STARTING SALARIES
Of Chemists and Chemical Engineers

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

1992
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OF CHEMISTS AND CHEMICAL ENGINEERS
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American Chemical Society’s
Survey of Graduates in
Chemistry and Chemical Engineering

American Chemical Society
1155 Sixteenth Street, NW
Washington, DC 20036

Available from the Distribution Office, ACS
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ACKNOWLEDGMENTS

Each year, at the direction of its Joint Board-Council Committee on Economic Status, 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 1992 Starting Salary Survey. A summary of the survey findings was published in the October 19 issue of Chemical & Engineering News.

Joan Burrelli and Karen Dyson of the Office of Professional Services conducted this year's survey and prepared this report. Dr. Burrelli wrote the summary and comment on the following pages. Special thanks go to the more than 4,000 graduates who took the time to respond to this year's survey.

Mary L. Funke, Manager
Office of Professional Services
SUMMARY OF FINDINGS

SALARIES

This year’s starting salaries indicate an improving economic outlook for new BS chemistry graduates. The median salary for inexperienced BS chemists increased to $24,000 this year, up from $23,000 for the previous three years. The mean starting salary was $24,764 this year, almost 4% higher than last year’s $23,858. After adjusting for inflation, mean salaries increased 1% this year.

Starting salaries for MS and PhD chemists increased less than those for BS chemists this year. The mean starting salary for MS chemists rose 1% this year to $31,626. The mean starting salary for PhD chemists rose 3.5% this year to $43,499. Inflation adjusted salaries for MS chemists decreased 2%; those for PhD chemists were little changed.

Chemical engineering graduates at all degree levels continue to earn higher salaries than those of chemists and the gap is getting larger over time. Starting salaries for new chemical engineering graduates continued to increase this year. The mean starting salary for inexperienced BS chemical engineers was $38,235 in 1992, up 4% from the $36,632 last year. Mean starting salaries for inexperienced MS chemical engineers rose 1% to $40,162, and for inexperienced PhD chemical engineers, they rose 4% to $52,368.

Table 1 shows average starting salaries paid to inexperienced chemistry graduates for 1991 and 1992, and gives additional information concerning the variation among individual salaries within each group. Table 2 presents corresponding information for chemical engineering graduates.

For inexperienced chemists (those with less than 12 months of experience), 1992 mean starting salaries were:

- $24,764 for the BS, up 3.8%, or in constant dollars up 0.7%
- $31,626 for the MS, up 1.3%, or in constant dollars down 1.7%
- $43,499 for the PhD, up 3.5%, or in constant dollars up 0.4%

Among chemical engineers, the 1992 mean starting salaries were:

- $38,235 for the BS, up 4.4%, or in constant dollars up 1.2%
- $40,162 for the MS, up 1.2%, or in constant dollars down 1.9%
- $52,368 for the PhD, up 3.7% or in constant dollars up 0.6%

The Consumer Price Index rose 3.1% from August 1991 to August 1992. The trends in median starting salaries from 1982 to the present for inexperienced chemists and chemical engineers are shown in Figures 1 and 2.

Salaries vary by the type and characteristics of the employer as well as the educational background of the graduates. Salaries are highest in private industry and lowest in colleges or universities. The median salary for new chemistry PhDs was $50,600 for those employed in industry and $28,000 for those employed in colleges or universities (see Table A-6). Similarly, salaries are highest for chemists in management ($28,600 for new BS graduates) and lowest in teaching ($22,800 for new BS graduates) (see Table A-11).
Table 1

STARTING YEARLY SALARIES
OF INEXPERIENCED FULL-TIME EMPLOYED
CHEMISTRY GRADUATES

by Degree: 1991 and 1992

<table>
<thead>
<tr>
<th>Salaries</th>
<th>Bachelor's</th>
<th>Master's</th>
<th>Doctorate</th>
</tr>
</thead>
<tbody>
<tr>
<td>90th Percentile</td>
<td>$31,500</td>
<td>$32,000</td>
<td>$40,000</td>
</tr>
<tr>
<td>75th Percentile</td>
<td>28,000</td>
<td>28,100</td>
<td>36,000</td>
</tr>
<tr>
<td>50th Percentile</td>
<td>23,000</td>
<td>24,000</td>
<td>32,000</td>
</tr>
<tr>
<td>25th Percentile</td>
<td>20,000</td>
<td>21,000</td>
<td>27,500</td>
</tr>
<tr>
<td>10th Percentile</td>
<td>17,400</td>
<td>18,100</td>
<td>21,100</td>
</tr>
<tr>
<td>Mean</td>
<td>23,858</td>
<td>24,764</td>
<td>31,218</td>
</tr>
<tr>
<td>Count</td>
<td>354</td>
<td>371</td>
<td>54</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>5,156</td>
<td>5,353</td>
<td>6,946</td>
</tr>
</tbody>
</table>
### Table 2

