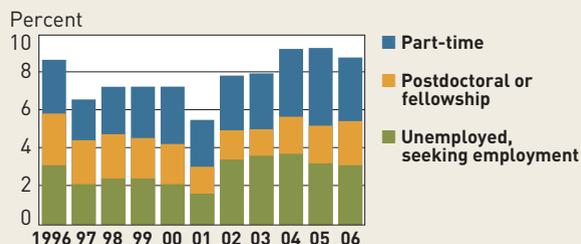
This year's survey was conducted by Senior Research As-

EMPLOYMENT STATUS

Job market improved slightly for chemists in 2006

	EMPLOYED			UNEMPLOYED, SEEKING EMPLOYMENT
	FULL-TIME	PART-TIME	POSTDOC	
1996	91.5%	2.7%	2.8%	3.0%
1997	93.5	2.1	2.3	2.0
1998	92.9	2.5	2.3	2.3
1999	92.9	2.7	2.1	2.3
2000	92.9	3.0	2.1	2.0
2001	94.6	2.5	1.4	1.5
2002	92.2	3.0	1.5	3.3
2003	92.1	3.0	1.4	3.5
2004	90.9	3.6	1.9	3.6
2005	90.8	4.1	2.0	3.1
2006	91.3	3.4	2.3	3.0

NOTE: As of March 1 each year. Based on population that excluded those fully retired or otherwise unemployed and not seeking employment. SOURCE: ACS salary survey 2006



sociate Janel Kasper-Wolfe of ACS's Department of Member Research & Technology under the general guidance of the ACS Committee on Economic & Professional Affairs.

A full report of the 2006 member survey will be available this fall for \$250 from the American Chemical Society, Office of Society Services, 1155-16th St., N.W., Washington, DC 20036; (202) 872-4600.

Questions concerning the content of the 2006 survey should be directed to Kasper-Wolfe at (202) 872-6120.

THE WORKING chemical community continues slowly to become more diverse. In 2006, 25.8% of respondents were women. This was up from 25.1% in 2005 and 15.0% in 1985. Of those with a bachelor's as their highest degree in 2006, 34.8% were women, as were 34.1% of the master's and 20.7% of the Ph.D.s.

Women have been earning just at or just above 50% of new chemistry bachelor's degree graduates since 2002, according to data gathered for the ACS Com-

SALARY TRENDS

Current-dollar salaries of chemists as a group over the past decade have increased faster than inflation

\$ THOUSANDS	BACHELOR'S	MASTER'S	PH.D.	ALL CHEMISTS
1996	\$45.0	\$53.6	\$68.0	\$60.0
1997	49.4	56.2	71.0	63.0
1998	49.6	57.7	73.3	65.0
1999	50.1	61.0	76.0	68.0
2000	53.1	62.0	79.0	70.0
2001	55.0	65.0	82.2	73.0
2002	58.0	68.5	85.2	76.5
2003	59.7	71.3	90.0	80.0
2004	62.0	72.3	91.6	82.0
2005	63.0	74.0	93.0	83.0
2006	65.2	77.5	95.0	85.0

AVERAGE ANNUAL SALARY INCREASE

2005-06	3.5%	4.7%	2.2%	2.4%
1996-06	3.7	3.8	3.4	3.5

CONSUMER PRICE INDEX, AVERAGE ANNUAL INCREASE

2005-06	3.4%
1996-06	2.5

NOTE: Median base salaries in thousands of dollars for those with full-time permanent jobs as of March 1 each year. **SOURCES:** ACS's annual salary and employment surveys; Bureau of Labor Statistics for consumer price index

By race, the number of respondents to ACS's salary surveys who are white continues to drift down—from 91.0% in 1990 to 85.8% in 2005 and 84.3% in 2006. Asians have posted the biggest gains, moving from 6.3% to 10.9% to 11.7% over the same years. Penetration into chemistry by blacks and Hispanics, both of whom constitute about 13% of the U.S. population, remains limited. In 1990, 1.3% of respondents were black and 1.4% were Hispanic. In 2006, these levels had increased to only 1.9% and 2.8%, respectively.

