

STARTING SALARIES

Of Chemists and Chemical Engineers

Analysis of the
American Chemical Society's
Survey of Graduates in
Chemistry and Chemical Engineering

1997


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AMERICAN CHEMICAL SOCIETY
COMMITTEE ON ECONOMIC AND PROFESSIONAL AFFAIRS
DEPARTMENT OF CAREER SERVICES



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1997

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American Chemical Society's
Survey of Graduates in
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American Chemical Society
1155 Sixteenth Street, NW
Washington, DC 20036

Available from the ACS Office of Society Services

CONTENTS

	Page
Acknowledgments.....	iv
Summary of Findings.....	1
The Revised 1997 Survey	
Salaries for the Class of 1997	
Salary Factors	
Employment of Bachelor's Chemists as Technicians	
Postgraduation Employment Status	
Number of Offers	
Postdoctoral Fellowships	
Plans for Advanced Study	
The Changing Plans of Bachelor's Chemists for the Fall	
Bachelor's Graduates Certified to ACS from Approved Programs	
B.A. or B.S. in Chemistry	
Demographic Composition of New Graduates	
Citizenship Status of New Graduates	
Scope and Method.....	15
Objectives	
Method of Collection and Timing of Survey	
Extent of Coverage	
Definitions	
Geographic Regions	
Technical Notes.....	17
Discrepancies among Tables	
Estimates of Median Salaries	
Comparing Salaries	
Estimating Sampling Error for Percents	
List of Tables.....	19
Tables.....	23
Survey Questionnaires.....	77

ACKNOWLEDGMENTS

Each year, at the direction of its Council Committee on Economic and Professional Affairs, the American Chemical Society (ACS) surveys recent chemistry and chemical engineering graduates to determine trends in starting salaries and employment status. This report presents detailed results of the 1997 new graduate study. Summaries of the survey findings were published in the March 9th issue of *Chemical & Engineering News* and the May issue of *Today's Chemist at Work*.

Mary Jordan and John Evans conducted this year's survey. Mary Jordan analyzed the data and wrote the summary on the following pages. Cyril Ogbenna formatted and edited the tables. Special thanks go to the more than 7000 graduates who took the time to respond to this year's survey.

Jean A. Parr, Head
Department of Career Services

SUMMARY OF FINDINGS

THE REVISED 1997 SURVEY

This year the ACS survey of new graduates in chemistry and chemical engineering took on a new form, timeline and analysis. In conjunction with 11 other science and engineering associations¹, the ACS survey moved to a core set of questions that will be asked of all doctorate graduates across disciplines. In order to facilitate analysis of all three degrees in chemistry and in chemical engineering, the core set of questions was asked of all the new graduates. Along with the core set of questions, additional questions apropos to chemical professionals were retained from previous surveys. In the end, two separate surveys were sent -- one to doctoral graduates and the other to master's and bachelor's graduates. This analysis combines the data from both surveys.

Another change in the 1997 survey was the timeline requesting information from the new grads as of the second week in October. Prior surveys had asked for no specific date of information. Through the use of a definite date for the responses of the graduates, employment status will now be more accurately measured. The timeline also aligns the ACS survey with the other disciplines at the doctorate level. However, because of changes in the survey's methodology, much of the employment trend data drawn from new graduates over the past decades will be interrupted or reinterpreted.

Thus, this year's report combines past trends when able, new measures, and some reinterpretation of data. This report reflects findings of an improved survey of employment status and starting salaries for new chemistry and chemical engineering graduates at all levels. While data on employment status of new graduates may differ from previous years because of the change in the survey, the salary data should be comparable.

SALARIES FOR THE CLASS OF 1997

Chemistry and chemical engineering graduates experienced a welcoming job market in 1997. The news was particularly good for the chemistry graduates. With the exception of bachelor's chemical engineers, overall starting salaries across degrees outpaced inflation by a considerable amount.

The 1997 new B.S. and M.S. chemistry graduates saw great increases in overall starting salaries from 1996. The mean salary for inexperienced (those with less than 12 months' experience) B.S. chemists was \$28,511 this year, an increase of 9.2 percent over the \$26,111 in 1996. The median starting salary was also increased from \$25,000 in 1996 to \$28,000 this year. This is the first substantial increase in bachelor's salaries in more than a decade. Adjusting for inflation², B.S. chemists' mean salaries increased by a substantial 7 percent. The mean starting salary for M.S. chemists increased by almost 11 percent this year from \$33,886 in 1996 to \$37,560 in 1997, more than erasing last year's loss from 1995. The M.S. median salary also rose to \$37,500 from \$34,100 in 1996.

The news on starting salaries for Ph.D. chemists was also significant for inexperienced graduates. The mean starting salaries for inexperienced Ph.D. chemists rose by 15 percent to \$51,067, up from \$44,408 in 1996. The median salary for inexperienced Ph.D.s rose to \$54,000, a substantial 20 percent increase over the \$45,000 median in 1996. On the other hand, both the master's and doctoral chemists were recovering from substantial losses between 1994 and 1995.

¹ The other disciplines included in the Ph.D. surveys on the Class of 1997 are computer science, earth and space sciences, mathematics, physics, psychology, economics, engineering, microbiology, physiology, political science, and sociology.

² The Consumer Price Index rose 2.1 percent from October 1996 to October 1997. It is used as an approximation for inflation.

Chemical engineers continued to earn higher salaries than those of chemists. However, this year their increases were not as great as those of chemists. Inexperienced chemical engineers showed increases between 1996 and 1997. The mean starting salary for B.S. chemical engineers was \$40,634 in 1997, up only 1.2 percent from \$40,143 in 1996. The salary in current dollars fell behind an inflation adjustment by 0.9 percent during that period. The mean starting salary for inexperienced M.S. chemical engineers was \$45,246, increasing by 5.6 percent from \$42,854 in 1996, and the mean starting salary for Ph.D. chemical engineers was \$58,593, up by 5.9 percent from \$55,188 in 1996.

Table 1 shows average starting salaries paid to inexperienced chemistry graduates for 1997, and gives additional information concerning the change among salaries within each group. Table 2 presents corresponding information for chemical engineers.

For inexperienced chemists, 1997 mean starting salaries changed in the following ways from 1996:

Table 1 1997 SALARIES FOR INEXPERIENCED CHEMISTRY GRADUATES

\$28,511 (up from \$26,111) for the B.S.,	up	9.2%, or in constant dollars	up	7.0%
\$37,560 (up from \$33,854) for the M.S.,	up	10.9%, or in constant dollars	up	8.8%
\$51,067 (up from \$44,408) for the Ph.D., up	15.0%,	or in constant dollars	up	12.9%

Among inexperienced chemical engineers, the 1997 mean starting salaries changed in the following ways from 1996:

Table 2 1997 SALARIES FOR INEXPERIENCED CHEMICAL ENGINEERING GRADUATES

\$40,634 (up from \$40,143) for the B.S.,	up	1.2%, or in constant dollars	down	0.9%
\$45,246 (up from \$42,854) for the M.S.,	up	5.6%, or in constant dollars	up	3.5%
\$58,593 (up from \$55,319) for the Ph.D., up	5.9%,	or in constant dollars	up	3.8%

Mean salaries represent the average starting salary and are subject to distortion due to some very high individual salaries. They are, however, used in statistical analysis. For the rest of this summary, the median salary is used as the descriptive statistic. The median is the salary representing the midpoint of the salary range for new graduates, where half of the salaries are above the median salary and half of the salaries are below. The trends in median starting salaries from 1975 to the present for inexperienced chemists and chemical engineers are shown in Figures 1 and 2 and Table 3.

Overall median starting salaries for new graduates are a summary measure. Thus, any trends must be seen in the light of generalization of figures where factors affecting the responding population affect the overall median salaries. Some of these factors are regional differences in pay structures; other factors include the characteristics of the new graduates, the type of employer, the size of employer, the work function performed, and the type of industry that hires a large proportion of new graduates.

Table 3

**Median Starting Salaries for Inexperienced Graduates, 1975-1997
(by Degree and in 1000s and Current Dollars)**

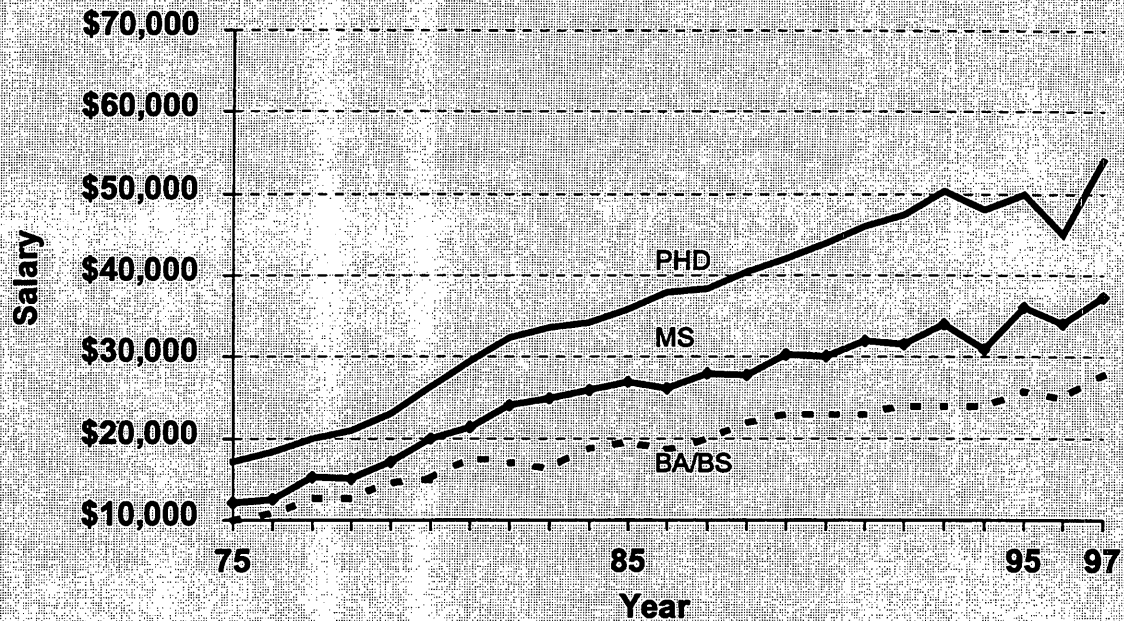
Year	Chemists			Chemical Engineers		
	B.S.	M.S.	Ph.D.	B.S.	M.S.	Ph.D.
1975	10.0	12.0	17.0	14.4	15.6	20.0
76	10.8	12.4	18.3	15.4	16.6	20.7
77	12.6	15.2	20.0	16.8	18.0	22.5
78	12.7	15.0	21.0	18.2	19.2	23.1
79	14.5	17.0	23.0	19.8	21.0	25.4
1980	15.0	20.0	26.4	21.6	23.9	28.8
81	17.7	21.3	29.5	24.5	26.0	31.5
82	17.0	24.1	32.4	26.7	29.0	35.0
83	16.5	24.9	33.6	26.1	29.3	38.0
84	18.8	26.0	34.2	27.0	30.3	40.0
1985	19.5	27.0	35.9	28.0	31.4	40.0
86	18.6	26.1	38.0	28.4	31.0	41.5
87	20.0	28.0	38.4	30.0	32.5	43.0
88	21.9	27.7	40.5	31.0	33.0	44.4
89	23.0	30.3	42.0	33.0	36.0	47.0
1990	23.0	30.0	44.0	35.2	37.2	50.0
91	23.0	32.0	46.0	37.5	40.2	52.0
92	24.0	31.5	47.5	40.0	41.5	54.0
93	24.0	34.0	50.4	40.5	42.2	52.7
94	24.0	30.8	48.0	na	na	na
1995	25.0	36.0	50.0	40.0	44.2	59.2
96	25.0	34.1	45.0	41.5	45.0	57.0
97	28.0	37.5	54.0	42.0	47.0	60.0

The salary trends for the past twenty-three years in chemistry, as shown in Figure 1, and chemical engineering, as shown in Figure 2, began with similar patterns and wages in 1975 and have followed more divergent paths since then. Those chemists with bachelor's degrees show the least increase in starting salaries since 1975. Even the vast improvement in starting salaries shown this year does not keep pace with the increases shown for M.S. and Ph.D. chemists. From 1989 until 1997, the new B.S. chemists showed almost no increase in starting pay. Thus, during those years the new bachelor's chemists were losing ground against inflation. On the other hand, chemical engineers with bachelor's degrees showed larger annual increases throughout the period until 1992, when they also showed irregular and slower annual increases in starting pay through 1997.

Chemists and chemical engineers with doctorates displayed similar patterns of increasing starting salaries, continuing to show greater proportional increases than chemists and chemical engineers with other degrees. Salaries for chemical engineers started higher in 1975 and increased at greater rates than those for chemists. All groups show relative flattening median starting salaries in the mid-1990s.

Figure 1

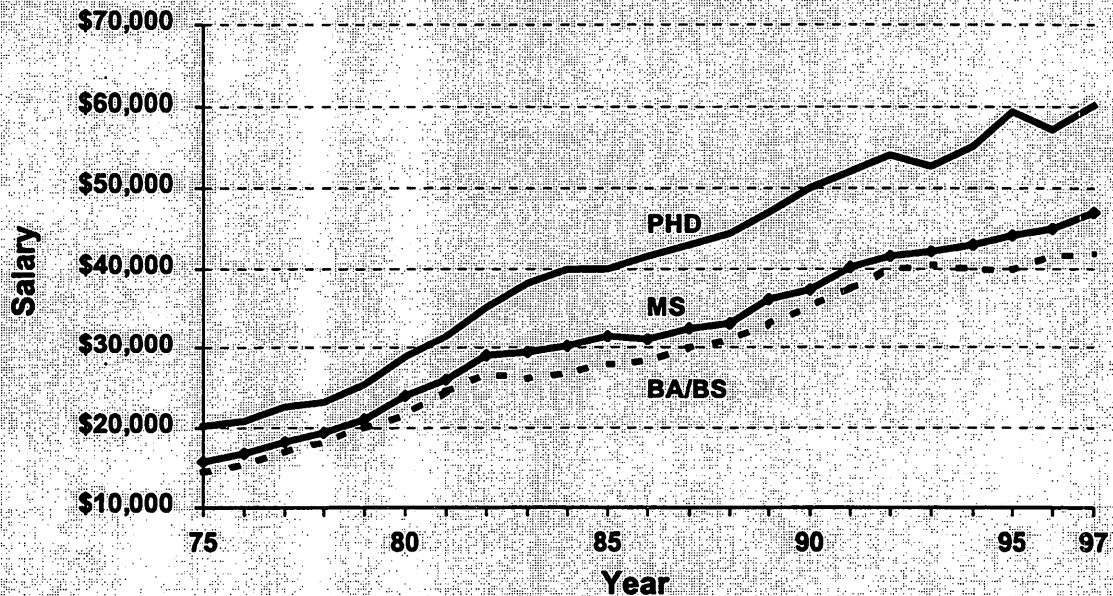
**Median Starting Salaries of Inexperienced Chemists
(in current dollars, 1975-97)**



Source: ACS Starting Salary Surveys

Figure 2

**Median Starting Salaries of Inexperienced Chemical Engineers
(in current dollars, 1975-97)**



Source: ACS Starting Salary Surveys

Note: 1994 figures for chemical engineers are extrapolated

Tables 4 and 5 show the range of starting salaries for inexperienced new graduates in chemistry and chemical engineering. By comparing these tables, an interesting phenomenon becomes apparent — while chemical engineers consistently have higher median and mean starting salaries, chemists' starting salaries show a wider range above the central measures. This is reflected also by the larger standard deviations for chemists.

**RANGES OF STARTING SALARIES
OF INEXPERIENCED FULL-TIME EMPLOYED**

Table 4

**CHEMISTRY GRADUATES
by Degree: 1996 and 1997**

Salaries	DEGREE LEVEL					
	Bachelor's		Master's		Doctorate	
	1996	1997	1996	1997	1996	1997
90th Percentile	\$35,000	38,000	45,000	46,000	60,000	66,000
75th Percentile	30,000	32,525	40,000	42,900	55,000	60,000
50th Percentile	25,000	28,000	34,100	37,500	45,000	54,000
25th Percentile	21,000	23,700	25,500	33,000	33,000	38,500
10th Percentile	17,500	20,000	23,800	27,100	28,000	33,000
Mean	26,119	28,511	33,886	37,560	44,408	51,067
Count	632	868	72	97	93	185
Standard Deviation	8,076	7,142	8,414	8,259	12,778	13,297

Table 5

**CHEMICAL ENGINEERING GRADUATES
by Degree: 1996 and 1997**

Salaries	DEGREE LEVEL					
	Bachelor's		Master's		Doctorate	
	1996	1997	1996	1997	1996	1997
90th Percentile	\$45,000	46,500	50,000	55,000	64,000	65,500
75th Percentile	43,500	45,000	46,500	49,500	60,000	63,000
50th Percentile	41,510	42,000	45,000	47,000	57,000	60,000
25th Percentile	37,000	37,500	39,000	40,000	50,000	55,970
10th Percentile	30,000	31,000	30,000	36,000	45,000	50,000
Mean	39,287	40,634	42,672	45,246	55,188	58,593
Count	462	743	29	49	33	81
Standard Deviation	5,974	6,711	6,922	7,672	7,843	8,486

SALARY FACTORS

As stated previously, salaries vary by the type and characteristics of the employer as well as the characteristics of the graduates. For instance, median starting salaries are typically highest in private industry and lowest in educational institutions. The median salary for new chemistry Ph.D.'s was \$57,800 for those employed in industry and \$35,000 for those employed in colleges or universities. For those inexperienced B.A./B.S. and M.S. chemists with new jobs in industry, the median salaries were \$30,000 and \$38,400, respectively. The new B.S. chemists who became secondary school teachers had a median starting salary of \$25,700. The vast majority of new M.S. chemists who went to work found jobs in industry.

The vast majority of chemical engineers at all degree levels are employed in private industry. Thus, their overall figures are closely aligned with the industrial salaries. In 1997, the new inexperienced chemical engineering doctorate received a starting salary of \$60,000 in industry, while the B.S. and M.S. chemical engineers had medians of \$43,000 and \$47,000, respectively.