**STARTING YEARLY SALARIES OF INEXPERIENCED FULL-TIME EMPLOYED CHEMICAL ENGINEERING GRADUATES**

by Degree: 1991 and 1992

<table>
<thead>
<tr>
<th>Salaries</th>
<th>Bachelor's</th>
<th>Master's</th>
<th>Doctorate</th>
<th>Bachelor's</th>
<th>Master's</th>
<th>Doctorate</th>
</tr>
</thead>
<tbody>
<tr>
<td>90th Percentile</td>
<td>$40,000</td>
<td>$41,900</td>
<td>$44,000</td>
<td>$44,800</td>
<td>$56,000</td>
<td>$58,000</td>
</tr>
<tr>
<td>75th Percentile</td>
<td>38,900</td>
<td>40,500</td>
<td>41,000</td>
<td>43,500</td>
<td>54,000</td>
<td>56,400</td>
</tr>
<tr>
<td>50th Percentile</td>
<td>37,500</td>
<td>40,000</td>
<td>40,200</td>
<td>41,500</td>
<td>52,000</td>
<td>54,000</td>
</tr>
<tr>
<td>25th Percentile</td>
<td>36,000</td>
<td>37,900</td>
<td>37,500</td>
<td>39,700</td>
<td>48,000</td>
<td>52,000</td>
</tr>
<tr>
<td>10th Percentile</td>
<td>32,000</td>
<td>31,300</td>
<td>35,100</td>
<td>30,000</td>
<td>44,200</td>
<td>40,000</td>
</tr>
<tr>
<td>Mean</td>
<td>36,632</td>
<td>38,235</td>
<td>39,695</td>
<td>40,162</td>
<td>50,497</td>
<td>52,368</td>
</tr>
<tr>
<td>Count</td>
<td>318</td>
<td>267</td>
<td>26</td>
<td>22</td>
<td>64</td>
<td>47</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>4,161</td>
<td>4,299</td>
<td>5,539</td>
<td>4,896</td>
<td>6,298</td>
<td>7,268</td>
</tr>
</tbody>
</table>
Figure 1

Median Starting Salaries of Inexperienced Chemists
(in current dollars)

Source: ACS Starting Salary Surveys

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BS</td>
<td>15.0</td>
<td>17.7</td>
<td>17.0</td>
<td>16.5</td>
<td>18.8</td>
<td>19.5</td>
<td>18.6</td>
<td>20.0</td>
<td>21.9</td>
<td>23.0</td>
<td>23.0</td>
<td>23.0</td>
<td>24.0</td>
</tr>
<tr>
<td>MS</td>
<td>20.0</td>
<td>21.3</td>
<td>24.1</td>
<td>24.9</td>
<td>26.0</td>
<td>27.0</td>
<td>26.1</td>
<td>28.0</td>
<td>27.7</td>
<td>30.3</td>
<td>30.0</td>
<td>32.0</td>
<td>31.5</td>
</tr>
<tr>
<td>PhD</td>
<td>26.4</td>
<td>29.5</td>
<td>32.4</td>
<td>33.6</td>
<td>34.2</td>
<td>35.8</td>
<td>38.0</td>
<td>38.4</td>
<td>40.5</td>
<td>42.0</td>
<td>44.0</td>
<td>46.0</td>
<td>47.5</td>
</tr>
</tbody>
</table>

*Base annual salary in thousands of dollars

Source: ACS Starting Salary Surveys
Figure 2

Median Starting Salaries of Inexperienced Chemical Engineers
(in current dollars)