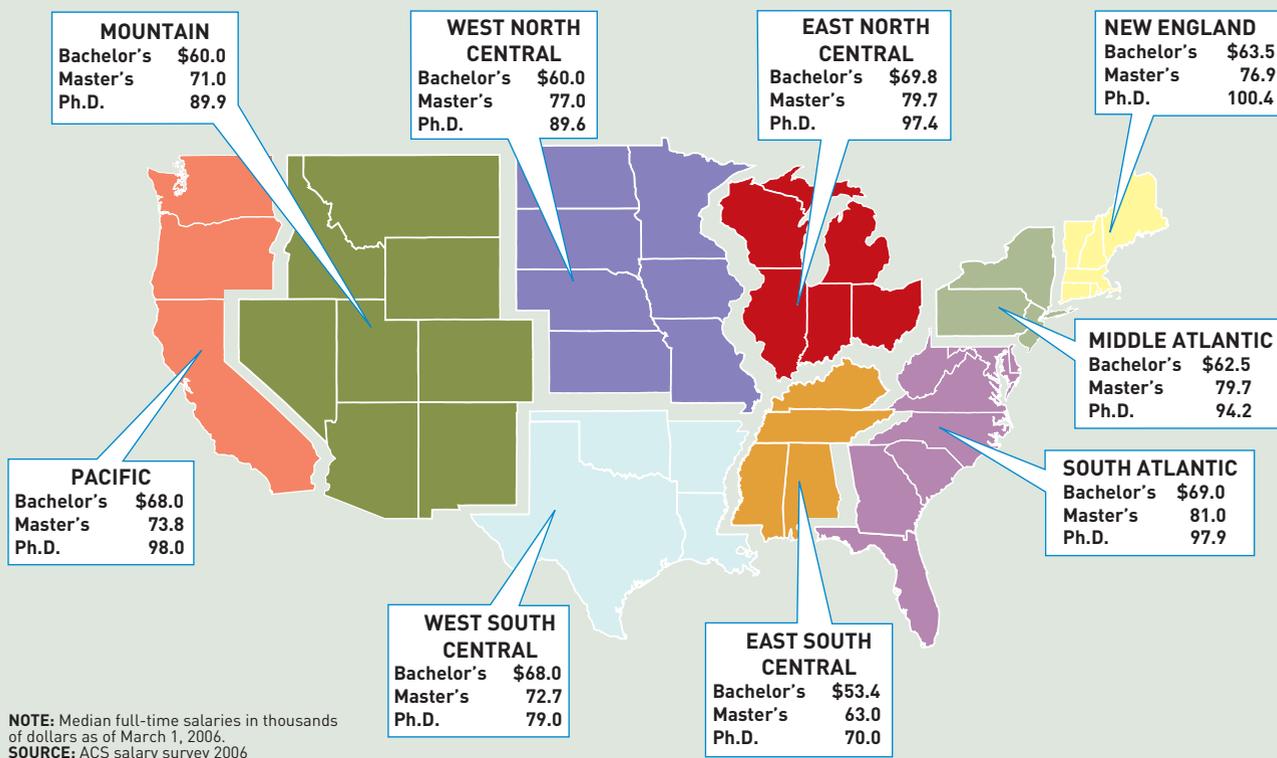
ACS members in the workforce are steadily becoming better qualified. In 1985, 25.4% of the respondents had a bachelor's as their highest degree. By 2006, this was down to 19.6%. The reverse trend holds for Ph.D.-degree holders, up from 56.7% of all respondents in 1985 to 62.7% in 2006. Master's graduates have remained largely level, at 17.9% in 1985 and 17.7% in 2006.

mittee on Professional Training (C&EN, July 24, page 43).

ANOTHER BIG CHANGE has been in the age of chemists. Their median age has ris-

SALARIES BY REGION

Chemists on the East and West Coasts may have an advantage



en from 42 years in the 1990 and 1995 surveys to 47 years in 2006. Men, with a median age of 48, are six years older than women. This difference is even larger for industrial chemists, with men's median at 48 in 2006 and women's at 39. Ph.D.s, at 48 years, are four years older than bachelor's.

This upward trend may be topping out. The mean age of all chemists in 2006 of 46.6 years was slightly down from 47.0 a year earlier.

The demographics of bachelor's and Ph.D. chemists vary quite sharply, and those of master's generally fall somewhere between the two. The 2006 survey indicates that 10% of bachelor's chemists are nonwhite. This compares with 18% of Ph.D.s and 13% of master's. More than 93% of bachelor's are native born, and just under 5% are naturalized citizens, whereas only 73% of Ph.D.s are native born and 13% are naturalized.

Another big difference by degree is in type of employment, with 81% of bachelor's working in business or industry compared with 53% of Ph.D.s. In contrast, 39% of Ph.D.s are working in academia, compared with 8% of bachelor's.

The percent of chemists who are women varies from 18% of those whose highest degree is in organic chemistry to 43% of those with

ACS MEMBERS IN DOMESTIC WORKFORCE

Working chemists as a group have become older, better qualified, and somewhat more diverse

	1985	1990	1995	2000	2005	2006
BY DEGREE						
Bachelor's	25.4%	24.3%	24.3%	22.1%	19.9%	19.6%
Master's	17.9	17.2	16.9	17.4	17.0	17.7
Ph.D.	56.7	58.5	58.8	60.5	63.1	62.7
BY GENDER						
Men	85.0	81.7	78.5	75.8	74.9	74.2
Women	15.0	18.3	21.5	24.2	25.1	25.8
BY AGE						
Up to 39	42.8	41.8	40.7	34.1	27.8	33.0
40 to 54	37.1	37.9	42.2	42.9	44.7	47.6
55 and older	19.9	20.4	17.2	22.9	27.5	19.4
Mean age	43.6	41.3	43.3	44.7	47.0	46.6
BY EMPLOYER						
Business/industry	66.4	63.8	65.5	64.7	62.0	61.6
Government	9.7	8.9	7.9	6.9	7.4	7.8
Academia	23.0	24.2	25.1	26.4	28.8	28.9
Self-employed	0.9	3.1	1.4	2.0	1.8	1.7
BY CITIZENSHIP						
Native born	87.6	87.7	82.3	79.5	79.8	79.3
Naturalized	8.0	7.1	8.5	10.2	10.2	10.7
Permanent resident	3.7	3.9	7.1	6.9	6.5	6.5
Other visa	0.7	1.3	2.1	3.4	3.5	3.5
BY RACE						
American Indian	na	0.4	0.2	0.2	0.2	0.2
Asian	na	6.3	10.3	11.1	10.9	11.7
Black	na	1.3	1.4	1.9	1.9	1.9
White	na	91.0	85.8	85.5	85.8	84.3
Other	na	1.0	2.3	1.3	1.2	1.9
BY ETHNICITY						
Hispanic	na	1.4	2.3	2.5	2.6	2.8

na = data not available. SOURCES: ACS censuses; ACS salary survey 2006

DEMOGRAPHICS BY DEGREE

Profiles of working ACS members vary markedly by highest degree earned

	BACHELOR'S	MASTER'S	PH.D.	ALL
BY GENDER				
Men	65.2%	65.9%	79.3%	74.2%
Women	34.8	34.1	20.7	25.8
BY RACE				
American Indian	0.4	0.2	0.2	0.2
Asian	5.1	9.1	14.5	11.7
Black	2.8	2.4	1.4	1.9
White	89.9	86.8	81.9	84.3
BY ETHNICITY				
Hispanic	3.6	2.8	2.6	2.8
BY CITIZENSHIP				
Native born	93.4	85.6	73.1	79.3
Naturalized	4.7	10.0	12.8	10.7
Permanent resident	1.4	3.0	9.1	6.5
Other visa	0.5	1.5	5.0	3.5
BY EMPLOYER				
Business/Industry	80.8	71.3	52.9	61.6
Government	9.7	8.6	7.0	7.8
Academia	7.8	18.1	38.6	28.9
Self-employed	1.6	2.0	1.6	1.7