In industry, larger employers generally pay more than smaller ones. In fact, one of the stronger predictors of starting salaries in industry is the size of the company. Bachelor's chemists employed in larger firms (25,000 or more employees) started at about \$9,000 more than those employed in small firms (less than 100 employees). New bachelor's chemists are more likely to be employed in firms with fewer than 500 employees than in large firms. About 20 percent of new bachelor's chemists are employed in firms with 25,000 or more employees, while almost 40 percent are employed in firms with fewer than 500 employees. New M.S. chemists in industry are apt to work in firms of any size, but the employer-size factor affects them also, with M.S. chemists starting at \$34,000 at small firms and \$42,000 at large firms. Ph.D.'s tend to work at larger firms where their starting salaries are \$60,000, while the median for smaller companies ranged around \$50,000.

For chemical engineers, the higher the degree, the more apt they are to work in larger firms. Very few chemical engineers with master's degrees and doctorates found employment with firms with fewer than 500 employees. Bachelor's chemical engineers are newly employed in firms of all sizes, but the majority were working in larger firms. As with chemists the pay differs according to the size of the company. The bachelor's chemical engineers' salaries differed by about \$7,000 between the smaller firms and larger firms (fewer than 100 employees and more than 25,000 employees).

Regional differences in pay tend to be tied to the type and size of employers in the region. Salaries for new B.S. chemistry graduates were highest in the Middle Atlantic and New England regions (\$30,000), and lowest in the Mountain region (\$25,000). Salaries for new B.S. chemical engineers were highest for those employed in the East North Central region (\$43,700) and lowest in the South Atlantic region (\$39,600). Proportionally, chemical engineers were employed nationwide, with a slight edge to the eastern regions. Both for those with new master's degrees and doctorates in chemistry and chemical engineering, the employment distribution and higher starting salaries were generally found in the eastern regions of the U.S. (See page 16 for a list of the states included in each geographic region.) On the other hand, both rates of employment and starting salaries rose considerably in the Pacific region for the first time in several years.

Generally speaking, bachelor's chemists receive higher starting salaries if they have received departmental certification from an ACS-approved program. This year, the overall difference in pay between those who had completed certification was \$3,000 more than the salary for those who did not. The overall median starting salary of inexperienced bachelor's chemists who were not certified was \$27,000; for those who did certify, it was \$30,000. Graduates who participated in internships also received significantly higher starting salaries, even more so if they received certification. Most graduates who participated in co-op programs also showed higher salaries if they received certification. For those B.S. graduates who also studied abroad as part of their program, the starting salaries showed almost no change. Except for those very top "A" students, grades do not appear to make much difference in the median starting salary of a bachelor's chemist. The correlation between grades and starting salaries is much stronger among those with a bachelor's degree in chemical engineering.

For bachelor's chemical engineers, salaries correlate closely with the grades they receive. The higher a B.S. chemical engineer's grade point average, both in the major and overall, the higher the starting salary. For example, a chemical engineer with a 'C' average in his or her major started at a \$38,000 salary; with a 'B' average, \$42,000; and with an 'A' average, it was \$45,000.

Bachelor's and master's graduates in chemistry who were on graduate assistantships or fellowships typically received about \$15,000, which remained the same as in 1996. Stipends for academic postdoctoral fellowships averaged about \$24,000 for academic chemistry postdoctoral fellows, decreasing by \$1000 from last year. On the other hand, chemistry postdoctoral fellows earned a median salary of \$42,500 in industry and \$39,000 in government.

Chemical engineering graduates received a median stipend of \$16,000 at the bachelor's and master's levels and \$28,500 at the academic postdoc level. Chemical engineering postdoctoral fellows in industry and governments started at \$40,500 and \$43,100, respectively.

EMPLOYMENT OF BACHELOR'S CHEMISTS AS TECHNICIANS

The starting job title for a chemist makes a difference. About 30 percent of the bachelor's chemistry graduates who were employed full-time in industry responded that they were employed as technicians. Those employed as technicians earned significantly lower salaries than those employed in other positions. The median salary of bachelor's chemistry graduates employed in industry as technicians was \$27,000 whereas the median salary of those employed as scientists was \$32,000. For the chemical engineering graduate with a bachelor's degree, this year the difference was far less significant between those employed as technicians and those employed as engineers, with technicians starting at \$43,000 and engineers starting at \$43,500.

POSTGRADUATION EMPLOYMENT STATUS

Previous to this report, unemployment rates for new graduates were based on full-time and permanent employment. Unemployment rates reflected the fall status but are not data-specific enough to be truly comparable across the graduates. The new surveys allow an accurate measure of unemployment³ as of the week of October 13, 1997. Table 6 below reflects both the old measures [denoted by (o)] and new measures [denoted by (n)] for 1997 for bachelor's graduates. As noted in Table 6, chemists had a lower rate of unemployment than new chemical engineering bachelor's graduates. After record levels of lack of full-time employment in 1996, both bachelor's chemists and chemical engineers from the Class of 1997 found their employment picture somewhat brighter. Table 7 shows the new measures for the Class of 1997.

Table 6

B.A./B.S. Chemists and B.S. Chemical Engineers Lack of Full-time Employment (1990-1997) and Unemployment (1997)

	1990	1991	1992	1993	1994	1995	1996	1997(o)	1997(n)
Chemistry	13%	14%	10%	19%	21%	19%	22%	10%	6%
Chemical Engineering	6%	9%	9%	25%	na%	23%	17%	15%	8%

³ The unemployment rate is calculated by dividing the number of those seeking employment by the total number of new graduates in the workforce or $[(\text{seeking}/\text{total}) \times 100]$. Formerly, the number was calculated by adding full-time-permanent and graduate students while all others were considered not employed. Of the remaining graduates, those who were seeking employment were divided by the combination of full-time-permanent, student, and seeking graduates $[\text{seeking}/(\text{full-time} + \text{student} + \text{seeking}) \times 100]$.

Table 7

**POSTGRADUATION STATUS OF CHEMISTRY AND
CHEMICAL ENGINEERING GRADUATES: October 13, 1997**

Major and Employment Status	Bachelor's Degree	Master's Degree	Doctorate
CHEMISTRY			
Full-time employed:			
Permanent	33.2%	45.9%	35.2%
Temporary	11.5%	8.3%	5.1%
Part-time employed			
Permanent	0.9%	0.5%	0.3%
Temporary	3.1%	3.5%	1.6%
Graduate student, postdoc	43.2%	35.8%	51.1%
Unemployed and seeking employment	5.6%	4.5%	4.6%
Unemployed and not seeking employment	2.6%	1.4%	2.0%
Total*	100.0	100.0	100.0
<i>Unemployment as of 10/13</i>	<i>5.7%</i>	<i>4.6%</i>	<i>4.7%</i>
Number of responses	4012	575	888
CHEMICAL ENGINEERING			
Full-time employed:			
Permanent	70.8%	61.2%	70.7%
Temporary	5.3%	4.4%	3.2%
Part-time employed			
Permanent	0.3%	0.5%	0.5%
Temporary	1.9%	0.5%	0.0%
Graduate student, postdoc	13.9%	27.9%	22.3%
Unemployed and seeking employment	7.5%	5.5%	3.2%
Unemployed and not seeking employment	0.3%	0.0%	0.0%
Total*	100.0	100.0	100.0
<i>Unemployment as of 10/13</i>	<i>7.5%</i>	<i>5.5%</i>	<i>3.2%</i>
Number of responses	1616	183	188

*Any deviation from 100 is due to rounding.

NUMBER OF OFFERS

As might be expected from the improved market for the Class of 1997, the numbers of offers for those who went to work in industry rose to an average of more than 2.0; and for those new graduates who had more than one year's working experience in a technical field prior to graduation, the offers rose to 2.2. The highest average numbers of offers went to the B.S. chemical engineering graduates with an average of 2.2 offers, followed by new chemical engineers with a master's degree with an average of 2.1 offers. The rest of the degree-holders in the study had an average of almost 2.0 offers per graduate.

New master's and Ph.D. chemistry graduates had about the same number of offers of employment, on average, as bachelor's graduates, but with slightly different distributions. Experience made a greater difference in average number of offers of employment for chemical engineers. Both inexperienced and experienced B.S. chemistry graduates had, on average, 2.0 offers of employment. New Ph.D. chemists whose field was organic, physical, and polymer chemistry had more offers this year, on average, than those in other fields.

POSTDOCTORAL FELLOWSHIPS

The proportion of new Ph.D.s who accept postdoctoral fellowships can sometimes be used as a rough indicator of demand. Because some of the new doctoral graduates who accept postdoctoral fellowships would have preferred full-time employment had it been available, an increase in the proportion accepting postdoctoral fellowships can indicate insufficient full-time employment. This year and partly because of a later timeline for the study, the proportion of Ph.D. chemists accepting postdoctoral fellowships increased precipitously to more than 51 percent (Table 7). This increase may indicate that the booming market may still be tight for new Ph.D.s in chemistry along with a greater demand by some industries for chemists with postdoctoral experience. The continuing tight market for Ph.D.s in chemistry is reflected in the fact that more than half of the chemists in postdoc situations said they took the position because full-time employment was not available, and about two-thirds were continuing to seek other employment.

PLANS FOR ADVANCED STUDY

Traditionally, between 50 percent and 55 percent of bachelor's chemistry graduates plan full-time studies in the coming year (in any field), and another roughly 10 percent plan part-time studies. This year, as shown in Table 8, the percentage of those who planned to continue full-time studies in the fall continued to decline; only 43 percent planned to study full time in the fall of 1997. Most bachelor's graduates in chemical engineering, also shown in Table 8, opt for employment. Hence, only 14 percent of them planned to study full-time in the fall of 1997. A summary of the plans of the 1997 graduates appears in Tables 8 and 9. Figure 4 shows the dynamic shift that has occurred for B.S. chemists in the mid-1990s: the proportion of new graduates opting for any graduate plans continued to decline, while the proportion opting to enter the workforce continued to grow.

Table 8

**PLANS FOR FURTHER STUDY OF BACHELOR'S
CHEMISTRY & CHEMICAL ENGINEERING GRADUATES: FALL 1997**

Plans	Chemistry	Chemical Engineering
Total further studies	49.3%	19.2%
Full-time	43.2%	13.9%
Part-time	6.1%	5.3%
No plans for further studies	50.8%	80.9%
Total*	100.0	100.0
Number of responses	4012	1616

*Any deviation from 100 is due to rounding

Table 9

**FIELDS OF STUDY OF BACHELOR'S CHEMISTRY AND
CHEMICAL ENGINEERING GRADUATES WHO PLAN FURTHER STUDIES
FALL 1997**

Plans	Chemistry	Chemical Engineering
FULL-TIME STUDY		
Chemistry or biochemistry	45.5%	1.7%
Chemical or biochemical engineering	1.2%	57.6%
Other engineering	0.8%	7.1%
Physical science	2.2%	0.9%
Life science	4.9%	0.4%
Medicine, dentistry, or pharmacy	34.3%	11.6%
Business or management	1.2%	4.0%
Education	2.3%	0.9%
Law	1.9%	7.6%
All others	6.0%	8.0%
Total	100.0	100.0
Number of responses	1,729	224
PART-TIME STUDY		
Chemistry or biochemistry	39.8%	1.2%
Chemical or biochemical engineering	5.4%	29.4%
Other engineering	3.3%	17.6%
Physical science	6.3%	3.5%
Life science	9.2%	1.2%
Medicine, dentistry, or pharmacy	10.1%	1.2%
Business or management	9.2%	30.6%
Education	7.5%	0.0%
Law	1.3%	0.0%
All others	7.9%	15.3%
Total*	100.0	100.0
Number of responses	239	85

*Any deviation from 100 is due to rounding

THE CHANGING OF BACHELOR'S CHEMISTS FOR THE FALL

Traditionally, roughly one-third of new bachelor's chemistry graduates planned to pursue chemistry graduate study, one-third planned graduate study in another field, and one-third had plans for immediate employment. Last year, the proportion of chemistry graduates planning to go on to graduate school dropped to the lowest in more than a decade. Those planning for advanced study in chemistry for the fall of 1997 remained steady, while the percent planning graduate study in other fields continued a decline (see Figure 4). Only 22 percent of the 1997 bachelor's chemistry graduates planned to pursue graduate studies in chemistry and only 27 percent planned to pursue graduate studies in another field. The proportion of bachelor's in chemistry who pursued employment over advanced study increased again this year.

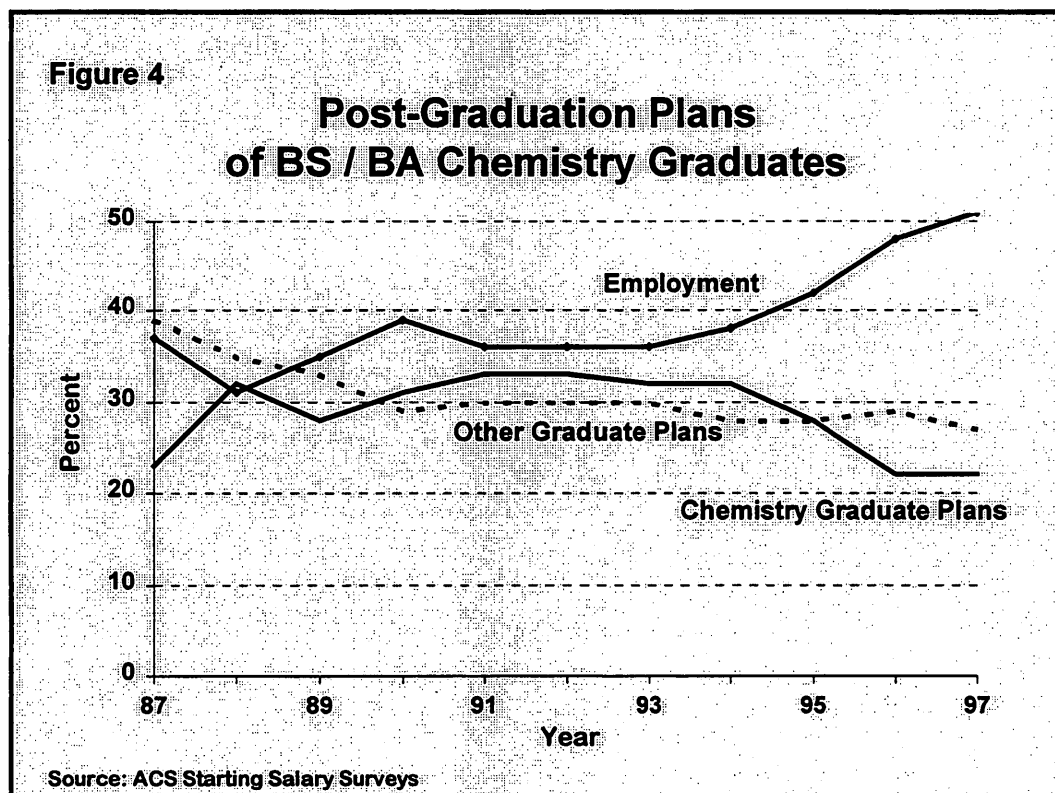
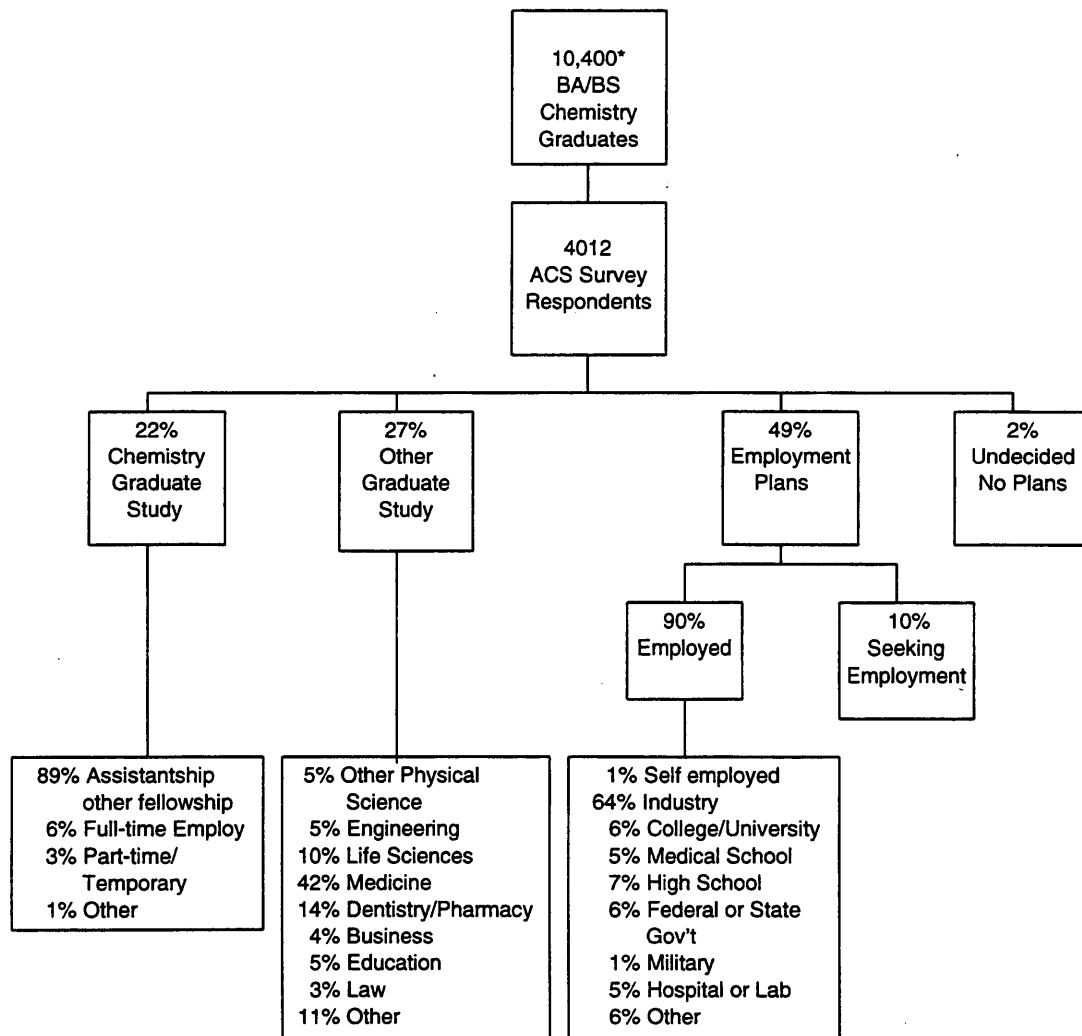


Figure 5 shows the more detailed plans of the 1997 bachelor's chemistry graduates. Of those bachelor's chemistry graduates who planned further studies in another discipline in 1997, the choice of field of study has not changed appreciably in the last decade, with studies in the medicine-related fields topping the list. Of those chemistry graduates who chose immediate employment, the majority chose industrial employment.