Source: ACS Starting Salary Surveys

Median Starting Salaries of Inexperienced Chemical Engineers*
(in current dollars)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BS</td>
<td>21.6</td>
<td>24.5</td>
<td>26.7</td>
<td>26.1</td>
<td>27.0</td>
<td>28.0</td>
<td>28.4</td>
<td>30.0</td>
<td>31.0</td>
<td>33.0</td>
<td>35.2</td>
<td>37.5</td>
<td>40.0</td>
</tr>
<tr>
<td>MS</td>
<td>23.9</td>
<td>26.0</td>
<td>29.0</td>
<td>29.2</td>
<td>30.3</td>
<td>31.4</td>
<td>31.0</td>
<td>32.5</td>
<td>33.0</td>
<td>36.0</td>
<td>37.2</td>
<td>40.2</td>
<td>41.5</td>
</tr>
<tr>
<td>PhD</td>
<td>28.8</td>
<td>31.5</td>
<td>35.0</td>
<td>38.0</td>
<td>39.9</td>
<td>40.0</td>
<td>41.5</td>
<td>43.0</td>
<td>44.4</td>
<td>47.0</td>
<td>50.0</td>
<td>52.0</td>
<td>54.0</td>
</tr>
</tbody>
</table>

*Base annual salary in thousands of dollars

Source: ACS Starting Salary Surveys
Larger employers generally pay more than smaller ones. BS chemists and chemical engineers employed in larger firms (more than 24,000 employees) make $6,000-$8,000 more, on average, than those employed in smaller firms (less than 500 employees) (see Tables A-10 and A-20). Chemical engineers are much more likely than chemists to be employed in large firms. Forty-one percent of new chemical engineers and only 20% of new chemists are employed in firms with more than 24,000 employees. Conversely, more than a third (37%) of chemists, but only 9% of chemical engineers, are employed in firms with less than 500 employees.

Salaries for new BS chemistry graduates are highest in the Middle Atlantic region ($25,500) and lowest in the West North Central region ($21,600). Median salaries for new BS chemical engineers vary from a high of $40,500 in the West South Central region to a low of $37,000 in the South Atlantic region. (See page 16 for a list of the states included in each geographic region.)

Generally speaking, bachelor's chemists and chemical engineers receive higher starting salaries if they have participated in co-op programs, or if they had a high grade point average in their major.

POST-GRADUATION EMPLOYMENT STATUS

Unemployment rates for bachelor's chemistry and chemical engineering graduates decreased this year. The recent history for unemployment rates of bachelor's graduates is:

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Engineering</td>
<td>8%</td>
<td>9%</td>
<td>6%</td>
<td>5%</td>
<td>8%</td>
<td>16%</td>
<td>21%</td>
</tr>
<tr>
<td>Chemistry</td>
<td>10%</td>
<td>14%</td>
<td>13%</td>
<td>10%</td>
<td>11%</td>
<td>13%</td>
<td>13%</td>
</tr>
</tbody>
</table>

As Figure 3 shows, unemployment for both chemistry and chemical engineering graduates was relatively high in the mid-1980s, and relatively low in 1988 and 1989, especially for chemical engineering graduates, and has been somewhat higher the past two years.

Chemistry graduates are finding it a little easier this year than last to get jobs in chemistry, indicating a coming end to the recession. The proportion of new bachelor's chemistry graduates who found employment in chemistry or chemical engineering increased this year: 65% found employment in chemistry or chemical engineering this year, compared to last year's 62%. This year, 79% of bachelor's chemical engineering graduates in the labor force found employment in chemistry and chemical engineering—the same figure as last year's.

* Note that the calculation for the unemployment rate excludes those persons who are not seeking employment.
Figure 3

Unemployment Rates of Recent Bachelor's Graduates

Source: ACS Starting Salary Surveys
Table 3

POST GRADUATION STATUS OF CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES: FALL 1992

<table>
<thead>
<tr>
<th>Major and Employment Status</th>
<th>Bachelor's</th>
<th>Master's</th>
<th>Doctorate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CHEMISTRY</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time employed:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In chemistry or chemical engineering</td>
<td>32.3%</td>
<td>44.7%</td>
<td>46.3%</td>
</tr>
<tr>
<td>Outside chemistry or chemical engineering</td>
<td>8.2%</td>
<td>7.3%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Grad. asst./postdoctoral or other fellowship</td>
<td>42.3%</td>
<td>40.6%</td>
<td>45.3%</td>
</tr>
<tr>
<td>Unemployed and seeking full-time employment</td>
<td>8.9%</td>
<td>5.8%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Unemployed and not seeking full-time employment</td>
<td>8.3%</td>
<td>1.5%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Number of responses</td>
<td>2,071</td>
<td>342</td>
<td>512</td>
</tr>
<tr>
<td><strong>CHEMICAL ENGINEERING</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time employed:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In chemistry or chemical engineering</td>
<td>62.4%</td>
<td>45.0%</td>
<td>73.8%</td>
</tr>
<tr>
<td>Outside chemistry or chemical engineering</td>
<td>8.6%</td>
<td>6.7%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Grad. asst./postdoctoral or other fellowship</td>
<td>18.3%</td>
<td>42.5%</td>
<td>15.0%</td>
</tr>
<tr>
<td>Unemployed and seeking full-time employment</td>
<td>8.1%</td>
<td>5.0%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Unemployed and not seeking full-time employment</td>
<td>2.6%</td>
<td>.8%</td>
<td>----</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Number of responses</td>
<td>694</td>
<td>120</td>
<td>107</td>
</tr>
</tbody>
</table>
NUMBER OF OFFERS