HOW TO READ THIS TABLE: Using the example of men: 65.2% of bachelor's degree respondents are male, as are 65.9% of master's, 79.3% of Ph.D.s, and 74.2% of all respondents. **NOTE:** Data are for ACS members in the domestic workforce as of March 1, 2006. **SOURCE:** ACS salary survey 2006

WHERE THE JOBS ARE

Younger chemists are more likely to work in academia or pharmaceuticals

% OF CHEMISTS	AGE		ALL
	UNDER 40	40+	
MANUFACTURING			
Manufacturing	52%	50%	51%
Chemical & related	13	16	15
Pharmaceutical/health/bio	29	20	23
Other manufacturing	10	14	13
ACADEMIA			
University/four-year college	32	28	29
Two-year college	23	19	20
Medical school	2	3	3
High school	3	3	3
Other	2	2	2
NONMANUFACTURING/ NONACADEMIC			
Analytical/research services	16	20	18
Government	8	7	7
Other	5	9	8
Other	3	4	3
SELF-EMPLOYED			
	1	2	2

NOTE: Percentage of chemists at all degree levels with full-time jobs as of March 1, 2006. **SOURCE:** ACS salary survey 2006

their highest degree in biotechnology and 46% of clinical chemists. By work specialty, it ranges from 18% of those working in organic chemistry, polymer chemistry, and materials science to 43% of those in chemical education.

THE MODEST IMPROVEMENT in the employment situation for chemists between March 2005 and March 2006 came at a time when nonfarm payrolls, as measured by the Bureau of Labor Statistics (BLS), increased by a reasonably healthy 2.0 million. This followed a similar 2.1 million gain in the previous 12 months.

These recent gains are in the ballpark of the average 2.4 million yearly payroll increases during the 1992–2001 economic boom. And they follow a 2.6 million decline between 2001 and 2004. Payrolls remained below their February 2001 high for an unprecedented four years.

AGE OF CHEMISTS

Median age for men is six years more than for women, and that for Ph.D.s is four years more than for bachelor's

	MEDIAN AGE	MEAN AGE
ALL CHEMISTS	47	46.6
BY DEGREE		
Bachelor's	44	42.7
Master's	48	46.7
Ph.D.	48	47.9
BY GENDER		
Men	48	47.9
Women	42	42.9
BY RACE		
American Indian	46	45.5
Asian	43	44.4
Black	45	44.8
White	48	47.0
BY ETHNICITY		
Hispanic	44	43.5
BY CITIZENSHIP		
Native born	48	46.8
Naturalized	50	50.2
Permanent resident	40	42.0
Other visa	35	36.0
BY EMPLOYER		
Industry/business	46	45.5
Government	51	49.5
Academia	46	46.9

NOTE: As of March 1, 2006.
SOURCE: ACS salary survey 2006

WORK SPECIALTY/HIGHEST DEGREE

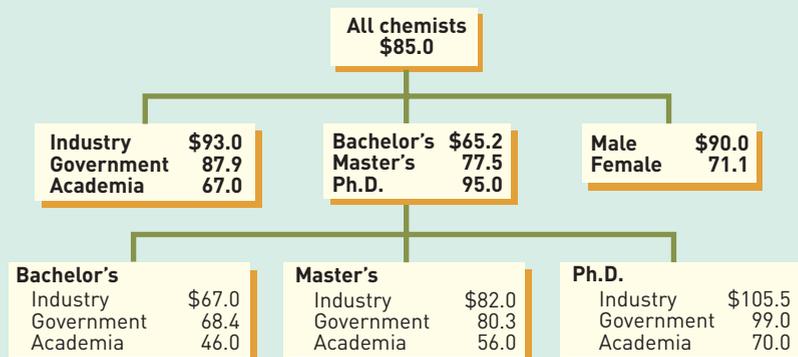
Many with inorganic, organic, and physical chemistry degrees work in other chemistry fields

	PERCENT OF TOTAL		PERCENT WHO ARE WOMEN ^a	
	WORK SPECIALTY	HIGHEST DEGREE	WORK SPECIALTY	HIGHEST DEGREE
CLASSIC CHEMISTRY	43.1%	62.2%	23%	22%
Analytical	17.3	12.3	30	28
Inorganic	3.2	9.4	20	25
Organic	10.3	26.3	18	18
Physical	4.5	10.7	21	21
Polymer	7.8	3.5	18	22
GENERAL CHEMISTRY	2.7	12.1	33	38
OTHER CHEMISTRY	45.6	17.8	28	30
Agricultural/food	2.8	0.8	25	29
Biochemistry	5.2	8.0	32	31
Biotechnology	3.7	0.4	25	43
Chemical education	7.1	1.3	43	40
Clinical chemistry	0.8	0.2	29	46
Environmental chemistry	5.7	2.1	29	28
Materials science	5.4	1.0	18	29
Medicinal/pharmaceutical	12.1	2.6	24	21
Other chemical	2.8	1.4	23	34
CHEMICAL ENGINEERING	id	3.1	id	18
NONCHEMISTRY	8.6	4.8	27	35
Business administration	1.5	1.0	18	29
Computer science	0.9	0.1	16	id
Law	1.2	0.2	27	id
Other nonchemistry	5.0	3.5	31	37

HOW TO READ THIS TABLE: Using the example of analytical chemistry: 17.3% of respondents, 30% of whom are women, work in analytical chemistry. 12.3% of respondents, 28% of whom are women, have their highest degree in analytical chemistry. ^a Given as integers because some of the sample sizes are small. id = insufficient data to be meaningful. SOURCE: ACS salary survey 2006