Figure 5

Postgraduation Plans of 1997 Bachelor's Chemistry Graduates



* *Estimated*

BACHELOR'S GRADUATES CERTIFIED TO ACS FROM APPROVED PROGRAMS

Graduates completing certification to ACS from approved programs are more likely than other graduates to plan further studies, especially further studies in chemistry. Fifty percent of the 1997 B.S. graduates certified from approved programs planned full-time studies compared with 32 percent of non-certified graduates. Of the bachelor's chemistry graduates who plan full-time studies, 61 percent of those completing certification plan to study chemistry, compared with only 22 percent of non-certified graduates. Conversely, 34 percent of the non-certified who are planning advanced studies plan to study medicine, compared with only about 13 percent of those who were certified.

Certified graduates are also less likely than those non-certified to be unemployed or working in temporary or part-time jobs. Among those employed, certified graduates are more likely to be employed in industry (76 percent vs. 66 percent). The unemployment rate for bachelor's graduates of approved programs was 4.8 percent this year, compared to 6.3 percent for other graduates.

B.A. OR B.S. IN CHEMISTRY

The 1997 study was the first study that asked whether the chemistry degree was a Bachelor of Arts or a Bachelor of Science. The overall differences in median starting pay are a difference in the proportions who went to different types of employers. Both groups started in industry at \$30,000, but a slightly smaller proportion of B.A. grads found jobs in the higher paid industrial sector. On the other hand, B.A. chemistry graduates were slightly more apt to become teachers (9 percent vs. 7 percent of B.S. chemists) and have starting teacher salaries of almost \$2,000 more than that of B.S. chemists. Both B.A. and B.S. chemistry graduates plan to attend graduate school in about the same proportions.

DEMOGRAPHIC COMPOSITION OF NEW GRADUATES

Sex

Women are increasingly represented at all degree levels of chemistry. The proportion of new women chemists in 1997 with bachelor's degrees, master's degrees, and doctorates was 48 percent, 42 percent, and 32 percent, respectively. This is a marked increase in the past 25 years, when in 1972 the percentages were 19, 22, and 10 for those with bachelor's degrees, master's degrees, and doctorates, respectively. The proportion of degrees granted to women in chemical engineering is also increasing, but more slowly than for women in chemistry. In 1997 the proportion of women in chemical engineering with bachelor's degrees, master's degrees, and doctorates was 35 percent, 29 percent, and 23 percent, respectively.

Race and Ethnicity

Minorities, and particularly Asians, are an increasing proportion of new graduates in chemistry and chemical engineering. The proportion of new bachelor's chemistry graduates who are African-American or Hispanic has increased fairly slowly since 1973, when ACS first collected such information. In 1973, African-Americans were 2.3 percent and Hispanics were 0.7 percent of bachelor's chemistry graduates. This year, African-Americans increased from 3.9 percent in 1996 to 4.6 percent in 1997. Hispanics composed 3.6 percent of the Class of 1997 bachelor's graduates, up from 2.4 in 1996. Native Americans continue to comprise less than 1 percent of new graduates in chemistry at all degree levels.

The proportion of new chemistry graduates who are Asian has quadrupled since 1973. In that year, Asians were 3 percent of bachelor's, 9 percent of master's, and 9 percent of Ph.D. graduates. This year, Asians were 13 percent of bachelor's, 30 percent of master's, and 28 percent of Ph.D. graduates. More than three-fourths of bachelor's chemistry graduates of Asian descent were U.S. citizens (either native or naturalized). Only 5 percent were here on temporary visas. The reverse was true for Ph.D.s. Only 13 percent of doctoral chemistry graduates of Asian descent were U.S. citizens, and 54 percent were here on temporary visas.

Citizenship

In chemistry and chemical engineering, the proportion of graduates who are U.S. citizens has decreased, and the proportion of graduates with temporary visas has increased over the last decade, especially among master's and doctoral graduates. The dynamics of citizenship are similar between the two fields, with the proportions of graduates with temporary visas increasing significantly with graduate degrees. In 1997, about 95 percent of bachelor's chemists and chemical engineers were U.S. citizens. Among master's chemistry graduates, the proportion of graduates who have temporary visas increased from 5 percent of the chemistry graduates in 1983 to 19 percent of the chemistry graduates in 1995 and 25 percent in 1997. Similarly, among graduates with doctoral degrees, the proportion of graduates who have temporary visas increased from 8 percent of the chemistry graduates in 1983 to 21 percent in 1996 and declined to 19 percent in 1997. For chemical engineers, the proportions are similar, but higher, with 23 percent of master's and 30 percent of Ph.D.s holding temporary visas at graduation.

Among new chemistry Ph.D.s, those with temporary visas were more likely to have postdoctoral appointments and were more likely to be unemployed than those with U.S. citizenship. Over 69 percent of new Ph.D.s with temporary visas have postdoctoral fellows versus about 46 percent of those with U.S. citizenship. The fall unemployment rate for those Ph.D. graduates with temporary visas was more than twice that of citizens, almost 8 percent for those with temporary visas versus about 3 percent for U.S. citizens.

SCOPE AND METHOD

OBJECTIVES

The 1997 Starting Salary Survey is the 47th in the series of annual surveys on the employment and future plans of new graduates in chemistry and chemical engineering conducted by the American Chemical Society. Summaries of the results of these surveys appear annually in *Chemical & Engineering News*. This year, a summary of the results was published on March 9, 1998. Also, an article on the Class of 1997 was published in the May issue of *Today's Chemist at Work*.

The primary objective of the survey is to gather data on the starting salaries and occupational status of new chemists and chemical engineers who graduated during the 1996-97 academic year. The survey covers bachelor's, master's, and doctoral degree recipients. In addition, since 1973, the survey provides information on graduates' sex, citizenship, and ethnicity.

METHOD OF COLLECTION AND TIMING OF SURVEY

Chemistry departments approved by ACS and chemical engineering departments approved by the American Institute of Chemical Engineers and the Engineer's Council for Professional Development provided names and addresses of students who graduated between July 1996 and June 1997. During the first week of October 1997, questionnaires were mailed to those graduates whose names had been provided and who had U.S. addresses.

EXTENT OF COVERAGE

Survey questionnaires were mailed by first class mail on October 13, 1997 to 17,899 graduates. Approximately 1 week after the initial mailing, a postcard reminder was sent, then a second questionnaire and cover letter were sent to non-respondents a month later. A third full mailing to non-respondent Ph.D.s was sent in early December. By the cutoff date of January 9, 1998, ACS had received 7,462 usable responses.

DEFINITIONS

The term "inexperienced" as used in the tables refers to those who have 12 months or less of prior professional work experience. The term "chemist" refers to one who received a degree in chemistry. Salary tables are based on full-time employment. Postdoctoral salaries are analyzed separately. Salaries are reported in U.S. dollars.

"Certified" bachelor's degree-holders are those who are certified by their department or program to ACS. The certified graduate "has pursued and successfully completed a curriculum as proscribed in the guidelines for ACS-approved programs and that...has received the bachelor's degree." (ACS Committee on Professional Training, 1998).

For this study, race and ethnicity categories are combined to become mutually exclusive. Hispanics may include all racial categories, but racial categories do not include Hispanics.

The Technical Notes present methods for estimating sampling error and also explain certain discrepancies among some of the tables.

GEOGRAPHIC REGIONS**PACIFIC**

Alaska
California
Hawaii
Oregon
Washington

MOUNTAIN

Arizona
Colorado
Idaho
Montana
Nevada
New Mexico
Utah
Wyoming

WEST NORTH CENTRAL

Iowa
Kansas
Minnesota
Missouri
Nebraska
North Dakota
South Dakota

WEST SOUTH CENTRAL

Arkansas
Louisiana
Oklahoma
Texas

EAST NORTH CENTRAL

Illinois
Indiana
Michigan
Ohio
Wisconsin

EAST SOUTH CENTRAL

Alabama
Kentucky
Mississippi
Tennessee

MIDDLE ATLANTIC

New Jersey
New York
Pennsylvania

SOUTH ATLANTIC

Delaware
District of Columbia
Florida
Georgia
Maryland
North Carolina
South Carolina
Virginia
West Virginia

NEW ENGLAND

Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island
Vermont

TECHNICAL NOTES

DISCREPANCIES AMONG TABLES

Because not all individuals responded to all of the survey items, some pairs of tables contain totals that should be identical but are not. For example, one table may group Ph.D.s by sex and another by employer. The totals will differ unless the number who did not indicate their sex is the same as the number who did not indicate their employer.

ESTIMATES OF MEDIAN SALARIES

Median salaries displayed within the cells of the salary tables are sample medians and are therefore subject to sampling error. This error could be quite large, especially when the number of respondents in the corresponding cell is small. Therefore, median salaries in cells with fewer than 15 respondents should not be used to estimate their corresponding population medians. Similarly, tables showing the 25th and 75th salary percentiles, and those showing the 10th and 90th salary percentiles, should have at least 25 respondents and 40 respondents, respectively.

COMPARING SALARIES

Often questions arise concerning women's salaries as compared with men's, or chemists' salaries as compared with chemical engineers'. These and similar comparisons require caution.

Statistical tests should be performed to determine whether observed differences in salaries of various sample groups could be mere chance occurrences resulting from peculiarities of the samples. Whether a difference in salaries is "statistically significant" depends not only on the magnitude of the difference but also on the sample sizes and the magnitudes of the sample standard deviations.

Discussion of statistical tests of significance may be found in *Introductory Statistics for Business and Economics*, by Thomas H. Wonnacott and Ronald J. Wonnacott, NY: Wiley, 1990, and in other similar texts.

ESTIMATING SAMPLING ERROR FOR PERCENTS

Percents in this report are derived from the sample. If the entire population had received and returned questionnaires, most estimates would be somewhat different. How much different? Although this question does not have an exact answer, the table below does provide some guidance. To use the table, find the column headed by the percent (p) derived from the sample, and find the row appropriate for the sample size (n). (Approximations for p and n may be used.) Note the number in that column and that row of the table.

This number from the body of the table measures the precision with which the sample percent estimates the percent of the entire population. Specifically, if this procedure is applied repeatedly, about 95 times out of 100, the population percent will differ from the sample percent by no more than the amount shown in the table.

Approximate Sampling Errors for Percents

n	p=10% or 90%	p=20% or 80%	p=30% or 70%	p=40% or 60%	p=50%
50	8.3%	11.1%	12.7%	13.6%	13.9%
100	5.9	7.8	9.0	9.6	9.8
200	4.2	5.5	6.4	6.8	6.9
500	2.6	3.5	4.0	4.3	4.4
1000	1.9	2.5	2.8	3.0	3.1
2000	1.3	1.8	2.0	2.1	2.2
5000	0.8	1.1	1.3	1.4	1.4
10000	0.6	0.8	0.9	1.0	1.0

In Table B-1a for example, 1932 respondents classified as chemists indicated their highest degree as the bachelor's degree and their gender as female. The percent of this group who are employed full-time in chemistry is 34.0 percent ($p = 34.0$). A "95 percent confidence interval" for this percent may be approximated by taking n and p to be about 1000 and 30 percent. The above table shows an approximate sampling error of 2.8 percent. Hence, the 95 percent confidence interval is 31.2 percent to 36.8 percent. If estimates were made at this "level of confidence" from 100 similar samples, about 95 of the confidence intervals calculated from these samples would contain the true population percent.

LIST OF TABLES

	Table Number	Page
SALARIES OF RESPONDENTS		
Full-time Chemists		
Degree Experience	A-1	23
Full-time Chemical Engineers		
Degree Experience	A-2	24
Full-time Inexperienced Chemists in Private Industry		
Degree Sex	A-3	25
Full-time Inexperienced Chemical Engineers in Private Industry		
Degree Sex	A-4	26
Full-time Inexperienced Chemists		
Degree Sex	A-5	27
Employer	A-6	28
Industry	A-7	29
Employer Size	A-8	30
Work Function	A-9	31
Certified to ACS B.S.	A-10	32
Degree Specialty M.S. and Ph.D.	A-11	33
Geographic Region	A-12	34
Full-time Inexperienced Chemical Engineers		
Degree Sex	A-13	35
Employer	A-14	36
Industry	A-15	37
Employer Size	A-16	38
Work Function	A-17	39
Geographic Region	A-18	40
Stipends of Postdoctoral Fellowships		
Field Employer	A19	41
Stipends of Graduate Students		
Field Degree	A20	42

EMPLOYMENT STATUS

All Chemists

Employment Status	Degree	Sex	B-1a	43
Plans for Advanced Study	Degree	Sex	B-1b	43
Employment Status	Degree	Citizenship	B-2a	44
Plans for Advanced Study	Degree	Citizenship	B-2b	45
Employment Status	Degree	Ethnicity	B-3a	46
Plans for Advanced Study	Degree	Ethnicity	B-3b	47
Employment Status	ACS Approved Curriculum. B.S.		B-4a	48
Plans for Advanced Study	ACS Approved Curriculum. B.S.		B-4b	48
Employment Status	Degree Specialty	M.S.	B-5	49
		Ph.D.	B-6	50

All Chemical Engineers

Employment Status	Degree	Sex	B-7a	51
Plans for Advanced Study	Degree	Sex	B-7b	52
Employment Status	Degree	Citizenship	B-8a	53
Plans for Advanced Study	Degree	Citizenship	B-8b	54
Employment Status	Degree	Ethnicity	B-9a	55
Plans for Advanced Study	Degree	Ethnicity	B-9b	56

ADVANCED FURTHER STUDIES

Part-time Study

Chemistry Graduates

Field of Advanced Study	Degree	Sex	C-1	57
	ACS Approved Curriculum. B.S.		C-2	58

Chemical Engineering Graduates

Field of Advanced Study	B.S. and M.S.	Sex	C-3	58
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Full-time Study

Chemistry Graduates

Field of Advanced Study	Degree	Sex	C-4	59
	ACS Approved Curriculum. B.S.		C-5	60

Field of Advanced Study	B.S. and M.S.	Sex	C-6	61
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**Table
Number** **Page**

AGE DISTRIBUTION OF RESPONDENTS

All Chemistry and Chemical Engineering Graduates

Age.....	Sex.....	B.S.	D-1	62
		M.S.	D-2	63
		Ph.D.	D-3	64

Postdoctoral Chemists

Age.....	Sex.....		D-4	65
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NUMBER OF JOB OFFERS

Full-time Employed Inexperienced Chemists

Number of Offers.....	Degree	Sex.....	E-1	66
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Full-time Employed Experienced Chemists

Number of Offers.....	Degree	Sex.....	E-2	67
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Full-time Employed Inexperienced Chemical Engineers

Number of Offers.....	Degree	Sex.....	E-3	68
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Full-time Employed Experienced Chemical Engineers

Number of Offers.....	Degree	Sex.....	E-4	69
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ETHNIC CLASSIFICATION AND CITIZENSHIP

All Chemistry Graduates

Citizenship.....	Degree	Ethnicity	F-1	70
		Sex.....	F-2	71

Minority Chemistry Graduates

Minority Classification	Degree	Sex.....	F-3	72
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All Chemical Engineering Graduates

Citizenship.....	Degree	Ethnicity	F-4	73
		Sex.....	F-5	74

Minority Chemical Engineering Graduates

Minority Classification	Degree	Sex.....	F-6	75
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Table A-1

SALARIES of CHEMISTS employed FULL-TIME
by DEGREE and EXPERIENCE
1997 ACS Starting Salary Survey

	Highest Degree		
	BS/BA	MS	PHD
Work Experience			
Less than 12 months			
Median	28,000	37,500	54,000
Mean	28,511	37,560	51,067
Std Dev	7,142	8,259	13,297
Count	868	97	185
12-36 months			
Median	30,000	38,000	54,000
Mean	30,263	37,702	51,316
Std Dev	7,127	8,847	13,188
Count	250	65	45
More than 36 months			
Median	33,000	39,900	56,000
Mean	33,833	39,301	55,570
Std Dev	9,736	9,512	12,215
Count	171	92	77
TOTAL			
Median	29,000	38,000	55,000
Mean	29,557	38,227	52,233
Std Dev	7,741	8,882	13,120
Count	1289	254	307

Table A-2

SALARIES of CHEMICAL ENGINEERS employed FULL-TIME
by DEGREE and EXPERIENCE
1997 ACS Starting Salary Survey

	Highest Degree		
	BS	MS	PHD
Work Experience			
Less than 12 months			
Median	42,000	47,000	60,000
Mean	40,634	45,246	58,593
Std Dev	6,711	7,672	8,468
Count	743	49	81
12-36 months			
Median	44,000	49,900	62,200
Mean	43,006	49,674	59,379
Std Dev	4,245	6,517	7,983
Count	318	35	24
More than 36 months			
Median	43,000	50,500	62,500
Mean	43,088	53,899	61,008
Std Dev	6,771	14,081	10,866
Count	56	25	24
TOTAL			
Median	43,000	48,500	60,900
Mean	41,432	48,652	59,189
Std Dev	6,212	9,776	8,851
Count	1117	109	129

Table A-3

SALARIES of INEXPERIENCED CHEMISTS employed FULL-TIME
in PRIVATE INDUSTRY by SEX and DEGREE
1997 ACS Starting Salary Survey

	Highest Degree		
	BA/BS	MS	PHD
Female			
Median	28,750	38,218	59,000
Mean	29,131	38,089	57,490
Std Dev	6,861	6,663	10,878
Count	296	40	37
Male			
Median	30,000	39,000	57,400
Mean	30,513	39,525	56,385
Std Dev	7,140	9,519	9,653
Count	308	37	87
TOTAL			
Median	30,000	38,436	57,800
Mean	29,836	38,779	56,715
Std Dev	7,033	8,138	10,002
Count	604	77	124

Table A-4

SALARIES of INEXPERIENCED CHEMICAL ENGINEERS employed FULL-TIME
in PRIVATE INDUSTRY by SEX and DEGREE
1997 ACS Starting Salary Survey

	Highest Degree		
	BS	MS	PHD
Female			
Median	43,800	46,850	60,000
Mean	41,730	45,669	58,270
Std Dev	5,641	5,981	5,363
Count	254	16	16
Male			
Median	42,000	47,000	60,480
Mean	41,185	46,701	59,638
Std Dev	6,391	7,042	6,499
Count	415	29	56
TOTAL			
Median	43,000	47,000	60,000
Mean	41,392	46,334	59,334
Std Dev	6,119	6,634	6,255
Count	669	45	72