The number of firm offers of employment was up this year for BS chemistry graduates. The number of offers generally follows the economy, as can be seen from the following:

14
12
10
8
6
4
2
0
% with 5 or more offers of employment

New PhD chemistry graduates had more offers of employment, on average, than master’s or bachelor’s graduates, and new chemical engineering graduates had more offers of employment than chemistry graduates. Experience made no difference in average number of offers of employment: both inexperienced and experienced BS chemistry graduates had, on average, two offers of employment. Among new PhD chemists, those whose field was biochemistry, analytical, inorganic, or polymer chemistry had more offers, on average, than those in other fields.

POSTDOCTORAL FELLOWSHIPS

The fraction of new PhDs who accept postdoctoral fellowships is another 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 fraction accepting postdoctoral fellowships can indicate insufficient full-time employment. This year, this measure of demand indicates a less favorable employment situation for PhD chemistry graduates than was the case last year: 45% of new chemistry doctorates accepted postdoctoral fellowships this year compared with 37% last year (Table 3). The fraction of new chemical engineering doctorates taking postdocs also increased: 15% of new chemical engineering doctorates accepted postdoctoral fellowships this year compared with 8% in 1991.

PLANS FOR ADVANCED STUDY

Traditionally, between 50% and 55% of bachelor's chemistry graduates plan full-time studies (in any field) and another roughly 10% plan part-time studies. Bachelor's chemical engineering graduates are much less likely than chemistry graduates to plan further studies. Only 22% planned full-time studies this year. A summary of the plans of the 1992 graduates appears in Tables 4 and 5.

Each year, roughly one-third of new bachelor's chemistry graduates plan to pursue chemistry graduate study, one-third plan graduate study in another field, and one-third have plans for immediate employment (see Figure 4). Of those bachelor's chemistry graduates who planned further studies in another discipline in 1992, slightly more than half (51%) planned to go into medicine, 12% planned to go into dentistry or pharmacy, 3% planned to study business, 15%
Figure 4

Post-graduation Plans of 1992 BS Chemistry Graduates

- 7,900 BS Chemistry Graduates
  - 2,674 ACS Survey Respondents
    - 33% Chemistry Graduate Study
      - Source of Support:
        - 82% Assistantship, other fellowship
        - 9% Full-time empl.
        - 6% Part-time/temp empl.
        - 3% Other
    - 30% Other Graduate Study
      - 4% Other phys. sci.
      - 5% Engineering
      - 6% Life Sciences
      - 51% Medicine
      - 12% Dentist/Pharm
      - 3% Business
      - 4% Education
      - 2% Law
      - 12% Other
    - 36% Employment Plans
      - 90% Employed
        - 67% Industry
        - 4% College or Univ
        - 5% High School
        - 8% Fed or state govt
        - 4% Military
        - 9% Hospital or indep lab
        - 3% Other
      - 10% Seeking Employment
    - 1% Undecided
Table 4

PLANS FOR FURTHER STUDY OF BS CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES: FALL 1992

<table>
<thead>
<tr>
<th>Plans</th>
<th>Chemistry</th>
<th>Chemical Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Further studies</td>
<td>62.7%</td>
<td>30.1%</td>
</tr>
<tr>
<td>Full-time</td>
<td>(55.2%)</td>
<td>(22.4%)</td>
</tr>
<tr>
<td>Part-time</td>
<td>(7.5%)</td>
<td>(7.7%)</td>
</tr>
<tr>
<td>No plans for further studies</td>
<td>37.3%</td>
<td>69.8%</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Number of responses</td>
<td>2,667</td>
<td>749</td>
</tr>
</tbody>
</table>