MEDIAN BASE SALARIES

Ph.D. brings a substantial salary advantage in all fields



NOTE: Median annual base salary in thousands of dollars for those with full-time permanent jobs as of March 1, 2006. SOURCE: ACS salary survey 2006

TYPE OF EMPLOYMENT

Pharmaceutical/health/bio claim largest share of ACS member chemists working in manufacturing

% OF CHEMISTS	AGE		ALL
	UNDER 40	40+	
MANUFACTURING	52.2%	50.2%	50.6%
CHEMICAL & RELATED	13.5	16.1	15.1
Agricultural chemicals	0.8	1.5	1.3
Basic chemicals	1.2	1.6	1.4
Coatings/ink/paint	2.9	3.4	3.2
Personal care products	0.8	1.0	0.9
Plastics	1.6	2.1	1.9
Rubber	0.4	0.6	0.5
Soaps	1.1	0.8	0.9
Specialty chemicals	4.7	5.1	5.0
PHARMACUTICAL/HEALTH/BIO	28.6	20.4	23.0
Biochemical products	1.0	0.9	0.9
Biotech research	3.9	1.6	2.4
Medical devices	2.3	2.2	2.3
Pharmaceuticals	21.4	15.7	17.4
OTHER MANUFACTURING	10.1	13.7	12.5
Aerospace	0.5	1.4	1.1
Building materials	0.6	0.8	0.7
Electronics/semiconductors	1.4	1.8	1.7
Food	1.2	1.5	1.4
Instruments	1.7	1.6	1.7
Metals	0.3	0.9	0.7
Paper	0.2	0.4	0.3
Petroleum	0.8	0.9	0.8
Textiles	0.4	0.3	0.3
Other manufacturing	3.0	4.1	3.8
ACADEMIA	31.8	28.0	29.2
Associate's-granting	2.2	2.8	2.6
Bachelor's-granting	7.3	6.6	6.8
Master's-granting	1.9	1.8	1.9
Ph.D.-granting	13.9	10.6	11.6
Medical school	3.3	3.0	3.1
High school	1.5	2.2	2.0
Other academic	1.7	1.0	1.2
NONMANUFACTURING/ NONACADEMIA	15.5	19.9	18.4
Research related	7.7	7.4	7.4
Analytical service labs	2.5	2.1	2.2
Contract research	1.3	1.6	1.5
Professional services	2.0	2.5	2.3
Research institution	1.7	1.1	1.3
Scientific agency	0.2	0.1	0.1
GOVERNMENT	5.2	8.7	7.6
Federal civilian	2.6	5.4	4.5
Military	0.4	0.3	0.3
State/local	1.8	2.5	2.3
Other government	0.4	0.5	0.5
OTHER	2.6	3.8	3.4
Hospitals	0.1	0.4	0.3
Nonprofit	1.3	1.8	1.6
Private utility	0.1	0.3	0.2
Other nonmanufacturing	1.1	1.3	1.3
SELF-EMPLOYED	0.5	2.3	1.7

NOTE: Percentage of chemists at all degree levels with full-time jobs as of March 1, 2006. SOURCE: ACS salary survey 2006

The estimate of payrolls is generally considered to be the most reliable and meaningful of several monthly BLS estimates of employment.

There is evolutionary change going on in what chemists do. Returns of the 2006 survey indicate that a total of 62% of chemists have their highest degree in the classic subdisciplines of analytical, inorganic, organic, physical, or polymer chemistry. Only 43%, however, indicate they work in these specialties. This is down from 52% in the 1990 survey.

In both 2006 and 1990, about 12% of working chemists had their degrees in general chemistry. But only 3% in 2006 and 6% in 1990 identified general chemistry as their work specialty.

The counterbalance comes in the "other" chemistry specialties. In 2006, 18% of chemists had their highest degrees in these chemistries, including 8% in biochemistry. However, 46% of responding chemists worked in these "other" specialties, including 12% in medicinal-pharmaceutical chemistry, 6% in environmental chemistry, and 5% each in

SALARIES OF CHEMISTS WHO HAVE NOT CHANGED JOBS

Compared with 2005, chemists post a 4.7% increase in basic salaries

MEDIAN SALARIES, \$ THOUSANDS	2005	2006	2005-06 INCREASE	% INCREASE
ALL	\$83.0	\$86.9	\$3.9	4.7%
BY DEGREE				
Bachelor's	64.0	67.2	3.2	5.0
Master's	75.0	79.0	4.0	5.3
Ph.D.	92.0	96.0	4.0	4.4
BY GENDER				
Men	88.0	92.0	4.0	4.6
Women	68.6	72.0	3.4	5.0
BY RACE				
American Indian	65.0	69.0	4.0	6.2
Asian	84.0	88.0	4.0	4.8
Black	70.5	75.3	4.8	6.8
White	83.0	87.0	4.0	4.8
BY ETHNICITY				
Hispanic	72.0	75.1	3.1	4.3
BY CITIZENSHIP				
Native born	82.4	86.0	3.6	4.4
Naturalized	90.4	94.6	4.2	4.7
Permanent resident	81.0	87.0	6.0	7.4
Other visa	66.3	71.5	5.2	7.8
BY EMPLOYER				
Industry/business	90.0	94.0	4.0	4.4
Government	85.0	90.0	5.0	5.9
Academia	65.0	68.3	3.3	5.1
BY AGE				
20-29	47.0	50.8	3.8	8.1
30-39	68.5	73.0	4.5	6.6
40-49	86.0	90.0	4.0	4.7
50-59	94.1	97.8	3.7	3.9
60-69	95.5	98.6	3.1	3.3

NOTE: Salaries are as of March 1. SOURCE: ACS salary surveys 2005 and 2006

EMPLOYMENT FACTORS

Chemists in manufacturing and management are more likely to be employed full-time