Table A-5

SALARIES of INEXPERIENCED CHEMISTS employed FULL-TIME
by SEX and DEGREE
1997 ACS Starting Salary Survey

	Highest Degree		
	BS	MS	PHD
Female			
Median	27,000	37,250	55,000
Mean	27,679	36,533	50,166
Std Dev	6,766	7,207	15,167
Count	438	50	58
Male			
Median	28,580	38,000	54,000
Mean	29,357	38,652	51,479
Std Dev	7,418	9,201	12,394
Count	430	47	127
TOTAL			
Median	28,000	37,500	54,000
Mean	28,511	37,560	51,067
Std Dev	7,142	8,259	13,297
Count	868	97	185

Table A-6

SALARIES of INEXPERIENCED CHEMISTS employed FULL-TIME
by DEGREE and EMPLOYER
1997 ACS Starting Salary Survey

	Highest Degree		
	BS	MS	PHD
EMPLOYER SECTOR			
Self Employed			
Median	25,000	---	---
Mean	25,000	---	---
Std Dev	7,071	---	---
Count	2	0	0
Industry			
Median	30,000	38,436	57,800
Mean	29,836	38,779	56,715
Std Dev	7,033	8,138	10,002
Count	604	77	124
College or univ			
Median	24,500	28,500	35,000
Mean	24,754	31,785	35,413
Std Dev	5,846	7,872	5,140
Count	36	6	34
Medical school			
Median	23,000	34,000	26,000
Mean	24,247	34,000	30,500
Std Dev	5,582	---	11,930
Count	23	1	4
Ele/sec school			
Median	25,700	35,000	31,375
Mean	26,356	31,781	31,375
Std Dev	4,522	7,924	1,945
Count	68	5	2
Federal govt			
Median	29,000	39,000	41,666
Mean	28,932	39,000	42,527
Std Dev	9,526	---	7,092
Count	18	1	6
Military			
Median	27,000	30,000	48,000
Mean	27,551	30,000	47,667
Std Dev	4,550	---	6,506
Count	13	1	3
State or local govt			
Median	24,000	34,500	37,891
Mean	26,276	34,500	37,630
Std Dev	6,112	4,950	7,503
Count	19	2	3
Hospital or lab			
Median	21,000	28,700	56,000
Mean	21,627	33,900	56,000
Std Dev	4,562	12,350	---
Count	35	3	1
Other			
Median	24,000	34,000	56,500
Mean	26,152	34,000	57,375
Std Dev	8,605	---	18,392
Count	48	1	8
TOTAL			
Median	28,000	37,500	54,000
Mean	28,525	37,560	51,067
Std Dev	7,143	8,259	13,297
Count	866	97	185

Table A-7

SALARIES of INEXPERIENCED CHEMISTS employed FULL-TIME
by DEGREE and TYPE OF INDUSTRY
1997 ACS Starting Salary Survey

	Highest Degree		
	BS	MS	PHD
TYPE OF INDUSTRY			
Nonmanufacturing			
Median	26,000	25,000	47,000
Mean	27,801	24,667	52,687
Std Dev	8,757	5,508	20,940
Count	98	3	8
Aerospace			
Median	39,350	39,000	55,000
Mean	38,976	39,000	55,000
Std Dev	5,970	---	---
Count	10	1	1
Agricultural chemicals			
Median	28,000	38,000	56,500
Mean	28,042	38,000	56,500
Std Dev	5,083	---	2,121
Count	25	1	2
Basic chemicals			
Median	26,000	40,750	60,000
Mean	26,704	40,750	58,800
Std Dev	5,908	1,061	3,347
Count	23	2	5
Electronics			
Median	30,600	46,000	62,000
Mean	30,015	47,000	62,077
Std Dev	7,893	4,000	9,962
Count	26	5	13
Petroleum			
Median	27,500	37,750	53,216
Mean	31,244	37,750	53,216
Std Dev	9,419	2,475	5,917
Count	16	2	2
Pharmaceuticals			
Median	30,000	40,000	60,960
Mean	30,655	38,981	57,983
Std Dev	6,369	5,934	9,819
Count	183	35	46
Plastics			
Median	29,120	42,600	59,700
Mean	29,680	42,600	58,400
Std Dev	4,341	7,637	2,280
Count	19	2	6
Specialty chemicals			
Median	30,000	40,000	56,100
Mean	30,269	43,222	54,231
Std Dev	5,605	14,678	6,404
Count	77	9	22
Other manuf			
Median	30,000	35,000	55,000
Mean	29,973	35,555	53,947
Std Dev	6,877	6,077	10,025
Count	127	17	19
TOTAL			
Median	30,000	38,436	57,800
Mean	29,836	38,779	56,715
Std Dev	7,033	8,138	10,002
Count	604	77	124

Table A-8

SALARIES of INEXPERIENCED CHEMISTS employed FULL-TIME
in INDUSTRY by DEGREE and EMPLOYER SIZE
1997 ACS Starting Salary Survey

	Highest Degree		
	BS	MS	PHD
Employer Size			
Less than 50			
Median	25,000	36,000	47,500
Mean	26,016	34,045	49,583
Std Dev	6,368	5,940	11,164
Count	96	11	12
50 to 99			
Median	26,000	34,500	64,000
Mean	27,088	34,304	65,000
Std Dev	5,854	7,001	27,976
Count	135	18	4
100 to 499			
Median	27,500	37,500	52,500
Mean	28,232	40,500	49,943
Std Dev	6,753	6,538	10,161
Count	57	3	28
500 to 2,499			
Median	30,000	31,500	56,500
Mean	29,666	36,000	56,321
Std Dev	6,316	9,124	3,506
Count	80	3	14
2,500 to 9,999			
Median	32,000	40,000	61,000
Mean	32,715	39,046	61,174
Std Dev	5,959	5,178	7,390
Count	67	13	17
10,000 to 24,999			
Median	30,680	44,950	60,000
Mean	31,263	49,133	59,907
Std Dev	8,008	15,433	3,870
Count	39	6	15
25,000 or more			
Median	35,000	42,000	60,000
Mean	34,438	42,480	60,358
Std Dev	6,289	5,207	6,610
Count	123	19	34
TOTAL			
Median	30,000	38,436	57,800
Mean	29,789	38,781	56,715
Std Dev	7,043	8,318	10,002
Count	597	73	124

Table A-9

SALARIES of INEXPERIENCED CHEMISTS employed FULL-TIME
by DEGREE and WORK FUNCTION
1997 ACS Starting Salary Survey

	Highest Degree		
	BS	MS	PHD
1st Work Function			
Teaching			
Median	25,900	29,003	35,000
Mean	26,490	30,113	35,030
Std Dev	4,691	6,556	4,825
Count	72	8	33
Management			
Median	26,000	38,000	65,030
Mean	28,352	39,850	62,515
Std Dev	9,068	5,711	13,240
Count	45	5	4
Research			
Median	29,000	39,979	57,600
Mean	28,974	39,407	54,815
Std Dev	6,363	6,465	10,731
Count	210	34	94
Dev & design			
Median	30,000	38,750	56,000
Mean	31,569	38,596	57,720
Std Dev	7,066	5,995	8,444
Count	109	16	25
Production			
Median	27,000	35,250	52,000
Mean	27,363	37,683	50,000
Std Dev	6,060	10,742	11,367
Count	264	26	11
Professional svcs			
Median	29,000	33,000	63,000
Mean	29,812	32,250	63,900
Std Dev	9,237	5,909	23,191
Count	59	4	7
Other			
Median	28,000	36,000	41,000
Mean	28,039	34,250	40,778
Std Dev	9,096	12,230	7,466
Count	106	4	11
TOTAL			
Median	28,000	37,500	54,000
Mean	28,513	37,560	51,067
Std Dev	7,149	8,259	13,297
Count	865	97	185

Table A-10

SALARIES of INEXPERIENCED B.S. CHEMISTS employed FULL-TIME
by EMPLOYER and CERTIFICATION
1997 ACS Starting Salary Survey

	CERTIFIED TO ACS		TOTAL
	Certified	Not certified	
EMPLOYER SECTOR			
Self Employed			
Median	---	25,000	25,000
Mean	---	25,000	25,000
Std Dev	---	7,071	7,071
Count	0	2	2
Industry			
Median	30,431	28,000	30,000
Mean	30,888	29,113	29,836
Std Dev	6,813	7,099	7,033
Count	246	358	604
College or univ			
Median	28,000	23,500	24,500
Mean	27,536	23,530	24,754
Std Dev	4,236	6,104	5,846
Count	11	25	36
Medical school			
Median	25,000	22,500	23,000
Mean	28,200	23,148	24,247
Std Dev	7,469	4,617	5,582
Count	5	18	23
Ele/sec school			
Median	24,700	26,000	25,700
Mean	25,124	26,705	26,356
Std Dev	4,951	4,381	4,522
Count	15	53	68
Federal govt			
Median	31,432	28,000	29,000
Mean	32,048	25,815	28,932
Std Dev	11,534	6,160	9,526
Count	9	9	18
Military			
Median	28,500	27,000	27,000
Mean	28,167	27,024	27,551
Std Dev	2,483	5,963	4,550
Count	6	7	13
State or local govt			
Median	23,000	25,500	24,000
Mean	24,623	26,867	26,276
Std Dev	3,808	6,771	6,112
Count	5	14	19
Hospital or lab			
Median	21,500	21,000	21,000
Mean	21,450	21,698	21,627
Std Dev	4,206	4,779	4,562
Count	10	25	35
Other			
Median	24,500	24,000	24,000
Mean	27,747	25,354	26,152
Std Dev	7,795	8,994	8,605
Count	16	32	48
TOTAL			
Median	30,000	27,000	28,000
Mean	29,901	27,706	28,525
Std Dev	7,046	7,081	7,143
Count	323	543	866

Table A-11

SALARIES of INEXPERIENCED MS and PhD CHEMISTS employed FULL-TIME
by DEGREE and DEGREE SPECIALTY
1997 ACS Starting Salary Survey

	Highest Degree	
	MS	PHD
FIELD		
Analytical chem		
Median	34,000	51,000
Mean	35,007	49,541
Std Dev	6,675	11,559
Count	21	44
Biochemistry		
Median	37,000	46,500
Mean	37,857	44,560
Std Dev	4,220	12,959
Count	7	10
Environm chem		
Median	30,000	38,900
Mean	29,667	38,900
Std Dev	4,509	8,627
Count	3	2
General chem		
Median	36,000	45,165
Mean	35,080	46,833
Std Dev	8,424	12,504
Count	17	4
Inorganic chem		
Median	35,500	54,000
Mean	37,660	49,209
Std Dev	6,195	11,822
Count	5	33
Med/Pharm chem		
Median	---	27,000
Mean	---	27,000
Std Dev	---	---
Count	0	1
Organic chem		
Median	40,000	59,400
Mean	38,753	54,005
Std Dev	6,377	12,965
Count	31	45
Physical chem		
Median	39,500	46,000
Mean	38,351	50,676
Std Dev	6,747	17,909
Count	5	19
Polymer chem		
Median	38,950	57,000
Mean	38,950	54,700
Std Dev	5,586	5,417
Count	2	10
Other chem		
Median	46,500	40,000
Mean	46,167	40,000
Std Dev	6,007	---
Count	3	1
Other		
Median	80,000	50,000
Mean	80,000	53,100
Std Dev	---	18,711
Count	1	10
TOTAL		
Median	37,500	54,000
Mean	37,508	50,573
Std Dev	8,210	13,215
Count	95	179

Table A-12

SALARIES of INEXPERIENCED CHEMISTS employed FULL-TIME
by DEGREE and GEOGRAPHIC REGION
1997 ACS Starting Salary Survey

	Highest Degree		
	BS	MS	PHD
REGION			
Pacific			
Median	29,000	35,500	57,000
Mean	29,047	36,214	58,841
Std Dev	7,365	6,079	12,289
Count	119	14	22
Mountain			
Median	25,000	40,375	45,000
Mean	25,873	39,138	44,910
Std Dev	7,265	6,416	9,584
Count	30	4	10
West North Central			
Median	26,000	30,000	47,000
Mean	27,204	33,051	47,435
Std Dev	6,172	8,707	16,003
Count	73	9	12
West South Central			
Median	27,038	36,000	52,500
Mean	29,026	37,500	47,774
Std Dev	9,173	6,868	14,463
Count	56	7	20
East North Central			
Median	28,000	36,000	51,000
Mean	28,399	37,173	48,109
Std Dev	7,364	13,243	12,000
Count	177	19	28
East South Central			
Median	25,500	---	41,250
Mean	25,715	---	41,736
Std Dev	6,466	---	15,605
Count	34	0	8
Middle Atlantic			
Median	30,000	42,000	57,500
Mean	30,269	39,950	55,811
Std Dev	7,152	6,771	10,563
Count	142	17	28
South Atlantic			
Median	26,000	36,200	49,000
Mean	27,245	38,243	49,698
Std Dev	6,444	5,029	14,407
Count	142	14	28
New England			
Median	30,000	38,718	56,000
Mean	30,236	38,743	53,542
Std Dev	6,371	6,526	11,818
Count	80	10	24
TOTAL			
Median	28,000	37,678	54,000
Mean	28,524	37,572	51,047
Std Dev	7,191	8,318	13,384
Count	853	94	180

Table A-13

SALARIES of INEXPERIENCED CHEMICAL ENGINEERS employed FULL-TIME
by SEX and DEGREE
1997 ACS Starting Salary Survey

	Highest Degree		
	BS	MS	PHD
Female			
Median	43,000	46,300	60,000
Mean	40,773	44,817	57,859
Std Dev	6,381	6,179	5,171
Count	289	18	19
Male			
Median	41,300	47,000	60,030
Mean	40,440	45,495	58,818
Std Dev	7,080	8,507	9,271
Count	450	31	62
TOTAL			
Median	42,000	47,000	60,000
Mean	40,570	45,246	58,593
Std Dev	6,813	7,672	8,468
Count	739	49	81

Table A-14

SALARIES of INEXPERIENCED CHEMICAL ENGINEERS employed FULL-TIME
by DEGREE and EMPLOYER
1997 ACS Starting Salary Survey

	Highest Degree		
	BS	MS	PHD
EMPLOYER SECTOR			
Industry			
Median	43,000	47,000	60,000
Mean	41,367	46,334	59,334
Std Dev	6,230	6,634	6,255
Count	674	45	72
College or univ			
Median	42,500	36,000	60,000
Mean	37,733	36,000	60,667
Std Dev	10,281	0	9,018
Count	12	2	3
Medical school			
Median	---	20,000	---
Mean	---	20,000	---
Std Dev	---	---	---
Count	0	1	0
Ele/sec school			
Median	28,000	---	---
Mean	28,000	---	---
Std Dev	---	---	---
Count	1	0	0
Federal govt			
Median	33,000	---	---
Mean	34,031	---	---
Std Dev	6,342	---	---
Count	9	0	0
Military			
Median	27,000	---	---
Mean	28,429	---	---
Std Dev	5,166	---	---
Count	14	0	0
State or local govt			
Median	30,000	---	---
Mean	30,804	---	---
Std Dev	3,911	---	---
Count	14	0	0
Hospital or lab			
Median	21,000	---	75,000
Mean	21,000	---	75,000
Std Dev	1,414	---	---
Count	2	0	1
Other			
Median	38,000	40,000	50,000
Mean	35,840	40,000	43,400
Std Dev	6,179	---	18,174
Count	15	1	5
TOTAL			
Median	42,000	47,000	60,000
Mean	40,590	45,246	58,593
Std Dev	6,804	7,672	8,468
Count	741	49	81

Table A-15

SALARIES of INEXPERIENCED CHEMICAL ENGINEERS employed FULL-TIME
by DEGREE and TYPE OF INDUSTRY
1997 ACS Starting Salary Survey

	Highest Degree		
	BS	MS	PHD
TYPE OF INDUSTRY			
Nonmanufacturing			
Median	39,000	44,500	51,000
Mean	38,959	43,725	53,563
Std Dev	9,985	7,424	10,154
Count	76	8	8
Aerospace			
Median	40,000	41,700	65,000
Mean	39,389	41,700	65,000
Std Dev	2,902	7,495	---
Count	9	2	1
Agricultural chemicals			
Median	44,500	---	---
Mean	43,536	---	---
Std Dev	4,798	---	---
Count	14	0	0
Basic chemicals			
Median	45,375	---	62,000
Mean	43,970	---	61,833
Std Dev	6,268	---	1,756
Count	40	0	3
Electronics			
Median	41,000	45,200	63,375
Mean	40,505	42,900	63,646
Std Dev	4,416	7,903	3,773
Count	53	6	12
Petroleum			
Median	45,000	51,000	61,000
Mean	44,160	52,200	61,794
Std Dev	4,819	6,452	3,026
Count	76	4	7
Pharmaceuticals			
Median	43,500	49,000	59,100
Mean	41,745	47,960	56,233
Std Dev	5,549	2,055	6,186
Count	66	5	9
Plastics			
Median	43,600	51,950	61,530
Mean	41,009	49,557	59,093
Std Dev	6,420	8,045	9,699
Count	47	6	6
Specialty chemicals			
Median	43,500	47,250	61,000
Mean	42,650	48,025	58,887
Std Dev	4,448	5,535	5,533
Count	92	4	8
Other manuf			
Median	41,400	46,450	60,000
Mean	40,242	45,640	59,167
Std Dev	5,669	5,022	3,214
Count	201	10	18
TOTAL			
Median	43,000	47,000	60,000
Mean	41,367	46,334	59,334
Std Dev	6,230	6,634	6,255
Count	674	45	72

Table A-16

SALARIES of INEXPERIENCED CHEMICAL ENGINEERS employed FULL-TIME
by DEGREE and EMPLOYER SIZE
1997 ACS Starting Salary Survey

	Highest Degree		
	BS	MS	PHD
Employer Size			
Less than 50			
Median	39,000	36,200	50,000
Mean	38,652	36,200	45,167
Std Dev	12,713	283	17,325
Count	41	2	6
50 to 99			
Median	36,500	53,000	---
Mean	35,778	50,750	---
Std Dev	7,210	7,588	---
Count	79	4	0
100 to 499			
Median	37,500	52,000	51,000
Mean	36,477	52,000	52,286
Std Dev	6,169	---	7,499
Count	49	1	7
500 to 2,499			
Median	40,000	38,000	57,000
Mean	39,712	41,211	54,792
Std Dev	5,802	7,094	6,998
Count	115	9	12
2,500 to 9,999			
Median	43,000	45,400	60,900
Mean	42,189	45,600	60,746
Std Dev	4,774	6,051	5,133
Count	105	10	13
10,000 to 24,999			
Median	44,000	49,100	62,350
Mean	43,383	45,420	62,044
Std Dev	3,648	13,536	3,714
Count	96	7	16
25,000 or more			
Median	44,000	47,400	63,000
Mean	42,029	46,520	62,442
Std Dev	6,192	4,744	5,147
Count	243	15	23
TOTAL			
Median	42,000	46,900	60,000
Mean	40,622	45,209	58,611
Std Dev	6,790	7,749	8,590
Count	728	48	77

Table A-17

SALARIES of INEXPERIENCED CHEMICAL ENGINEERS employed FULL-TIME
by DEGREE and WORK FUNCTION
1997 ACS Starting Salary Survey

	Highest Degree		
	BS	MS	PHD
1st Work Function			
Teaching			
Median	34,500	---	52,000
Mean	35,375	---	52,000
Std Dev	8,390	---	---
Count	4	0	1
Management			
Median	41,000	---	66,500
Mean	39,446	---	62,000
Std Dev	6,829	---	15,253
Count	57	0	4
Research			
Median	40,000	49,000	60,000
Mean	39,164	44,333	57,730
Std Dev	7,410	10,817	6,753
Count	65	9	35
Dev & design			
Median	43,900	47,000	62,000
Mean	42,202	46,333	61,548
Std Dev	5,053	6,641	3,798
Count	187	15	28
Production			
Median	43,000	46,800	65,500
Mean	41,554	45,573	65,500
Std Dev	5,530	6,952	3,536
Count	272	15	2
Professional svcs			
Median	39,500	38,000	55,000
Mean	39,093	40,429	56,166
Std Dev	6,379	5,563	7,326
Count	102	7	7
Other			
Median	39,120	55,100	50,000
Mean	37,017	52,147	44,500
Std Dev	12,404	6,220	22,159
Count	55	3	4
TOTAL			
Median	42,000	47,000	60,000
Mean	40,638	45,246	58,593
Std Dev	6,751	7,672	8,468
Count	742	49	81

Table A-18

SALARIES of INEXPERIENCED CHEMICAL ENGINEERS employed FULL-TIME
by DEGREE and GEOGRAPHIC REGION
1997 ACS Starting Salary Survey

	Highest Degree		
	BS	MS	PHD
REGION			
Pacific			
Median	42,000	51,500	60,000
Mean	41,163	50,000	58,115
Std Dev	6,334	7,165	8,506
Count	67	4	15
Mountain			
Median	40,850	43,000	58,500
Mean	40,317	42,800	58,500
Std Dev	3,427	6,302	9,192
Count	26	3	2
West North Central			
Median	41,250	39,500	60,060
Mean	39,594	39,500	61,812
Std Dev	5,857	6,364	7,358
Count	52	2	5
West South Central			
Median	45,000	47,100	62,000
Mean	43,310	45,757	59,597
Std Dev	5,985	11,825	6,473
Count	135	6	12
East North Central			
Median	43,700	49,000	60,000
Mean	40,698	48,420	61,557
Std Dev	6,349	7,819	6,189
Count	136	5	7
East South Central			
Median	40,800	47,800	53,750
Mean	37,628	47,800	53,750
Std Dev	8,064	---	8,839
Count	27	1	2
Middle Atlantic			
Median	42,033	45,000	60,000
Mean	40,578	41,545	59,943
Std Dev	6,328	8,711	5,344
Count	144	11	23
South Atlantic			
Median	39,600	47,000	57,500
Mean	38,963	46,577	55,754
Std Dev	9,550	4,652	7,546
Count	99	13	8
New England			
Median	40,000	45,850	60,000
Mean	39,148	45,850	51,400
Std Dev	4,512	1,202	22,323
Count	42	2	5
TOTAL			
Median	42,033	47,000	60,000
Mean	40,670	45,235	58,646
Std Dev	6,817	7,582	8,506
Count	728	47	79

Table A-19

STIPENDS of POSTDOCTORAL FELLOWSHIPS by TYPE of EMPLOYER
1997 ACS Starting Salary Survey

	Highest Degree	
	PHD Chem	PHD Chem eng
EMPLOYER SECTOR		
Industry		
Median	42,500	40,500
Mean	41,972	42,387
Std Dev	9,588	9,599
Count	18	6
College or univ		
Median	24,000	30,000
Mean	24,674	31,977
Std Dev	4,930	7,660
Count	289	22
Medical school		
Median	25,000	28,000
Mean	25,359	26,900
Std Dev	3,939	2,837
Count	76	5
Federal govmt		
Median	39,500	43,100
Mean	38,873	42,950
Std Dev	7,313	2,266
Count	40	6
Military		
Median	37,500	---
Mean	37,925	---
Std Dev	4,019	---
Count	4	0
State or local govmt		
Median	39,000	43,330
Mean	39,696	43,330
Std Dev	9,390	9,433
Count	9	2
Hospital or lab		
Median	25,750	---
Mean	26,375	---
Std Dev	5,764	---
Count	4	0
Other		
Median	24,500	46,000
Mean	28,316	46,000
Std Dev	8,947	---
Count	14	1
TOTAL		
Median	25,000	33,000
Mean	27,297	35,302
Std Dev	7,751	9,014
Count	454	42

Table A-20

STIPENDS of GRADS/FELLOWSHIPS by TYPE of Employer
1997 ACS Starting Salary Survey

	Highest Degree			
	Bach chem	MS chem	Bach chem eng	MS chem eng
Salary				
EMPTYE				
Industry				
Median	16,000	35,000	27,000	40,000
Mean	18,161	35,740	27,600	40,000
Std Dev	11,308	16,484	15,817	---
Count	56	5	7	1
College/univ/med sch				
Median	15,000	15,000	16,000	15,250
Mean	14,930	14,893	15,031	15,878
Std Dev	8,059	3,387	4,827	3,238
Count	890	142	125	35
Federal govmt				
Median	21,000	---	22,000	---
Mean	20,333	---	22,000	---
Std Dev	4,041	---	2,828	---
Count	3	0	2	0
Other				
Median	13,000	23,250	28,000	---
Mean	14,305	25,375	28,000	---
Std Dev	7,395	20,172	---	---
Count	45	4	1	0
TOTAL				
Median	15,000	15,000	16,000	15,500
Mean	15,084	15,894	15,727	16,609
Std Dev	8,242	6,609	6,122	5,272
Count	994	151	135	36

Table B-1a

CHEMISTRY GRADUATES
by EMPLOYMENT STATUS, SEX, and DEGREE
1997 ACS Starting Salary Survey

	BS/BA			MS			PHD		
	Female	Male	Total	Female	Male	Total	Female	Male	Total
Employment Status									
Fulltime Perm	33.6% 650	32.8% 681	33.2% 1331	48.1% 127	44.6% 137	46.2% 264	31.1% 87	37.1% 225	35.2% 312
Fulltim temp	12.6% 244	10.4% 216	11.5% 460	11.4% 30	5.9% 18	8.4% 48	8.2% 23	3.6% 22	5.1% 45
Grad or postdoc	40.4% 781	45.8% 950	43.2% 1731	29.9% 79	40.7% 125	35.7% 204	48.6% 136	52.4% 318	51.2% 454
Parttime Perm	1.3% 26	.5% 10	.9% 36	1.1% 3	.0% 0	.5% 3	.7% 2	.2% 1	.3% 3
Parttime temp	3.3% 64	2.8% 58	3.0% 122	3.0% 8	3.6% 11	3.3% 19	1.4% 4	1.6% 10	1.6% 14
Unempl seeking	6.0% 115	5.2% 108	5.6% 223	4.2% 11	4.6% 14	4.4% 25	6.4% 18	3.8% 23	4.6% 41
Unempl not seeking	2.7% 52	2.5% 52	2.6% 104	2.3% 6	.7% 2	1.4% 8	3.6% 10	1.3% 8	2.0% 18
Total	100.0% 48.2% 1932	100.0% 51.8% 2075	100.0% 100.0% 4007	100.0% 46.2% 264	100.0% 53.8% 307	100.0% 100.0% 571	100.0% 31.6% 280	100.0% 68.4% 607	100.0% 100.0% 887

Table B-1b

CHEMISTRY BS/BA and MS GRADUATES
by PLANS FOR FURTHER STUDIES IN FALL 1997, SEX, and DEGREE
1997 ACS Starting Salary Survey

	BS/BA			MS		
	Female	Male	Total	Female	Male	Total
Study in Fall of 1997?						
Yes, fulltime	40.4% 781	45.8% 950	43.2% 1731	29.9% 79	40.7% 125	35.7% 204
Yes, part-time	6.1% 118	6.0% 124	6.0% 242	3.8% 10	5.9% 18	4.9% 28
No	53.5% 1033	48.2% 1001	50.8% 2034	66.3% 175	53.4% 164	59.4% 339
Total	100.0% 48.2% 1932	100.0% 51.8% 2075	100.0% 100.0% 4007	100.0% 46.2% 264	100.0% 53.8% 307	100.0% 100.0% 571

Table B-2a

CHEMISTRY GRADUATES
by EMPLOYMENT STATUS, CITIZENSHIP, and DEGREE
1997 ACS Starting Salary Survey

	Citizenship				Total
	US Native	US Natlized	US Perm Res	Temp visa	
BS/BA					
Employment Status					
Fulltime Perm	34.1% 1161	34.0% 121	22.5% 43	8.3% 4	33.2% 1329
Fulltim temp	11.6% 394	12.6% 45	9.9% 19	6.3% 3	11.5% 461
Grad or postdoc	43.5% 1481	36.2% 129	43.5% 83	70.8% 34	43.2% 1727
Parttime Perm	.9% 29	.3% 1	3.1% 6	.0% 0	.9% 36
Parttime temp	2.8% 97	3.7% 13	5.8% 11	2.1% 1	3.0% 122
Unempl seeking	4.8% 164	9.6% 34	9.4% 18	12.5% 6	5.5% 222
Unempl not seeking	2.3% 80	3.7% 13	5.8% 11	.0% 0	2.6% 104
MS					
Employment Status					
Fulltime Perm	52.2% 186	53.6% 15	55.6% 25	25.7% 36	46.0% 262
Fulltim temp	5.6% 20	10.7% 3	15.6% 7	12.9% 18	8.4% 48
Grad or postdoc	32.3% 115	35.7% 10	11.1% 5	52.1% 73	35.7% 203
Parttime Perm	.8% 3	.0% 0	.0% 0	.0% 0	.5% 3
Parttime temp	3.7% 13	.0% 0	6.7% 3	2.9% 4	3.5% 20
Unempl seeking	3.9% 14	.0% 0	11.1% 5	4.3% 6	4.4% 25
Unempl not seeking	1.4% 5	.0% 0	.0% 0	2.1% 3	1.4% 8
PHD					
Employment Status					
Fulltime Perm	40.4% 233	33.3% 11	35.2% 38	18.2% 31	35.2% 313
Fulltim temp	6.8% 39	.0% 0	1.9% 2	2.4% 4	5.1% 45
Grad or postdoc	45.9% 265	48.5% 16	50.9% 55	69.4% 118	51.1% 454
Parttime Perm	.2% 1	3.0% 1	.9% 1	.0% 0	.3% 3
Parttime temp	2.1% 12	3.0% 1	.9% 1	.0% 0	1.6% 14
Unempl seeking	2.9% 17	12.1% 4	6.5% 7	7.6% 13	4.6% 41
Unempl not seeking	1.7% 10	.0% 0	3.7% 4	2.4% 4	2.0% 18
Total	100.0% 79.5% 4339	100.0% 7.6% 417	100.0% 6.3% 344	100.0% 6.6% 358	100.0% 100.0% 5458

Table B-2b

CHEMISTRY BS/BA and MS GRADUATES
by PLANS FOR FURTHER STUDIES IN FALL 1997, CITIZENSHIP, and DEGREE
1997 ACS Starting Salary Survey

	BS/BA				MS		
	Citizenship				Citizenship		
	US Native	US Natized	US Perm Res	Temp visa	US Native	US Natized	US Perm Res
Study in Fall of 1997?							
Yes, fulltime	43.5% 1481	36.2% 129	43.5% 83	70.8% 34	32.3% 115	35.7% 10	11.1% 5
Yes, part-time	5.5% 186	9.3% 33	11.0% 21	2.1% 1	3.4% 12	3.6% 1	6.7% 3
No	51.1% 1739	54.5% 194	45.5% 87	27.1% 13	64.3% 229	60.7% 17	82.2% 37
Total	100.0% 85.1% 3406	100.0% 8.9% 356	100.0% 4.8% 191	100.0% 1.2% 48	100.0% 62.6% 356	100.0% 4.9% 28	100.0% 7.9% 45

	MS	Total
	Citizenship	
	Temp visa	
Study in Fall of 1997?		
Yes, fulltime	52.1% 73	42.2% 1930
Yes, part-time	7.9% 11	5.9% 268
No	40.0% 56	51.9% 2372
Total	100.0% 24.6% 140	100.0% 100.0% 4570

Table B-3a

CHEMISTRY GRADUATES
by EMPLOYMENT STATUS, ETHNICITY, and DEGREE
1997 ACS Starting Salary Survey

	RACE/ETHNICITY						Total
	Amer Indian	Asian	Black	Hisp	White	Other	
BS/BA							
Employment Status							
Fulltime Perm	21.4% 6	29.0% 152	36.1% 65	25.7% 37	34.8% 1039	22.0% 20	33.4% 1319
Fulltim temp	14.3% 4	13.1% 69	10.6% 19	18.1% 26	10.8% 321	17.6% 16	11.5% 455
Grad or postdoc	60.7% 17	41.1% 216	34.4% 62	38.2% 55	44.1% 1315	42.9% 39	43.1% 1704
Parttime Perm	.0% 0	.4% 2	2.2% 4	.7% 1	.9% 26	2.2% 2	.9% 35
Parttime temp	.0% 0	3.8% 20	3.3% 6	3.5% 5	2.8% 85	3.3% 3	3.0% 119
Unempl seeking	3.6% 1	8.8% 46	11.1% 20	8.3% 12	4.5% 133	5.5% 5	5.5% 217
Unempl not seeking	.0% 0	3.8% 20	2.2% 4	5.6% 8	2.1% 64	6.6% 6	2.6% 102
MS							
Employment Status							
Fulltime Perm	25.0% 1	36.6% 60	50.0% 7	42.1% 8	50.9% 173	50.0% 6	46.1% 255
Fulltim temp	25.0% 1	14.0% 23	7.1% 1	15.8% 3	5.6% 19	.0% 0	8.5% 47
Grad or postdoc	50.0% 2	38.4% 63	28.6% 4	36.8% 7	34.7% 118	33.3% 4	35.8% 198
Parttime Perm	.0% 0	.0% 0	.0% 0	.0% 0	.9% 3	.0% 0	.5% 3
Parttime temp	.0% 0	3.7% 6	.0% 0	5.3% 1	2.9% 10	8.3% 1	3.3% 18
Unempl seeking	.0% 0	6.1% 10	7.1% 1	.0% 0	3.8% 13	8.3% 1	4.5% 25
Unempl not seeking	.0% 0	1.2% 2	7.1% 1	.0% 0	1.2% 4	.0% 0	1.3% 7
PHD							
Employment Status							
Fulltime Perm	75.0% 3	24.6% 59	38.9% 7	29.2% 7	39.8% 227	28.6% 4	35.3% 307
Fulltim temp	.0% 0	1.7% 4	.0% 0	16.7% 4	6.3% 36	.0% 0	5.1% 44
Grad or postdoc	25.0% 1	60.4% 145	55.6% 10	41.7% 10	47.5% 271	64.3% 9	51.3% 446
Parttime Perm	.0% 0	.0% 0	.0% 0	4.2% 1	.4% 2	.0% 0	.3% 3
Parttime temp	.0% 0	1.3% 3	.0% 0	.0% 0	1.4% 8	.0% 0	1.3% 11
Unempl seeking	.0% 0	8.8% 21	5.6% 1	.0% 0	3.2% 18	7.1% 1	4.7% 41
Unempl not seeking	.0% 0	3.3% 8	.0% 0	8.3% 2	1.4% 8	.0% 0	2.1% 18
Total	100.0% .7% 36	100.0% 17.3% 929	100.0% 3.9% 212	100.0% 3.5% 187	100.0% 72.4% 3893	100.0% 2.2% 117	100.0% 100.0% 5374

Table B-3b

CHEMISTRY BS/BA and MS GRADUATES
by PLANS FOR FURTHER STUDIES IN FALL 1997, ETHNICITY, and DEGREE
1997 ACS Starting Salary Survey

	RACE						Total
	Amer Indian	Asian	Black	Hisp	White	Other	
BS/BA							
Study in Fall of 1997?							
Yes, fulltime	60.7% 17	41.1% 216	34.4% 62	38.2% 55	44.1% 1315	42.9% 39	43.1% 1704
Yes, part-time	14.3% 4	7.2% 38	15.6% 28	4.2% 6	5.3% 157	4.4% 4	6.0% 237
No	25.0% 7	51.6% 271	50.0% 90	57.6% 83	50.7% 1511	52.7% 48	50.9% 2010
Total	100.0% 7% 28	100.0% 13.3% 525	100.0% 4.6% 180	100.0% 3.6% 144	100.0% 75.5% 2983	100.0% 2.3% 91	100.0% 100.0% 3951
MS							
Study in Fall of 1997?							
Yes, fulltime	50.0% 2	38.4% 63	28.6% 4	36.8% 7	34.7% 118	33.3% 4	35.8% 198
Yes, part-time	.0% 0	8.5% 14	.0% 0	5.3% 1	3.5% 12	.0% 0	4.9% 27
No	50.0% 2	53.0% 87	71.4% 10	57.9% 11	61.8% 210	66.7% 8	59.3% 328
Total	100.0% .7% 4	100.0% 29.7% 164	100.0% 2.5% 14	100.0% 3.4% 19	100.0% 61.5% 340	100.0% 2.2% 12	100.0% 100.0% 553

Table B-4a

BS CHEMISTRY GRADUATES
by EMPLOYMENT STATUS and CERTIFICATION
1997 ACS Starting Salary Survey