	EMPLOYED			UNEMPLOYED, SEEKING EMPLOYMENT
	FULL-TIME	PART-TIME	POSTDOC	
ALL CHEMISTS	91.3%	3.4%	2.3%	3.0%
BY DEGREE				
Bachelor's	93.4	3.2	0.2	3.2
Master's	92.4	4.6	0.0	2.9
Ph.D.	90.3	3.2	3.6	2.9
BY GENDER				
Men	91.8	2.7	2.4	3.1
Women	89.8	5.7	1.9	2.6
BY RACE				
Asian	88.1	1.8	7.3	2.9
Black	89.6	3.7	3.0	3.7
White	91.8	3.7	1.5	3.0
BY ETHNICITY				
Hispanic	93.5	2.5	3.0	1.0
BY CITIZENSHIP				
Native born	92.4	3.8	1.0	2.8
Naturalized	93.4	2.6	0.6	3.4
Permanent resident	90.0	1.5	4.2	4.2
Other visa	62.1	1.2	32.8	4.0
BY CURRENT OR MOST RECENT EMPLOYER				
Industry/manufacturing	95.7	1.3	0.1	2.9
Industry/nonmanufacturing	88.8	5.2	0.7	5.4
Government	94.1	1.8	2.3	1.8
High school	96.2	3.1	0.0	0.6
College/university	85.5	5.1	7.4	1.9
BY JOB FUNCTION				
R&D	89.6	1.6	5.6	3.2
R&D management	95.5	0.5	0.0	4.0
Teaching	90.7	8.0	0.6	0.7
General management	96.6	1.2	0.0	2.2
Marketing	92.9	4.0	0.0	3.1
Production	93.9	2.6	0.5	3.0
BY AGE				
Under 25	86.5	5.4	2.7	5.4
25-29	84.8	2.3	10.9	2.0
30-34	87.4	1.8	8.6	2.2
35-39	92.0	2.2	4.1	1.7
40-44	93.0	2.7	1.2	3.2
45-49	94.6	1.9	0.4	3.1
50-54	93.2	3.3	0.1	3.5
55-59	92.3	3.5	0.3	3.9
60-64	id	id	id	id
65-69	86.8	11.5	0.0	1.6
BY REGION				
Pacific	88.6	3.6	3.5	4.4
Mountain	90.8	3.2	3.2	2.7
West North Central	91.5	3.8	3.5	2.2
West South Central	95.5	2.1	1.5	0.9
East North Central	91.8	3.8	1.8	2.6
East South Central	91.8	1.6	2.3	4.3
Middle Atlantic	91.5	3.2	2.1	3.2
South Atlantic	91.4	3.6	2.4	2.6
New England	90.6	4.6	1.6	3.2

NOTE: As of March 1, 2006. Excludes those fully retired or unemployed and not seeking employment. **id** = insufficient data to be meaningful. **SOURCE:** ACS salary survey 2006

WHERE CHEMISTS WORK

Academia is claiming a growing share of ACS working member chemists

% OF CHEMISTS	2002	2003	2004	2005	2006
MANUFACTURING	55%	54%	56%	52%	51%
Chemical & related	17	15	17	15	15
Pharmaceutical/health/bio	22	21	23	22	23
Other manufacturing	16	18	16	15	13
ACADEMIA	24	26	24	27	29
University/four-year college	19	20	18	21	20
Two-year college	2	2	2	2	3
Medical school	1	2	2	2	3
High school	2	2	2	2	2
Other	na	na	na	na	1
NONMANUFACTURING/ NONACADEMIC	20	20	17	21	18
Analytical/research services	9	9	9	9	7
Government	8	8	7	8	8
Other	3	3	1	3	3
SELF-EMPLOYED	1	1	3	1	2

NOTE: Percentage of chemists at all degree levels with full-time jobs as of March 1, 2006; data given as intergers because some of the sample sizes are small. **na** = data not available. **SOURCE:** ACS salary and employment surveys

INDUSTRIAL SALARIES

Management pays the big bucks, and larger firms pay more

\$ THOUSANDS	BACHELOR'S	MASTER'S	PH.D.
BY WORK FUNCTION			
Analytical services	\$55.3	\$76.1	\$97.5
Applied research	71.0	77.4	100.0
Basic research	60.0	81.7	108.0
Chemical information	id	94.0	90.0
Computers	id	id	91.0
General management	98.0	104.0	122.4
Health & safety	70.9	94.2	118.2
Marketing & sales	75.0	85.0	103.0
Production/quality control	62.8	79.0	96.7
R&D management	90.3	103.0	129.0
BY SIZE OF EMPLOYER			
Fewer than 50 employees	58.0	63.3	95.0
50 to 99	55.7	66.7	90.0
100 to 499	62.5	79.0	100.0
500 to 2,499	65.0	83.0	105.0
2,500 to 9,999	65.0	87.7	104.0
10,000 to 24,999	72.0	86.3	108.0
25,000+	79.8	85.4	110.4

NOTE: Median full-time salaries as of March 1, 2006. **id** = insufficient data to be meaningful. **SOURCE:** ACS salary survey 2006

SALARIES OF ALL CHEMISTS BY EXPERIENCE

Pay tends to plateau at 30 years beyond the bachelor's degree

\$ THOUSANDS	YEARS SINCE BACHELOR'S DEGREE									ALL
	2-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	
BY GENDER										
Men	\$53.2	\$59.2	\$73.1	\$84.0	\$95.0	\$96.1	\$102.0	\$102.5	\$100.0	\$90.0
Women	45.0	54.6	68.0	75.0	81.7	82.0	84.6	82.0	81.8	71.1
BY DEGREE										
Bachelor's	44.5	50.8	65.1	71.1	72.0	84.8	83.0	80.0	82.2	65.2
Master's	55.0	60.0	67.0	74.6	85.0	85.0	85.2	85.0	90.0	77.5
Ph.D.	89.3	70.0	77.0	89.0	96.1	102.0	110.0	105.0	100.5	95.0
BY EMPLOYER										
Industry/business	48.9	60.0	78.0	90.6	98.0	102.0	108.0	106.8	107.8	93.0
Government	id	59.8	70.0	78.5	90.0	92.0	87.3	98.0	111.0	87.9
Academia	44.8	48.0	51.0	59.0	68.5	68.8	70.0	80.0	87.5	67.0