	Certified		Total
	Yes	No	
Employment Status			
Fulltime Perm	34.1% 490	32.7% 842	33.2% 1332
Fulltim temp	9.9% 143	12.4% 318	11.5% 461
Grad or postdoc	46.2% 664	41.5% 1068	43.2% 1732
Parttime Perm	.4% 6	1.2% 31	.9% 37
Parttime temp	2.9% 42	3.1% 81	3.1% 123
Unempl seeking	4.7% 67	6.1% 156	5.6% 223
Unempl not seeking	1.8% 26	3.0% 78	2.6% 104
Total	100.0% 35.8% 1438	100.0% 64.2% 2574	100.0% 100.0% 4012

Table B-4b

BS CHEMISTRY GRADUATES
by PLANS FOR FURTHER STUDIES IN FALL 1997 and CERTIFICATION
1997 ACS Starting Salary Survey

	Certified		Total
	Yes	No	
Study in Fall of 1997?			
Yes, fulltime	46.2% 664	41.5% 1068	43.2% 1732
Yes, part-time	7.0% 101	5.5% 142	6.1% 243
No	46.8% 673	53.0% 1364	50.8% 2037
Total	100.0% 35.8% 1438	100.0% 64.2% 2574	100.0% 100.0% 4012

Table B-5

MASTERS CHEMISTRY GRADUATES
by EMPLOYMENT STATUS and DEGREE SPECIALTY
1997 ACS Starting Salary Survey

	Employment Status							Total
	Fulltime Perm	Fulltime temp	Grad or postdoc	Parttime Perm	Parttime temp	Unempl seeking	Unempl not seeking	
FIELD								
Analytical chem	22.1% 55.3% 57	19.1% 8.7% 9	12.3% 24.3% 25	33.3% 1.0% 1	15.0% 2.9% 3	20.0% 4.9% 5	37.5% 2.9% 3	18.2% 100.0% 103
Biochemistry	9.3% 39.3% 24	21.3% 16.4% 10	10.8% 36.1% 22	.0% .0% 0	10.0% 3.3% 2	4.0% 1.6% 1	25.0% 3.3% 2	10.8% 100.0% 61
Environm chem	2.3% 42.9% 6	2.1% 7.1% 1	2.9% 42.9% 6	.0% .0% 0	5.0% 7.1% 1	.0% .0% 0	.0% .0% 0	2.5% 100.0% 14
General chem	19.0% 73.1% 49	6.4% 4.5% 3	4.9% 14.9% 10	.0% .0% 0	10.0% 3.0% 2	8.0% 3.0% 2	12.5% 1.5% 1	11.9% 100.0% 67
Inorganic chem	7.8% 31.3% 20	12.8% 9.4% 6	17.2% 54.7% 35	.0% .0% 0	5.0% 1.6% 1	8.0% 3.1% 2	.0% .0% 0	11.3% 100.0% 64
Med/Pharm chem	.0% .0% 0	2.1% 33.3% 1	.5% 33.3% 1	.0% .0% 0	.0% .0% 0	4.0% 33.3% 1	.0% .0% 0	.5% 100.0% 3
Organic chem	26.7% 45.7% 69	14.9% 4.6% 7	28.9% 39.1% 59	.0% .0% 0	30.0% 4.0% 6	36.0% 6.0% 9	12.5% .7% 1	26.7% 100.0% 151
Physical chem	5.8% 22.1% 15	8.5% 5.9% 4	19.6% 58.8% 40	33.3% 1.5% 1	15.0% 4.4% 3	16.0% 5.9% 4	12.5% 1.5% 1	12.0% 100.0% 68
Polymer chem	5.0% 56.5% 13	8.5% 17.4% 4	2.0% 17.4% 4	.0% .0% 0	5.0% 4.3% 1	4.0% 4.3% 1	.0% .0% 0	4.1% 100.0% 23
Other chem	1.9% 45.5% 5	4.3% 18.2% 2	1.0% 18.2% 2	33.3% 9.1% 1	5.0% 9.1% 1	.0% .0% 0	.0% .0% 0	1.9% 100.0% 11
Total	100.0% 45.7% 258	100.0% 8.3% 47	100.0% 36.1% 204	100.0% .5% 3	100.0% 3.5% 20	100.0% 4.4% 25	100.0% 1.4% 8	100.0% 100.0% 565

Table B-6

PhD CHEMISTRY GRADUATES
by EMPLOYMENT STATUS and DEGREE SPECIALTY
1997 ACS Starting Salary Survey

	Employment Status							Total
	Fulltime Perm	Fulltime temp	Grad or postdoc	Parttime Perm	Parttime temp	Unempl seeking	Unempl not seeking	
FIELD								
Analytical chem	31.2% 54.2% 91	18.6% 4.8% 8	12.7% 32.7% 55	.0% .0% 0	16.7% 1.2% 2	25.6% 6.0% 10	11.1% 1.2% 2	20.0% 100.0% 168
Biochemistry	5.1% 16.9% 15	9.3% 4.5% 4	15.0% 73.0% 65	.0% .0% 0	.0% .0% 0	5.1% 2.2% 2	16.7% 3.4% 3	10.6% 100.0% 89
Environm chem	1.0% 50.0% 3	2.3% 16.7% 1	.2% 16.7% 1	.0% .0% 0	.0% .0% 0	2.6% 16.7% 1	.0% .0% 0	.7% 100.0% 6
General chem	1.7% 55.6% 5	.0% .0% 0	.9% 44.4% 4	.0% .0% 0	.0% .0% 0	.0% .0% 0	.0% .0% 0	1.1% 100.0% 9
Inorganic chem	16.1% 33.8% 47	16.3% 5.0% 7	17.6% 54.7% 76	.0% .0% 0	25.0% 2.2% 3	12.8% 3.6% 5	5.6% .7% 1	16.6% 100.0% 139
Med/Pharm chem	.7% 40.0% 2	.0% .0% 0	.7% 60.0% 3	.0% .0% 0	.0% .0% 0	.0% .0% 0	.0% .0% 0	.6% 100.0% 5
Organic chem	25.0% 31.7% 73	27.9% 5.2% 12	29.6% 55.7% 128	33.3% .4% 1	25.0% 1.3% 3	23.1% 3.9% 9	22.2% 1.7% 4	27.4% 100.0% 230
Physical chem	12.7% 23.3% 37	16.3% 4.4% 7	21.1% 57.2% 91	66.7% 1.3% 2	33.3% 2.5% 4	28.2% 6.9% 11	38.9% 4.4% 7	19.0% 100.0% 159
Polymer chem	4.8% 53.8% 14	7.0% 11.5% 3	1.9% 30.8% 8	.0% .0% 0	.0% .0% 0	.0% .0% 0	5.6% 3.8% 1	3.1% 100.0% 26
Other chem	1.7% 62.5% 5	2.3% 12.5% 1	.2% 12.5% 1	.0% .0% 0	.0% .0% 0	2.6% 12.5% 1	.0% .0% 0	1.0% 100.0% 8
Total	100.0% 34.8% 292	100.0% 5.1% 43	100.0% 51.5% 432	100.0% .4% 3	100.0% 1.4% 12	100.0% 4.6% 39	100.0% 2.1% 18	100.0% 100.0% 839

Table B-7a

CHEMICAL ENGINEERING GRADUATES
by EMPLOYMENT STATUS, SEX, and DEGREE
1997 ACS Starting Salary Survey

	BS			MS			PHD		
	Female	Male	Total	Female	Male	Total	Female	Male	Total
Employment Status									
Fulltime Perm	75.1% 428	68.3% 711	70.7% 1139	67.9% 36	58.6% 75	61.3% 111	72.1% 31	70.3% 102	70.7% 133
Fulltim temp	4.7% 27	5.6% 58	5.3% 85	5.7% 3	3.9% 5	4.4% 8	4.7% 2	2.8% 4	3.2% 6
Grad or postdoc	10.2% 58	15.9% 166	13.9% 224	17.0% 9	32.0% 41	27.6% 50	23.3% 10	22.1% 32	22.3% 42
Parttime Perm	.2% 1	.4% 4	.3% 5	1.9% 1	.0% 0	.6% 1	.0% 0	.7% 1	.5% 1
Parttime temp	1.6% 9	2.1% 22	1.9% 31	.0% 0	.8% 1	.6% 1	.0% 0	.0% 0	.0% 0
Unempl seeking	8.1% 46	7.3% 76	7.6% 122	7.5% 4	4.7% 6	5.5% 10	.0% 0	4.1% 6	3.2% 6
Unempl not seeking	.2% 1	.4% 4	.3% 5	.0% 0	.0% 0	.0% 0	.0% 0	.0% 0	.0% 0
Total	100.0% 35.4% 570	100.0% 64.6% 1041	100.0% 100.0% 1611	100.0% 29.3% 53	100.0% 70.7% 128	100.0% 100.0% 181	100.0% 22.9% 43	100.0% 77.1% 145	100.0% 100.0% 188

Table B-7b

CHEMICAL ENGINEERING BS and MS GRADUATES
by PLANS FOR FURTHER STUDIES IN FALL 1997, SEX, and DEGREE
1997 ACS Starting Salary Survey

	Female	Male	Total
BS			
Study in Fall of 1997?			
Yes, fulltime	10.2% 58	15.9% 166	13.9% 224
Yes, part-time	4.6% 26	5.7% 59	5.3% 85
No	85.3% 486	78.4% 816	80.8% 1302
Total	100.0% 35.4% 570	100.0% 64.6% 1041	100.0% 100.0% 1611
MS			
Study in Fall of 1997?			
Yes, fulltime	17.0% 9	32.0% 41	27.6% 50
Yes, part-time	1.9% 1	3.1% 4	2.8% 5
No	81.1% 43	64.8% 83	69.6% 126
Total	100.0% 29.3% 53	100.0% 70.7% 128	100.0% 100.0% 181

Table B-8a

CHEMICAL ENGINEERING GRADUATES
by EMPLOYMENT STATUS, CITIZENSHIP, and DEGREE
1997 ACS Starting Salary Survey

	Citizenship				Total
	U.S. Native	U.S. Naturali zed	U.S. Permanent Resident	Other Visa	
BS					
Employment Status					
Fulltime Perm	72.6% 1031	62.3% 71	64.8% 35	19.2% 5	70.8% 1142
Fulltim temp	4.7% 67	10.5% 12	7.4% 4	7.7% 2	5.3% 85
Grad or postdoc	13.1% 186	15.8% 18	13.0% 7	50.0% 13	13.9% 224
Parttime Perm	.4% 5	.0% 0	.0% 0	.0% 0	.3% 5
Parttime temp	1.9% 27	1.8% 2	1.9% 1	3.8% 1	1.9% 31
Unempl seeking	7.0% 99	9.6% 11	13.0% 7	19.2% 5	7.6% 122
Unempl not seeking	.4% 5	.0% 0	.0% 0	.0% 0	.3% 5
MS					
Employment Status					
Fulltime Perm	69.0% 80	28.6% 2	58.8% 10	46.3% 19	61.3% 111
Fulltim temp	3.4% 4	14.3% 1	5.9% 1	4.9% 2	4.4% 8
Grad or postdoc	24.1% 28	42.9% 3	17.6% 3	39.0% 16	27.6% 50
Parttime Perm	.9% 1	.0% 0	.0% 0	.0% 0	.6% 1
Parttime temp	.9% 1	.0% 0	.0% 0	.0% 0	.6% 1
Unempl seeking	1.7% 2	14.3% 1	17.6% 3	9.8% 4	5.5% 10
PHD					
Employment Status					
Fulltime Perm	75.5% 71	60.0% 6	81.5% 22	59.6% 34	70.7% 133
Fulltim temp	4.3% 4	.0% 0	.0% 0	3.5% 2	3.2% 6
Grad or postdoc	17.0% 16	30.0% 3	11.1% 3	35.1% 20	22.3% 42
Parttime Perm	1.1% 1	.0% 0	.0% 0	.0% 0	.5% 1
Unempl seeking	2.1% 2	10.0% 1	7.4% 2	1.8% 1	3.2% 6
Total	100.0% 82.2% 1630	100.0% 6.6% 131	100.0% 4.9% 98	100.0% 6.3% 124	100.0% 100.0% 1983

Table B-8b

CHEMICAL ENGINEERING BS and MS GRADUATES
by PLANS FOR FURTHER STUDIES IN FALL 1997, CITIZENSHIP, and DEGREE
1997 ACS Starting Salary Survey

	Citizenship				Total
	US Native	US Natized	US Perm Res	Temp visa	
BS					
Study in Fall of 1997?					
Yes, fulltime	13.1% 186	15.8% 18	13.0% 7	50.0% 13	13.9% 224
Yes, part-time	4.7% 67	10.5% 12	11.1% 6	.0% 0	5.3% 85
No	82.2% 1167	73.7% 84	75.9% 41	50.0% 13	80.9% 1305
Total	100.0% 88.0% 1420	100.0% 7.1% 114	100.0% 3.3% 54	100.0% 1.6% 26	100.0% 100.0% 1614
MS					
Study in Fall of 1997?					
Yes, fulltime	24.1% 28	42.9% 3	17.6% 3	39.0% 16	27.6% 50
Yes, part-time	2.6% 3	.0% 0	5.9% 1	2.4% 1	2.8% 5
No	73.3% 85	57.1% 4	76.5% 13	58.5% 24	69.6% 126
Total	100.0% 64.1% 116	100.0% 3.9% 7	100.0% 9.4% 17	100.0% 22.7% 41	100.0% 100.0% 181

Table B-9a

CHEMICAL ENGINEERING GRADUATES
by EMPLOYMENT STATUS, ETHNICITY, and DEGREE
1997 ACS Starting Salary Survey

	RACE						Total
	Amer Indian	Asian	Black	Hisp	White	Other	
BS							
Employment Status							
Fulltime Perm	71.4% 5	56.8% 109	54.4% 37	70.2% 40	74.3% 917	38.5% 10	70.5% 1118
Fulltim temp	28.6% 2	10.4% 20	4.4% 3	5.3% 3	4.4% 54	7.7% 2	5.3% 84
Grad or postdoc	.0% 0	21.9% 42	16.2% 11	17.5% 10	12.2% 151	26.9% 7	13.9% 221
Parttime Perm	.0% 0	.0% 0	.0% 0	.0% 0	.4% 5	.0% 0	.3% 5
Parttime temp	.0% 0	1.0% 2	7.4% 5	1.8% 1	1.8% 22	3.8% 1	2.0% 31
Unempl seeking	.0% 0	9.9% 19	17.6% 12	5.3% 3	6.6% 81	23.1% 6	7.6% 121
Unempl not seeking	.0% 0	.0% 0	.0% 0	.0% 0	.4% 5	.0% 0	.3% 5
Total	100.0% 7	100.0% 192	100.0% 68	100.0% 57	100.0% 1235	100.0% 26	100.0% 1585
MS							
Employment Status							
Fulltime Perm	.0% 0	54.2% 26	100.0% 4	.0% 0	67.8% 80	.0% 0	62.1% 110
Fulltim temp	.0% 0	6.3% 3	.0% 0	.0% 0	4.2% 5	.0% 0	4.5% 8
Grad or postdoc	.0% 0	29.2% 14	.0% 0	60.0% 3	23.7% 28	100.0% 2	26.6% 47
Parttime Perm	.0% 0	.0% 0	.0% 0	.0% 0	.8% 1	.0% 0	.6% 1
Parttime temp	.0% 0	.0% 0	.0% 0	.0% 0	.8% 1	.0% 0	.6% 1
Unempl seeking	.0% 0	10.4% 5	.0% 0	40.0% 2	2.5% 3	.0% 0	5.6% 10
Total	.0% 0	100.0% 48	100.0% 4	100.0% 5	100.0% 118	100.0% 2	100.0% 177
PHD							
Employment Status							
Fulltime Perm	100.0% 2	69.0% 40	100.0% 4	75.0% 3	72.6% 77	36.4% 4	70.3% 130
Fulltim temp	.0% 0	1.7% 1	.0% 0	.0% 0	4.7% 5	.0% 0	3.2% 6
Grad or postdoc	.0% 0	27.6% 16	.0% 0	25.0% 1	18.9% 20	45.5% 5	22.7% 42
Parttime Perm	.0% 0	.0% 0	.0% 0	.0% 0	.9% 1	.0% 0	.5% 1
Unempl seeking	.0% 0	1.7% 1	.0% 0	.0% 0	2.8% 3	18.2% 2	3.2% 6
Total	100.0% 2	100.0% 58	100.0% 4	100.0% 4	100.0% 106	100.0% 11	100.0% 185

Table B-9b

CHEMICAL ENGINEERING BS and MS GRADUATES
by PLANS FOR FURTHER STUDIES IN FALL 1997, ETHNICITY, and DEGREE
1997 ACS Starting Salary Survey

	RACER						Total
	Amer Indian	Asian	Black	Hisp	White	Other	
BS							
Study in Fall of 1997?							
Yes, fulltime	.0% 0	21.9% 42	16.2% 11	17.5% 10	12.2% 151	26.9% 7	13.9% 221
Yes, part-time	.0% 0	7.8% 15	2.9% 2	7.0% 4	5.0% 62	7.7% 2	5.4% 85
No	100.0% 7	70.3% 135	80.9% 55	75.4% 43	82.8% 1022	65.4% 17	80.7% 1279
Total	100.0% .4% 7	100.0% 12.1% 192	100.0% 4.3% 68	100.0% 3.6% 57	100.0% 77.9% 1235	100.0% 1.6% 26	100.0% 100.0% 1585
MS							
Study in Fall of 1997?							
Yes, fulltime	.0% 0	29.2% 14	.0% 0	60.0% 3	23.7% 28	100.0% 2	26.6% 47
Yes, part-time	.0% 0	2.1% 1	.0% 0	20.0% 1	2.5% 3	.0% 0	2.8% 5
No	.0% 0	68.8% 33	100.0% 4	20.0% 1	73.7% 87	.0% 0	70.6% 125
Total	.0% .0% 0	100.0% 27.1% 48	100.0% 2.3% 4	100.0% 2.8% 5	100.0% 66.7% 118	100.0% 1.1% 2	100.0% 100.0% 177

Table C-1

CHEMISTRY GRADUATES WHO PLAN PART-TIME STUDIES IN FALL 1997
by FIELD OF ADVANCED STUDY, DEGREE, and SEX
1997 ACS Starting Salary Survey

	Bachelor's			Master's		
	Female	Male	Total	Female	Male	Total
Field of Advanced Study						
Chemistry	26.7% 31	35.2% 43	31.1% 74	10.0% 1	16.7% 3	14.3% 4
Other physical sci	2.6% 3	9.8% 12	6.3% 15	40.0% 4	16.7% 3	25.0% 7
Chem/biochem eng	5.2% 6	5.7% 7	5.5% 13	.0% 0	.0% 0	.0% 0
Other engineering	1.7% 2	4.9% 6	3.4% 8	.0% 0	11.1% 2	7.1% 2
Biochemistry	12.9% 15	4.9% 6	8.8% 21	10.0% 1	11.1% 2	10.7% 3
Life Science	9.5% 11	9.0% 11	9.2% 22	.0% 0	.0% 0	.0% 0
Medicine	5.2% 6	2.5% 3	3.8% 9	.0% 0	.0% 0	.0% 0
Pharmacy	6.9% 8	5.7% 7	6.3% 15	.0% 0	5.6% 1	3.6% 1
Business mgmt	6.0% 7	12.3% 15	9.2% 22	20.0% 2	16.7% 3	17.9% 5
Education	11.2% 13	3.3% 4	7.1% 17	10.0% 1	11.1% 2	10.7% 3
Law	.0% 0	2.5% 3	1.3% 3	.0% 0	.0% 0	.0% 0
Other	12.1% 14	4.1% 5	8.0% 19	10.0% 1	11.1% 2	10.7% 3
Total	100.0% 116	100.0% 122	100.0% 238	100.0% 10	100.0% 18	100.0% 28

Table C-2

BS CHEMISTRY GRADUATES WHO PLAN PART-TIME STUDIES IN FALL 1997
by FIELD OF ADVANCED STUDY and CERTIFICATION
1997 ACS Starting Salary Survey

	Certified to ACS		Total
	Yes	No	
Field of Advanced Study Other physical sci	100.0% 27	100.0% 26	100.0% 53
Total	100.0% 27	100.0% 26	100.0% 53

Table C-3

CHEMICAL ENGINEERING GRADUATES WHO PLAN PART-TIME STUDIES IN FALL 1997
by FIELD OF ADVANCED STUDY, SEX, and DEGREE
1997 ACS Starting Salary Survey

	MS chem engineer		
	Female	Male	Total
Field of Advanced Study Chemistry	100.0% 1	.0% 0	20.0% 1
Chem/biochem eng	.0% 0	50.0% 2	40.0% 2
Other engineering	.0% 0	25.0% 1	20.0% 1
Business mgmt	.0% 0	25.0% 1	20.0% 1
Total	100.0% 1	100.0% 4	100.0% 5

Table C-4

CHEMISTRY GRADUATES WHO PLAN FULL-TIME STUDIES IN FALL 1997
by FIELD OF ADVANCED STUDY, DEGREE, and SEX
1997 ACS Starting Salary Survey

	Bach chemistry			MS chemistry		
	Female	Male	Total	Female	Male	Total
Field of Advanced Study Chemistry	33.3% 260	39.6% 375	36.7% 635	74.7% 59	72.0% 90	73.0% 149
Other physical sci	1.8% 14	2.5% 24	2.2% 38	6.3% 5	4.8% 6	5.4% 11
Chem/biochem eng	.8% 6	1.6% 15	1.2% 21	.0% 0	1.6% 2	1.0% 2
Other engineering	1.0% 8	.6% 6	.8% 14	.0% 0	1.6% 2	1.0% 2
Biochemistry	10.4% 81	7.3% 69	8.7% 150	5.1% 4	4.0% 5	4.4% 9
Life Science	5.8% 45	4.1% 39	4.9% 84	.0% 0	1.6% 2	1.0% 2
Medicine	24.0% 187	27.7% 263	26.0% 450	2.5% 2	3.2% 4	2.9% 6
Dentistry	2.1% 16	3.6% 34	2.9% 50	.0% 0	.8% 1	.5% 1
Pharmacy	7.3% 57	3.6% 34	5.3% 91	1.3% 1	2.4% 3	2.0% 4
Business mgmt	1.0% 8	1.3% 12	1.2% 20	.0% 0	.8% 1	.5% 1
Education	3.6% 28	1.2% 11	2.3% 39	6.3% 5	.8% 1	2.9% 6
Law	1.7% 13	2.0% 19	1.9% 32	1.3% 1	5.6% 7	3.9% 8
Other	7.3% 57	5.0% 47	6.0% 104	2.5% 2	.8% 1	1.5% 3
Total	100.0% 780	100.0% 948	100.0% 1728	100.0% 79	100.0% 125	100.0% 204

Table C-5

BS CHEMISTRY GRADUATES WHO PLAN FULL-TIME STUDIES IN FALL 1997
by FIELD OF ADVANCED STUDY and CERTIFICATION
1997 ACS Starting Salary Survey

Field of Advanced Study	Certified to ACS		Total
	Yes	No	
Chemistry	60.8% 403	21.9% 233	36.8% 636
Other physical sci	3.3% 22	1.5% 16	2.2% 38
Chem/biochem eng	1.8% 12	.8% 9	1.2% 21
Other engineering	1.1% 7	.7% 7	.8% 14
Biochemistry	6.8% 45	9.8% 105	8.7% 150
Life Science	2.0% 13	6.7% 71	4.9% 84
Medicine	13.0% 86	34.1% 364	26.0% 450
Dentistry	.6% 4	4.3% 46	2.9% 50
Pharmacy	3.2% 21	6.6% 70	5.3% 91
Business mgmt	.8% 5	1.4% 15	1.2% 20
Education	1.8% 12	2.5% 27	2.3% 39
Law	1.1% 7	2.3% 25	1.9% 32
Other	3.9% 26	7.3% 78	6.0% 104
Total	100.0% 663	100.0% 1066	100.0% 1729

Table C-6

CHEMICAL ENG GRADUATES WHO PLAN FULL-TIME STUDIES IN FALL 1997
by FIELD OF ADVANCED STUDY, SEX, and DEGREE
1997 ACS Starting Salary Survey

Field of Advanced Study	Bach chen eng			MS chem eng		
	Female	Male	Total	Female	Male	Total
Chemistry	1.7% 1	1.2% 2	1.3% 3	.0% 0	5.0% 2	4.1% 2
Other physical sci	1.7% 1	.6% 1	.9% 2	.0% 0	2.5% 1	2.0% 1
Chem/biochem eng	51.7% 30	59.6% 99	57.6% 129	88.9% 8	77.5% 31	79.6% 39
Other engineering	6.9% 4	7.2% 12	7.1% 16	11.1% 1	2.5% 1	4.1% 2
Biochemistry	.0% 0	.6% 1	.4% 1	.0% 0	.0% 0	.0% 0
Life Science	.0% 0	.6% 1	.4% 1	.0% 0	.0% 0	.0% 0
Medicine	8.6% 5	10.8% 18	10.3% 23	.0% 0	2.5% 1	2.0% 1
Dentistry	.0% 0	.6% 1	.4% 1	.0% 0	.0% 0	.0% 0
Pharmacy	1.7% 1	.6% 1	.9% 2	.0% 0	.0% 0	.0% 0
Business mgmt	8.6% 5	2.4% 4	4.0% 9	.0% 0	2.5% 1	2.0% 1
Education	1.7% 1	.6% 1	.9% 2	.0% 0	.0% 0	.0% 0
Law	8.6% 5	7.2% 12	7.6% 17	.0% 0	5.0% 2	4.1% 2
Other	8.6% 5	7.8% 13	8.0% 18	.0% 0	2.5% 1	2.0% 1
Total	100.0% 58	100.0% 166	100.0% 224	100.0% 9	100.0% 40	100.0% 49

Table D-1

BS CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES
by AGE and SEX
1997 ACS Starting Salary Survey

	FIELD OF HIGHEST DEGREE					
	CHEMISTRY			CHEM ENGINEER		
	Female	Male	Total	Female	Male	Total
under 20	.1% 1	.0% 0	.0% 1	.0% 0	.0% 0	.0% 0
20	.4% 7	.2% 4	.3% 11	.4% 2	.3% 3	.3% 5
21	7.4% 143	4.6% 95	6.0% 238	4.2% 24	1.8% 19	2.7% 43
22	45.0% 867	40.0% 825	42.4% 1692	35.0% 199	28.1% 291	30.5% 490
23	21.3% 410	23.2% 479	22.3% 889	37.1% 211	35.6% 369	36.1% 580
24	8.5% 164	9.7% 200	9.1% 364	10.4% 59	13.9% 144	12.6% 203
25	4.8% 93	5.4% 112	5.1% 205	3.7% 21	5.4% 56	4.8% 77
26	2.0% 38	3.4% 71	2.7% 109	2.1% 12	4.4% 46	3.6% 58
27	1.9% 36	2.4% 49	2.1% 85	.9% 5	2.1% 22	1.7% 27
28	1.3% 25	1.9% 39	1.6% 64	.7% 4	.8% 8	.7% 12
29	1.1% 21	1.5% 30	1.3% 51	.7% 4	1.9% 20	1.5% 24
30 to 34	3.2% 62	4.4% 91	3.8% 153	1.9% 11	3.3% 34	2.8% 45
35 to 39	1.8% 35	1.7% 35	1.8% 70	1.6% 9	1.8% 19	1.7% 28
40 to 49	.9% 17	1.4% 28	1.1% 45	.9% 5	.6% 6	.7% 11
50 to 59	.1% 1	.1% 2	.1% 3	.2% 1	.0% 0	.1% 1
65 and over	.4% 8	.1% 3	.3% 11	.2% 1	.0% 0	.1% 1
Total	100.0% 1928	100.0% 2063	100.0% 3991	100.0% 568	100.0% 1037	100.0% 1605

Table D-2

MS CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES
by AGE and SEX
1997 ACS Starting Salary Survey

	FIELD OF HIGHEST DEGREE					
	CHEMISTRY			CHEM ENGINEER		
	Female	Male	Total	Female	Male	Total
under 20	.0% 0	.3% 1	.2% 1	.0% 0	.0% 0	.0% 0
22	.4% 1	.7% 2	.5% 3	.0% 0	1.6% 2	1.1% 2
23	2.3% 6	2.0% 6	2.2% 12	9.6% 5	1.6% 2	3.9% 7
24	7.7% 20	9.1% 27	8.4% 47	9.6% 5	14.8% 19	13.3% 24
25	13.5% 35	14.1% 42	13.8% 77	19.2% 10	14.8% 19	16.1% 29
26	12.7% 33	16.1% 48	14.5% 81	17.3% 9	19.5% 25	18.9% 34
27	11.9% 31	7.4% 22	9.5% 53	7.7% 4	5.5% 7	6.1% 11
28	6.9% 18	5.7% 17	6.3% 35	3.8% 2	7.0% 9	6.1% 11
29	6.2% 16	6.7% 20	6.5% 36	3.8% 2	5.5% 7	5.0% 9
30 to 34	22.7% 59	22.8% 68	22.8% 127	13.5% 7	14.8% 19	14.4% 26
35 to 39	9.6% 25	8.1% 24	8.8% 49	7.7% 4	9.4% 12	8.9% 16
40 to 49	3.8% 10	4.7% 14	4.3% 24	5.8% 3	3.9% 5	4.4% 8
50 to 59	.8% 2	1.7% 5	1.3% 7	.0% 0	.8% 1	.6% 1
60 to 64	.4% 1	.0% 0	.2% 1	.0% 0	.8% 1	.6% 1
65 and over	1.2% 3	.7% 2	.9% 5	1.9% 1	.0% 0	.6% 1
Total	100.0% 260	100.0% 298	100.0% 558	100.0% 52	100.0% 128	100.0% 180

Tables D-3

PHD CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES
by AGE and SEX
1997 ACS Starting Salary Survey

	FIELD OF HIGHEST DEGREE					
	CHEMISTRY			CHEM ENGINEER		
	Female	Male	Total	Female	Male	Total
25	.4% 1	.5% 3	.5% 4	2.3% 1	1.4% 2	1.6% 3
26	1.4% 4	2.5% 15	2.2% 19	4.7% 2	3.5% 5	3.8% 7
27	18.4% 51	10.6% 64	13.0% 115	16.3% 7	14.7% 21	15.1% 28
28	17.7% 49	17.2% 104	17.3% 153	9.3% 4	15.4% 22	14.0% 26
29	13.7% 38	14.4% 87	14.2% 125	23.3% 10	20.3% 29	21.0% 39
30 to 34	32.5% 90	35.4% 214	34.5% 304	37.2% 16	36.4% 52	36.6% 68
35 to 39	6.9% 19	12.4% 75	10.7% 94	2.3% 1	6.3% 9	5.4% 10
40 to 49	7.2% 20	6.6% 40	6.8% 60	4.7% 2	2.1% 3	2.7% 5
50 to 59	1.8% 5	.3% 2	.8% 7	.0% 0	.0% 0	.0% 0
60 to 64	.0% 0	.2% 1	.1% 1	.0% 0	.0% 0	.0% 0
Total	100.0% 277	100.0% 605	100.0% 882	100.0% 43	100.0% 143	100.0% 186

Tables D-4

POSTDOC CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES
by AGE and SEX
1997 ACS Starting Salary Survey

	FIELD OF HIGHEST DEGREE					
	CHEMISTRY			CHEM ENGINEER		
	Female	Male	Total	Female	Male	Total
25	.7% 1	.6% 2	.7% 3	.0% 0	3.2% 1	2.4% 1
26	1.5% 2	2.5% 8	2.2% 10	10.0% 1	.0% 0	2.4% 1
27	19.3% 26	10.1% 32	12.8% 58	20.0% 2	9.7% 3	12.2% 5
28	16.3% 22	17.6% 56	17.2% 78	.0% 0	6.5% 2	4.9% 2
29	17.0% 23	13.8% 44	14.8% 67	30.0% 3	19.4% 6	22.0% 9
30 to 34	34.8% 47	40.9% 130	39.1% 177	30.0% 3	54.8% 17	48.8% 20
35 to 39	5.9% 8	10.4% 33	9.1% 41	.0% 0	3.2% 1	2.4% 1
40 to 49	4.4% 6	4.1% 13	4.2% 19	10.0% 1	3.2% 1	4.9% 2
Total	100.0% 135	100.0% 318	100.0% 453	100.0% 10	100.0% 31	100.0% 41

Table E-1

OFFERS of FULL-TIME EMPLOYED INEXPERIENCED CHEMISTS
by AGE and SEX
1997 ACS Starting Salary Survey

	Highest Degree								
	BS/BA			MS			PHD		
	Female	Male	Total	Female	Male	Total	Female	Male	Total
1	47.0% 164	47.5% 155	47.3% 319	48.8% 21	55.0% 22	51.8% 43	55.6% 30	45.6% 52	48.8% 82
2	28.7% 100	29.1% 95	28.9% 195	32.6% 14	20.0% 8	26.5% 22	24.1% 13	28.9% 33	27.4% 46
3	18.1% 63	15.6% 51	16.9% 114	11.6% 5	20.0% 8	15.7% 13	11.1% 6	18.4% 21	16.1% 27
4	4.0% 14	3.7% 12	3.9% 26	7.0% 3	2.5% 1	4.8% 4	3.7% 2	2.6% 3	3.0% 5
5	1.7% 6	2.1% 7	1.9% 13	.0% 0	2.5% 1	1.2% 1	3.7% 2	.9% 1	1.8% 3
6 or 7	.3% 1	.3% 1	.3% 2	.0% 0	.0% 0	.0% 0	.0% 0	.9% 1	.6% 1
8 or 9	.0% 0	.3% 1	.1% 1	.0% 0	.0% 0	.0% 0	1.9% 1	.9% 1	1.2% 2
10 OR MORE	.3% 1	1.2% 4	.7% 5	.0% 0	.0% 0	.0% 0	.0% 0	1.8% 2	1.2% 2
Total	100.0% 349	100.0% 326	100.0% 675	100.0% 43	100.0% 40	100.0% 83	100.0% 54	100.0% 114	100.0% 168

Table E-2

OFFERS of FULL-TIME EMPLOYED EXPERIENCED CHEMISTS
by AGE and SEX
1997 ACS Starting Salary Survey

	Highest Degree								
	BS/bA			MS			PHD		
	Female	Male	Total	Female	Male	Total	Female	Male	Total
1	42.0% 63	33.9% 59	37.7% 122	47.6% 30	41.4% 29	44.4% 59	44.0% 11	44.9% 35	44.7% 46
2	32.7% 49	40.2% 70	36.7% 119	33.3% 21	37.1% 26	35.3% 47	40.0% 10	30.8% 24	33.0% 34
3	16.7% 25	17.2% 30	17.0% 55	14.3% 9	12.9% 9	13.5% 18	8.0% 2	16.7% 13	14.6% 15
4	4.7% 7	6.3% 11	5.6% 18	3.2% 2	8.6% 6	6.0% 8	8.0% 2	6.4% 5	6.8% 7
5	2.0% 3	1.7% 3	1.9% 6	1.6% 1	.0% 0	.8% 1	.0% 0	1.3% 1	1.0% 1
6 or 7	1.3% 2	.6% 1	.9% 3	.0% 0	.0% 0	.0% 0	.0% 0	.0% 0	.0% 0
10 OR MORE	.7% 1	.0% 0	.3% 1	.0% 0	.0% 0	.0% 0	.0% 0	.0% 0	.0% 0
Total	100.0% 150	100.0% 174	100.0% 324	100.0% 63	100.0% 70	100.0% 133	100.0% 25	100.0% 78	100.0% 103

Table E-3

OFFERS of FULL-TIME EMPLOYED INEXPERIENCED CHEMICAL ENGINEERS
by DEGREE and SEX
1997 ACS Starting Salary Survey

	Highest Degree								
	BS			MS			PHD		
	Female	Male	Total	Female	Male	Total	Female	Male	Total
1	37.5% 97	44.1% 175	41.5% 272	38.9% 7	42.9% 12	41.3% 19	35.3% 6	45.6% 26	43.2% 32
2	29.7% 77	30.2% 120	30.0% 197	33.3% 6	28.6% 8	30.4% 14	47.1% 8	29.8% 17	33.8% 25
3	18.1% 47	15.1% 60	16.3% 107	11.1% 2	25.0% 7	19.6% 9	11.8% 2	17.5% 10	16.2% 12
4	5.4% 14	6.0% 24	5.8% 38	16.7% 3	.0% 0	6.5% 3	5.9% 1	3.5% 2	4.1% 3
5	5.8% 15	3.3% 13	4.3% 28	.0% 0	3.6% 1	2.2% 1	.0% 0	1.8% 1	1.4% 1
6 or 7	3.5% 9	.8% 3	1.8% 12	.0% 0	.0% 0	.0% 0	.0% 0	.0% 0	.0% 0
8 or 9	.0% 0	.3% 1	.2% 1	.0% 0	.0% 0	.0% 0	.0% 0	1.8% 1	1.4% 1
10 OR MORE	.0% 0	.3% 1	.2% 1	.0% 0	.0% 0	.0% 0	.0% 0	.0% 0	.0% 0
Total	100.0% 259	100.0% 397	100.0% 656	100.0% 18	100.0% 28	100.0% 46	100.0% 17	100.0% 57	100.0% 74