NOTE: Median full-time salaries as of March 1, 2006. **id** = insufficient data to be meaningful.
SOURCE: ACS salary survey 2006

SALARY SPREAD FOR INDUSTRIAL CHEMISTS

Highest paid 20% of chemists earn about twice or more that of lowest paid 20%

\$ THOUSANDS	YEARS SINCE BACHELOR'S DEGREE									ALL
	2-4	5-9	10-14	15-19	20-24	25-29	30-34	35-40	40+	
BACHELOR'S										
First 20%	\$65.0	\$72.5	\$92.2	\$100.0	\$110.0	\$120.0	\$126.5	\$135.0	\$144.0	\$109.0
Second 20%	56.5	61.0	75.0	85.0	95.0	101.6	105.0	105.6	119.0	88.2
Third 20%	46.0	51.3	66.0	71.8	74.0	87.0	85.8	83.1	92.8	67.0
Fourth 20%	38.0	44.8	50.5	60.0	60.0	70.0	65.0	61.0	75.0	51.0
Fifth 20%	30.5	37.0	43.0	45.0	49.0	60.0	52.0	40.9	58.4	40.5
MASTER'S										
First 20%	id	\$73.5	\$88.7	\$98.0	\$125.0	\$122.7	\$136.0	\$146.0	\$130.0	\$123.0
Second 20%	id	68.5	82.4	90.2	103.0	109.0	118.3	115.0	110.0	100.0
Third 20%	id	60.3	71.0	78.1	90.5	88.0	95.0	95.0	98.6	82.0
Fourth 20%	id	52.0	61.8	65.0	74.0	75.0	79.4	74.0	79.0	65.8
Fifth 20%	id	43.0	50.0	55.0	64.2	60.0	62.0	65.0	55.0	55.0
PH.D.										
First 20%	id	\$94.1	\$110.0	\$139.4	\$145.5	\$165.4	\$178.0	\$157.0	\$175.0	\$155.0
Second 20%	id	87.3	104.0	115.0	124.6	140.0	145.0	135.0	136.0	128.0
Third 20%	id	77.8	92.0	99.7	108.0	112.0	120.0	116.0	111.4	105.5
Fourth 20%	id	70.0	77.0	87.9	92.0	96.0	102.4	96.2	90.0	89.9
Fifth 10%	id	53.5	67.0	73.0	80.0	82.0	88.0	81.0	70.6	74.0

HOW TO READ THIS TABLE: Using the example of bachelor's chemists five to nine years after they have received their bachelor's degrees: The 20% best paid chemists had a median salary of \$72,500, whereas the 20% worst paid had a median salary of \$37,000. **NOTE:** Median salaries as of March 1, 2006. **id** = insufficient data to be meaningful.
SOURCE: ACS salary survey 2006

BONUSES

Almost half of chemists received bonuses in 2005

	INDUSTRY				ALL
	MANUFACTURING	NONMANUFACTURING	GOVERNMENT	ACADEMIA	
Eligible for bonus	72%	60%	39%	14%	52%
Percent of those eligible who received a bonus	95	87	87	84	92
Percent of all chemists who received a bonus	68	52	34	12	48
Median bonus awarded	\$8,000	\$5,000	\$2,000	\$3,000	\$6,800

SOURCE: ACS salary survey 2006

biochemistry and materials science. In 1990, a lower 33% of chemists worked in the "other" chemistry specialties, and just 15% had their highest degree in these specialties.

EVOLUTIONARY CHANGES have also occurred in the profile of where ACS member chemists work. There is a downward drift in those engaged in manufacturing, from 55% in 2002 to 51% in 2006. And there is an upward trend in those in academia, from 24% to 29% over the same period.

The employment profiles of subsets of the chemist workforce vary considerably, as would be expected. For instance, Ph.D.s are less likely to have full-time jobs, 90.3%, than are bachelor's and master's graduates, 93.4% and 92.4%, respectively. The difference is mainly due to the 3.6% of Ph.D. respondents who are on postdocs.

Similarly, fewer women, 89.8%, have full-time jobs than do men, 91.8%. This variance is related to the higher percentage of women with part-time jobs, 5.7%, compared with men, 2.7%. By race, far more Asians are postdocs, 7.3%, compared with 3.0% of blacks and 1.5% of whites.

By citizenship, 32.8% of respondents holding "other" visas are on postdocs. This compares with 4.2% of permanent residents, 1.0% of native-born citizens, and 0.6% of naturalized citizens.

By age, those with full-time jobs increase from almost 85% of 25- to 29-year-olds to a peak of almost 95% of 45- to 49-year-olds. By current or most recent employer, those in industry are somewhat more likely to be unemployed than are those in education or working for government.

Age appears to be an underlying factor in the rate of gain in the salaries of individual chemists who have had their jobs for a year or more.

The year-to-year increase in the median salaries of respondents to the 2006 survey of chemists who had not changed jobs and reported their salaries in both 2005 and 2006 was 8.1% for 20- to 29-year-olds. It sagged steadily to 3.3% for those 60 to 69 years old. Also, those with a bachelor's as their highest degree, who are generally younger, posted a 5.0% increase compared with 4.4% for Ph.D.s.

Women, also generally younger, posted a 5.0% gain compared with 4.6% for men.