Table E-4

OFFERS of FULL-TIME EMPLOYED EXPERIENCED CHEMICAL ENGINEERS
by DEGREE and SEX
1997 ACS Starting Salary Survey

	Highest Degree								
	BS			MS			PHD		
	Female	Male	Total	Female	Male	Total	Female	Male	Total
1	33.9% 40	31.0% 71	32.0% 111	13.3% 2	39.4% 13	31.3% 15	40.0% 4	51.5% 17	48.8% 21
2	31.4% 37	32.8% 75	32.3% 112	33.3% 5	36.4% 12	35.4% 17	30.0% 3	18.2% 6	20.9% 9
3	22.0% 26	18.3% 42	19.6% 68	26.7% 4	18.2% 6	20.8% 10	10.0% 1	21.2% 7	18.6% 8
4	5.1% 6	8.3% 19	7.2% 25	13.3% 2	6.1% 2	8.3% 4	20.0% 2	3.0% 1	7.0% 3
5	5.1% 6	5.7% 13	5.5% 19	6.7% 1	.0% 0	2.1% 1	.0% 0	.0% 0	.0% 0
6 or 7	.8% 1	2.6% 6	2.0% 7	6.7% 1	.0% 0	2.1% 1	.0% 0	3.0% 1	2.3% 1
8 or 9	.8% 1	.9% 2	.9% 3	.0% 0	.0% 0	.0% 0	.0% 0	3.0% 1	2.3% 1
10 OR MORE	.8% 1	.4% 1	.6% 2	.0% 0	.0% 0	.0% 0	.0% 0	.0% 0	.0% 0
Total	100.0% 118	100.0% 229	100.0% 347	100.0% 15	100.0% 33	100.0% 48	100.0% 10	100.0% 33	100.0% 43

Table F-1

ALL CHEMISTRY GRADUATES
by DEGREE and RACE/ETHNICITY
1997 ACS Starting Salary Survey

	BS/BA					
	RACE					Total
	American Indian	Asian	Black	White	Other	
US Native	100.0% 30	29.5% 155	85.6% 160	95.4% 2887	69.4% 120	85.1% 3352
US Natlzed	.0% 0	45.3% 238	5.9% 11	2.3% 70	19.7% 34	9.0% 353
US Perm Res	.0% 0	20.6% 108	7.5% 14	1.8% 54	7.5% 13	4.8% 189
Temp visa	.0% 0	4.6% 24	1.1% 2	.5% 15	3.5% 6	1.2% 47
Total	100.0% 30	100.0% 525	100.0% 187	100.0% 3026	100.0% 173	100.0% 3941

	MS					
	RACE					Total
	American Indian	Asian	Black	White	Other	
US Native	100.0% 4	4.1% 7	78.6% 11	90.2% 314	60.0% 12	62.7% 348
US Natlzed	.0% 0	13.0% 22	7.1% 1	1.1% 4	5.0% 1	5.0% 28
US Perm Res	.0% 0	17.2% 29	14.3% 2	2.6% 9	15.0% 3	7.7% 43
Temp visa	.0% 0	65.7% 111	.0% 0	6.0% 21	20.0% 4	24.5% 136
Total	100.0% 4	100.0% 169	100.0% 14	100.0% 348	100.0% 20	100.0% 555

	PHD					
	RACE					Total
	American Indian	Asian	Black	White	Other	
US Native	100.0% 4	5.8% 14	68.4% 13	88.5% 521	63.6% 14	64.8% 566
US Natlzed	.0% 0	7.1% 17	.0% 0	2.4% 14	9.1% 2	3.8% 33
US Perm Res	.0% 0	33.3% 80	10.5% 2	3.9% 23	9.1% 2	12.2% 107
Temp visa	.0% 0	53.8% 129	21.1% 4	5.3% 31	18.2% 4	19.2% 168
Total	100.0% 4	100.0% 240	100.0% 19	100.0% 589	100.0% 22	100.0% 874

Table F-2

CITIZENSHIP OF ALL CHEMISTRY GRADUATES
by DEGREE and SEX
1997 ACS Starting Salary Survey

	BS/BA			MS			PHD
	Female	Male	Total	Female	Male	Total	Female
US Native	84.1% 1623	86.1% 1783	85.2% 3406	59.7% 157	64.9% 198	62.5% 355	63.6% 178
US Natlzed	9.1% 176	8.6% 179	8.9% 355	6.1% 16	3.9% 12	4.9% 28	6.1% 17
US Perm Res	5.2% 100	4.4% 91	4.8% 191	12.5% 33	3.9% 12	7.9% 45	15.4% 43
Temp visa	1.6% 30	.9% 18	1.2% 48	21.7% 57	27.2% 83	24.6% 140	15.0% 42
Total	100.0% 1929	100.0% 2071	100.0% 4000	100.0% 263	100.0% 305	100.0% 568	100.0% 280

CITIZENSHIP OF ALL CHEMISTRY GRADUATES ..continued
by DEGREE and SEX
1997 ACS Starting Salary Survey

	PHD	
	Male	Total
US Native	65.6% 398	64.9% 576
US Natlzed	2.6% 16	3.7% 33
US Perm Res	10.7% 65	12.2% 108
Temp visa	21.1% 128	19.2% 170
Total	100.0% 607	100.0% 887

Table F-3

MINORITY CHEMISTRY GRADUATES
by DEGREE and SEX
1997 ACS Starting Salary Survey

	BS/BA			MS			PHD
	Female	Male	Total	Female	Male	Total	Female
RACE/ETHNICITY							
Amer Indian	.6% 12	.8% 16	.7% 28	.4% 1	1.0% 3	.7% 4	.0% 0
Asian	13.9% 265	12.7% 260	13.3% 525	32.4% 83	27.3% 81	29.7% 164	30.1% 83
Black	6.3% 121	2.9% 59	4.6% 180	2.7% 7	2.4% 7	2.5% 14	.7% 2
Hisp	3.5% 67	3.8% 77	3.6% 144	4.3% 11	2.7% 8	3.4% 19	3.3% 9
White	73.5% 1404	77.4% 1579	75.5% 2983	58.2% 149	64.3% 191	61.5% 340	64.1% 177
Other	2.1% 41	2.4% 50	2.3% 91	2.0% 5	2.4% 7	2.2% 12	1.8% 5
Total	100.0% 1910	100.0% 2041	100.0% 3951	100.0% 256	100.0% 297	100.0% 553	100.0% 276

MINORITY CHEMISTRY GRADUATES..continued
by DEGREE and SEX
1997 ACS Starting Salary Survey

	PHD	
	Male	Total
RACE/ETHNICITY		
Amer Indian	.7% 4	.5% 4
Asian	26.4% 157	27.6% 240
Black	2.7% 16	2.1% 18
Hisp	2.5% 15	2.8% 24
White	66.2% 393	65.5% 570
Other	1.5% 9	1.6% 14
Total	100.0% 594	100.0% 870

Table F-4

ALL CHEMICAL ENGINEERING GRADUATES
by DEGREE and RACE/ETHNICITY
1997 ACS Starting Salary Survey

	BS						
	RACE/ETHNICITY						Total
	Amer Indian	Asian	Black	Hisp	White	Other	
US Native	85.7% 6	29.2% 56	86.8% 59	86.0% 49	97.6% 1205	73.1% 19	87.9% 1394
US Natlzed	14.3% 1	46.9% 90	2.9% 2	7.0% 4	1.1% 13	3.8% 1	7.0% 111
US Perm Res	.0% 0	15.6% 30	5.9% 4	7.0% 4	1.1% 14	7.7% 2	3.4% 54
Temp visa	.0% 0	8.3% 16	4.4% 3	.0% 0	.2% 3	15.4% 4	1.6% 26
Total	100.0% 7	100.0% 192	100.0% 68	100.0% 57	100.0% 1235	100.0% 26	100.0% 1585

	MS						Total	PHD RACE/ETHNICITY
	RACE/ETHNICITY					Amer Indian		
	Asian	Black	Hisp	White	Other			
US Native	8.3% 4	100.0% 4	20.0% 1	87.3% 103	.0% 0	63.3% 112	100.0% 2	
US Natlzed	12.5% 6	.0% 0	20.0% 1	.0% 0	.0% 0	4.0% 7	.0% 0	
US Perm Res	20.8% 10	.0% 0	20.0% 1	4.2% 5	50.0% 1	9.6% 17	.0% 0	
Temp visa	58.3% 28	.0% 0	40.0% 2	8.5% 10	50.0% 1	23.2% 41	.0% 0	
Total	100.0% 48	100.0% 4	100.0% 5	100.0% 118	100.0% 2	100.0% 177	100.0% 2	

	PHD					
	RACE/ETHNICITY					Total
	Asian	Black	Hisp	White	Other	
US Native	1.7% 1	75.0% 3	50.0% 2	80.2% 85	9.1% 1	50.8% 94
US Natlzed	3.4% 2	.0% 0	25.0% 1	4.7% 5	18.2% 2	5.4% 10
US Perm Res	25.9% 15	25.0% 1	.0% 0	5.7% 6	27.3% 3	13.5% 25
Temp visa	69.0% 40	.0% 0	25.0% 1	9.4% 10	45.5% 5	30.3% 56
Total	100.0% 58	100.0% 4	100.0% 4	100.0% 106	100.0% 11	100.0% 185

Table F-5

CITIZENSHIP OF ALL CHEMICAL ENGINEERING GRADUATES
by DEGREE and SEX
1997 ACS Starting Salary Survey

	BS			MS			PHD
	Female	Male	Total	Female	Male	Total	Female
US Native	88.2% 503	87.9% 915	88.0% 1418	54.7% 29	68.0% 87	64.1% 116	53.5% 23
US Natlized	7.4% 42	6.8% 71	7.0% 113	3.8% 2	3.9% 5	3.9% 7	9.3% 4
US Perm Res	3.2% 18	3.5% 36	3.4% 54	20.8% 11	4.7% 6	9.4% 17	14.0% 6
Temp visa	1.2% 7	1.8% 19	1.6% 26	20.8% 11	23.4% 30	22.7% 41	23.3% 10
Total	100.0% 570	100.0% 1041	100.0% 1611	100.0% 53	100.0% 128	100.0% 181	100.0% 43

CITIZENSHIP OF ALL CHEMICAL ENGINEERING GRADUATES
by DEGREE and SEX
1997 ACS Starting Salary Survey

	PHD	
	Male	Total
US Native	49.0% 71	50.0% 94
US Natlized	4.1% 6	5.3% 10
US Perm Res	14.5% 21	14.4% 27
Temp visa	32.4% 47	30.3% 57
Total	100.0% 145	100.0% 188

Table F-6

MINORITY CHEMICAL ENGINEERING GRADUATES
by DEGREE and SEX
1997 ACS Starting Salary Survey

	BS			MS			PHD
	Female	Male	Total	Female	Male	Total	Female
RACE/ETHNICITY							
Amer Indian	.5% 3	.4% 4	.4% 7	.0% 0	.0% 0	.0% 0	2.4% 1
Asian	13.5% 76	11.4% 116	12.1% 192	30.8% 16	25.6% 32	27.1% 48	23.8% 10
Black	6.9% 39	2.8% 29	4.3% 68	7.7% 4	.0% 0	2.3% 4	2.4% 1
Hisp	3.9% 22	3.4% 35	3.6% 57	1.9% 1	3.2% 4	2.8% 5	2.4% 1
White	73.8% 417	80.2% 817	77.9% 1234	59.6% 31	69.6% 87	66.7% 118	66.7% 28
Other	1.4% 8	1.8% 18	1.6% 26	.0% 0	1.6% 2	1.1% 2	2.4% 1
Total	100.0% 565	100.0% 1019	100.0% 1584	100.0% 52	100.0% 125	100.0% 177	100.0% 42

MINORITY CHEMICAL ENGINEERING GRADUATES
by DEGREE and SEX
1997 ACS Starting Salary Survey

	PHD	
	Male	Total
RACE/ETHNICITY		
Amer Indian	.7% 1	1.1% 2
Asian	33.6% 48	31.4% 58
Black	2.1% 3	2.2% 4
Hisp	2.1% 3	2.2% 4
White	54.5% 78	57.3% 106
Other	7.0% 10	5.9% 11
Total	100.0% 143	100.0% 185



AMERICAN CHEMICAL SOCIETY
Survey of Starting Salaries and Employment Status of 1997
Chemistry and Chemical Engineering Doctorates

Today's date: — —97
 Month Day

SECTION A. EDUCATION

1. When was your doctorate granted?

—
 Month Year

2. From what educational institution, department, and program did you receive your doctorate?

3. What is the field of your doctorate?

- 01 Chemical engineering
- 02 Agricultural/food chemistry
- 03 Analytical chemistry
- 04 Biochemistry
- 05 Environmental chemistry
- 06 General chemistry
- 07 Inorganic chemistry
- 08 Medicinal/pharmaceutical chemistry
- 09 Organic chemistry
- 10 Physical chemistry
- 11 Polymer chemistry
- 12 Other chemical science
- 13 Other, please specify:

SECTION B. EMPLOYMENT

Please answer all the following questions for your primary employment only as of the week of October 13, 1997.

4. Were you working for pay or profit during the week of October 13, 1997? This includes postdoctoral appointment, being self-employed, or temporarily absent from a job (e.g., illness, vacation, or parental leave), even if unpaid.

- 1 Yes → Go to 6
- 2 No

5. If you were not working for pay or profit during the week of October 13, 1997, were you seeking employment?

- 1 Yes
- 2 No → Go to Section C

If yes, how many months had you spent actively looking for employment?

→ Go to Section C

6. When did you start this primary employment?

—
 Month Year

7. How many months did you spend actively looking for employment before accepting this primary employment?

8. Is this primary employment full-time or part-time?

- 1 Full-time (35+ hrs/wk)
- 2 Part-time (Less than 35 hrs/wk)

If part-time, are you working part-time because a suitable full-time work week job was not available?

- 1 Yes
- 2 No

9. Is this primary employment permanent or temporary?

- 1 Permanent → Go to 10
2 Temporary, scheduled to end:

—
Month Year

If temporary, is the position a postdoctoral appointment?

- 1 Yes
2 No

Are you working in a temporary position because a suitable permanent job was not available?

- 1 Yes
2 No

10. In your primary employment, what is your annual base salary or stipend?

per year

a. If academically employed, is the salary for:

- 1 9-10 months of work, even if paid over 12 months
2 11-12 months

11. How many firm offers of employment did you receive in a field of chemistry or chemical engineering?

Specify number

12. How much professional or technical work experience had you prior to graduation?

- 1 Zero to 12 months
2 12 to 36 months
3 More than 36 months

13. What is the one specialty most related to your primary employment?

- 1 Chemical engineering
2 Chemistry (including biochemistry)
3 Other, please specify:

14. Which job search methods did you use?

Please check all that apply

- 01 Faculty advisor(s)
02 Informal channel, e.g., colleague or friend
03 Newspaper advertisement
04 Newsletter/magazine/journal, please specify:
05 Placement service (e.g., campus, conference) please specify:
06 Employment agency
07 Met employer through former job or position
08 Sent unsolicited vita or resume
09 Received unsolicited offer
10 Electronic resource, please specify:
11 Other, please specify:

a. Which was the one most effective job search method? Use the codes listed above.

15. Are you currently actively looking for another position?

- 1 Yes
2 No

16. What are your primary and secondary work activities in your primary employment?

Please check one in each column.

One Primary One Secondary

Teaching
Management or administration
Research
Development/Design
Production/QC
Professional services (e.g., consulting)
Other, please specify:

17. In your primary employment, in what sector do you work? Please choose the one category that best describes your employer.

Educational institution

- 01 Four-year college or university
- 02 University medical or prof'l school
- 03 Two-year college
- 04 Elementary/secondary school or system
- 05 Other academic, please specify:

Business/Industry

- 06 Non-manufacturing
- 07 Aerospace
- 08 Agricultural chemicals
- 09 Basic chemicals
- 10 Electronics
- 11 Petroleum/natural gas
- 12 Pharmaceutical/personal care
- 13 Plastics
- 14 Specialty chemicals
- 15 Other manufactures, please specify:

Government

- 16 Federal government (civilian)
- 17 Military
- 18 State or local government
- 19 Other government, please specify:

Other non-academic employer

- 20 Hospital or independent laboratory
- 21 Nonprofit organization
- 22 Other research institute

Self-employed

- 23 Please specify:

Other

- 24 Please specify:

18. Geographic location of employment. Please give the first three digits of zip code:

19. Employer's approximate number of employees (total for the whole organization):

- 1 Less than 50
- 2 50 to 99
- 3 100 to 499
- 4 500 to 2,499
- 5 2,500 to 9,999
- 6 10,000 to 24,999
- 7 25,000 or more

Please select one response to indicate your agreement or disagreement with the statements in items 20-23 regarding your primary employment.

20. The position is related to my field.

- 1 Strongly Agree
- 2 Agree
- 3 No Opinion
- 4 Disagree
- 5 Strongly Disagree

21. The position is commensurate with my education/training.

- 1 Strongly Agree
- 2 Agree
- 3 No Opinion
- 4 Disagree
- 5 Strongly Disagree

22. The position is similar to what I expected to be doing when I began my doctoral program.

- 1 Strongly Agree
- 2 Agree
- 3 No Opinion
- 4 Disagree
- 5 Strongly Disagree

23. My position is professionally challenging.

- 1 Strongly Agree
- 2 Agree
- 3 Not Applicable
- 4 Disagree
- 5 Strongly Disagree

**SECTION C. OTHER BACKGROUND
INFORMATION****24. What is your sex?**

- 1 Female
- 2 Male

25. What is your citizenship or visa status?

- 1 U.S. native
- 2 U.S. naturalized
- 3 U.S. permanent resident visa
- 4 Temporary visa

26. What is your age?

Years

Your comments will be appreciated.

27. Are you Hispanic?

- 1 Yes
- 2 No

28. What is your racial background?

- 1 American Indian or Alaskan Native
- 2 Asian or Pacific Islander
- 3 Black
- 4 White
- 5 Other

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