The median salary of all female 2006 respondents was \$71,100, or 79% of the \$90,000 median for all male respondents. This percentage was up from 73% 10 years earlier in 1996 when the medians were \$45,700 for women and \$63,000 for men.

When the salaries of groups of men and women chemists with the same degree, in

COMPARE

Chemical Engineers Are Better Paid Than Chemists

The small number of chemical engineers responding to the 2006 salary survey, about 300, limits the amount of useful analysis that is possible. However, some broad comparisons with chemist respondents are possible. The most striking comparison this year, as always, is that of salaries.

Chemical engineers are just better paid. At the bachelor's degree level, the median salary of \$80,000 greatly exceeds the \$65,200 median for chemists. For master's, the gap is \$100,000 for chemical engineers compared with \$77,500 for chemists, and for Ph.D.s, \$109,200 versus \$95,000.

Part of this salary advantage for chemical engineers is the higher percentage of them working in higher paying industry jobs—78% compared with 62% of chemists.

Chemical engineers are only half as likely to be women as are chemists, 13% compared with 26%. They are less likely to have a Ph.D., 53% compared with 62%.

The differences in the race and citizenship status of chemical engineers and chemists are small and not statistically significant.

CONTRAST

Chemical engineers earn more at all degree levels and are less likely to have Ph.D.s or be women

	CHEMISTS	CHEMICAL ENGINEERS
BY EMPLOYMENT		
Full-time	91%	94%
Part-time	3	3
Postdoc	2	1
Unemployed/seeking	3	2
BY EMPLOYER		
Business/industry	62	78
Government/other	7	5
Academia	29	17
Self-employed	2	0
BY GENDER		
Men	74	87
Women	26	13
BY HIGHEST DEGREE		
Bachelor's	20	21
Master's	18	26
Ph.D.	62	53

Note: As of March 1, 2006. SOURCE: ACS salary survey 2006

For instance, 81% of chemical engineers are white, as are 84% of chemists. Also

	CHEMISTS	CHEMICAL ENGINEERS
BY CITIZENSHIP		
Native born	79%	76%
Naturalized	11	15
Permanent resident	7	5
Other visa	3	3
BY RACE		
American Indian	0	0
Asian	12	13
Black	2	3
White	84	81
Other	2	2
BY ETHNICITY		
Hispanic	3	5
MEDIAN BASE SALARY		
Bachelor's	\$65,200	\$80,000
Master's	77,500	100,000
Ph.D.	95,000	109,200

91% of chemical engineers are native-born or naturalized citizens as are 90% of chemists.

FACULTY SALARIES BY GENDER

Women earn between 95 and 100% of men's salaries in most cases

\$ THOUSANDS	MEN	WOMEN	WOMEN'S SALARIES AS % OF MEN'S	% WHO ARE WOMEN
B.A./B.S.-GRANTING SCHOOLS				
Full professor	\$76.8	\$75.0	98%	18%
Associate professor	57.8	55.0	95	38
Assistant professor	49.0	46.8	96	44
M.S.-GRANTING SCHOOLS				
Full professor	82.0	id	id	9
Associate professor	57.8	id	id	42
Assistant professor	49.0	id	id	16
PH.D.-GRANTING SCHOOLS				
Full professor	100.4	90.7	90	18
Associate professor	70.5	72.0	102	23
Assistant professor	60.0	60.0	100	33

NOTE: Median salaries for nine- or 10-month contracts as of March 1, 2006. id = insufficient data to be meaningful. SOURCE: ACS salary survey 2006

EMPLOYEE FRINGE BENEFITS

Availability of benefits for chemists has changed little since 1998

% OF RESPONDENTS RECEIVING THE BENEFIT	MANUFACTURING/ INDUSTRY	NONMANUFACTURING	GOVERNMENT	HIGH SCHOOL	COLLEGE/ UNIVERSITY	2006 ALL	1998 ALL
PAID LEAVE							
Holidays	99%	98%	99%	79%	89%	96%	97%
Vacations	99	98	99	67	77	93	93
Sick leave	95	91	98	96	90	93	94
Family sick leave	72	68	89	80	68	72	67
Newborn leave	77	69	76	75	71	74	68
Bereavement leave	93	87	84	94	72	86	87
Jury duty	96	91	94	95	83	91	92
RETIREMENT/SAVINGS							
Savings plans	97	92	89	83	90	93	91
Employee stock ownership	57	33	1	0	6	38	46
Employer matching savings	85	63	65	28	55	72	70
Profit sharing	41	24	3	1	4	27	33
Stock options	49	31	3	0	6	33	34
Flexible spending accounts	87	79	77	57	73	81	59
Employer-defined pension	63	36	80	61	52	58	nm
Flexible benefits programs	61	46	42	34	56	55	57
MEDICAL/DENTAL PLANS							
Employee medical coverage	99	98	99	99	100	99	99
Family medical coverage	99	96	99	99	98	98	98
Employee dental coverage	97	92	85	96	96	95	92
Family dental coverage	97	91	84	94	94	94	91
Employee vision coverage	85	76	73	76	79	80	63
Family vision coverage	83	72	71	75	76	79	58
Prescription drug program	94	86	90	89	91	91	90
Annual physical	68	55	63	57	65	65	61
Wellness/fitness program	64	47	51	40	54	57	49
INSURANCE							
Employee life insurance	95	89	95	90	93	93	94
Family life insurance	70	46	59	32	51	60	56
Accidental death/dismemberment	90	78	73	68	81	84	84
Long-term-care insurance	66	51	72	47	61	63	55
Short-term disability	88	77	58	65	75	80	78
Long-term disability	89	79	63	70	79	83	82
PROFESSIONAL DEVELOPMENT							
College tuition reimbursement	83	64	64	58	68	74	77
Cultural diversity training	46	21	58	42	40	42	34
Educational leave	28	18	39	44	39	31	35
In-house training	85	70	91	79	73	80	80
Outside training workshops	90	77	90	87	65	82	85
Professional association dues	80	62	31	39	35	62	60
Sabbatical leave	12	10	18	46	73	29	28
Travel to meetings	92	83	90	68	86	88	89
OTHER PROGRAMS							
Benefit sharing	6	7	31	5	13	10	9
Employee assistance	71	50	77	28	36	59	56
Ergonomic equipment	69	48	69	8	32	56	47
Flexible work hours	72	73	80	8	60	69	64
Job sharing	20	7	13	13	8	15	12
Off-site child care	16	5	15	3	14	14	12
On-site child care	16	6	24	11	34	19	12
Personal protective equipment	93	73	87	39	60	81	81

nm = not meaningful. SOURCE: ACS salary surveys 1998 and 2006

FRINGE BENEFITS: WHAT THE EMPLOYER PAYS

Employers are becoming a little less likely to cover all the costs of a benefit

	EMPLOYERS PAYING ALL		EMPLOYERS PAYING NONE	
	1998	2006	1998	2006
MEDICAL/DENTAL PLANS				
Employee medical coverage	28%	16%	2%	2%
Family medical coverage	13	7	8	7
Employee dental coverage	24	15	9	9
Family dental coverage	14	8	13	12
Employee vision coverage	19	12	22	18
Family vision coverage	11	7	28	21
Prescription drug program	16	12	6	7
Annual physical	43	29	15	18
Wellness/fitness program	24	19	30	29
INSURANCE				
Employee life insurance	44	37	9	11
Family life insurance	6	5	48	49
Accidental death/dismemberment	39	32	18	20
Long-term-care insurance	16	11	37	46
Short-term-care disability	46	37	15	19
Long-term disability	32	29	19	21
PROFESSIONAL DEVELOPMENT				
College tuition reimbursement	46	37	5	7
Cultural diversity training	66	65	28	27
Educational leave	14	14	52	57
In-house training	90	89	5	6
Outside training workshops	80	76	6	7
Professional association dues	66	67	18	19
Sabbatical leave	22	21	44	52
Travel to meetings	79	77	4	5
OTHER PROGRAMS				
Benefit sharing	16	14	71	67
Employee assistance	61	61	11	14
Ergonomic equipment	79	81	14	15
Flexible work hours	77	75	18	20
Job sharing	33	31	62	65
Off-site child care	2	2	77	81
On-site child care	3	3	79	80
Protective equipment	88	88	4	6

SOURCE: ACS salary survey 2006

INDUSTRIAL SALARIES BY EXPERIENCE AND GENDER

When adjusted for years of experience, women's salaries average 94% of men's

YEARS SINCE BACHELOR'S DEGREE	BACHELOR'S			MASTER'S			PH.D.		
	MEN	WOMEN	WOMEN AS % OF MEN	MEN	WOMEN	WOMEN AS % OF MEN	MEN	WOMEN	WOMEN AS % OF MEN
2-4	\$48.0	\$44.0	92%	id	id	id	id	id	id
5-9	51.5	51.3	100	\$60.7	\$60.2	99%	\$80.0	\$73.8	92%
10-12	66.0	62.3	94	72.1	69.5	96	93.0	89.0	96
15-19	71.0	75.0	106	80.7	74.3	92	100.0	97.2	97
20-24	79.1	69.4	88	94.4	79.5	84	109.0	103.0	95
25-29	87.0	79.9	92	91.2	80.0	88	113.3	110.0	97
30-34	88.0	82.5	94	95.0	100.0	105	121.0	112.2	93
35-39	89.0	id	id	92.5	id	id	118.0	100.0	85
40+	101.7	id	id	98.6	id	id	114.5	id	id

NOTE: Median salaries in thousands of dollars for chemists with full-time industrial jobs as of March 1, 2006. id = insufficient data to be meaningful. SOURCE: ACS salary survey 2006

the same type of work, and with the same amount of experience are compared, the gender differentials become far smaller. Female Ph.D. industrial chemists earn between 92 and 97% as much as their male colleagues for all five-year age groups up to 30 to 34 years beyond receipt of the bachelor's degree. Women master's chemists receive between 84 and 105%, and women bachelor's chemists between 88 and 106%.

The pattern is the same in academia. At bachelor's-granting institutions, the median nine- or 10-month contract for female full professors of \$75,000 is 98% of the \$76,800 median for men. At Ph.D.-granting departments, the gap is wider: \$90,700 for women and \$100,400 for men.

The big problem women still have is in becoming full professors. At both bachelor's- and Ph.D.-granting schools, only 18% of full professors are women.

About half of all working chemists received bonuses in 2006. The share ranged from 12% of academic chemists to 68% of chemists in manufacturing. The median bonus for those who received one was \$6,800. Industrial chemists did a little better at \$8,000; academics received \$3,000; and government employees, \$2,000.

THE 2006 SURVEY precisely repeated a study of fringe benefits conducted as part of the 1998 salary survey. The questionnaires for both surveys asked respondents to identify the fringe benefits available to them. They also asked how the cost of the benefits was handled: fully paid by the employer, partially paid by the employer, or paid by the respondent.

The responses from those with full-time jobs indicated little change in the availability of benefits over the eight-year span. The availability of the more than 40 benefits queried moved up slightly from an average of 65% to 67%. The availability of employee medical coverage remained at 99% in both surveys and of family medical coverage at 98%. The average for nine different medical benefits moved up from 78% to 84%. The availability of six insurance programs moved up slightly from an average of 75% to 77%.

For all 40-plus programs, on average, 39% were paid fully by the employer in 1998. This declined to 35% in 2006. The average paid fully by respondents rose nominally from 25% to 26%.

For the big-money medical programs, the percentage paid fully by the employer fell from an average of 21% in 1998 to 14% in 2006. The percentage paid fully by respondents also fell slightly from 15% to 14%. The gain was in programs partially paid for by employers, from 64% to 72%. ■