Table 5

FIELDS OF STUDY OF BS CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES WHO PLAN FURTHER STUDIES FALL 1992

<table>
<thead>
<tr>
<th>Plans</th>
<th>Chemistry</th>
<th>Chemical Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FULL-TIME STUDY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemistry or biochemistry</td>
<td>54.6%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Chemical or biochemical engineering</td>
<td>1.2%</td>
<td>73.8%</td>
</tr>
<tr>
<td>Other engineering</td>
<td>.8%</td>
<td>6.0%</td>
</tr>
<tr>
<td>Medicine, dentistry, or pharmacy</td>
<td>32.4%</td>
<td>11.3%</td>
</tr>
<tr>
<td>Business or management</td>
<td>.5%</td>
<td>----%</td>
</tr>
<tr>
<td>All others</td>
<td>10.5%</td>
<td>6.5%</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Number of responses</td>
<td>1,455</td>
<td>168</td>
</tr>
<tr>
<td><strong>PART-TIME STUDY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemistry or biochemistry</td>
<td>45.4%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Chemical or biochemical engineering</td>
<td>4.0%</td>
<td>39.7%</td>
</tr>
<tr>
<td>Other engineering</td>
<td>2.0%</td>
<td>12.1%</td>
</tr>
<tr>
<td>Physical science</td>
<td>6.1%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Life science</td>
<td>8.1%</td>
<td>-------</td>
</tr>
<tr>
<td>Medicine, dentistry, or pharmacy</td>
<td>6.0%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Business or management</td>
<td>9.6%</td>
<td>31.0%</td>
</tr>
<tr>
<td>Education</td>
<td>6.1%</td>
<td>1.7%</td>
</tr>
<tr>
<td>All others</td>
<td>12.6%</td>
<td>8.7%</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Number of responses</td>
<td>198</td>
<td>58</td>
</tr>
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</table>
planned to study other natural sciences and engineering and 18% planned to go into other fields. The choice of field of study has not changed appreciably in the last decade.

Of those bachelor's chemistry graduates who chose immediate employment, the majority chose industrial employment. Of those who are employed, 67% are employed in industry, and about 10% each are employed in academia, in government, and in hospitals or independent labs.

CHEMISTRY GRADUATES WHO HAVE COMPLETED ACS APPROVED PROGRAMS

Graduates completing undergraduate chemistry programs approved by the ACS Committee on Professional Training have historically received higher starting salaries than graduates completing non-approved programs. This year, however, both graduates who completed the ACS approved programs and those who did not complete the approved program, earned, on average, $25,000 per year in industry.

Graduates of approved programs are more likely than graduates of non-approved programs to plan further studies and to plan further studies in chemistry. Fifty-nine percent of graduates of approved programs planned full-time studies compared with 42% of graduates of non-approved programs (Table B-4b). Of the bachelor's chemistry graduates who plan full-time studies, most (69%) of those from approved programs plan to study chemistry, compared with only 24% of those from non-approved programs. Conversely, 40% of those from non-approved programs plan to study medicine compared with only 12% of those from approved programs (Table C-5).

Graduates of approved programs are also less likely than those from non-approved programs to be unemployed and among those employed, are more likely to be employed in chemistry or chemical engineering. The unemployment rate for bachelor's graduates of approved programs was 6% this year, compared to 13% for graduates of non-approved programs (Table B-4a).* Among the full-time employed bachelor's chemistry graduates, 82% of graduates of ACS approved programs, but only 78% of graduates of non-approved programs, were employed in chemistry or chemical engineering.

EMPLOYMENT OF BACHELOR'S CHEMISTS AS TECHNICIANS

About 36% 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 not employed as technicians. The median salary of bachelor's chemistry graduates employed in industry as technicians was $23,800 whereas the median salary of those not employed as technicians was $26,400.

RACE/ETHNIC COMPOSITION OF NEW GRADUATES

Minorities, and particularly Asians, are an increasing fraction 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% and Hispanics were 7% of bachelor's chemistry graduates. This year, African-Americans are 3% and Hispanics are 2.4% of bachelor's chemistry graduates. Native Americans are a very small proportion (1% or less) of new graduates in chemistry and chemical engineering at all degree levels.

* Note that the calculation for the unemployment rate excludes those persons who are not seeking employment.
The proportion of new chemistry graduates who are Asian has trebled since 1973. In that year, Asians were 3% of bachelor's, 9% of master's, and 9% of PhD graduates. This year, Asians are 8% of bachelor's, 28% of master's, and 29% of PhD graduates. More than three-quarters (79%) of bachelor's chemistry graduates of Asian descent are U.S. citizens (either native or naturalized). Only 6% are here on temporary visas. The reverse is true for PhDs. Only 8% of doctoral chemistry graduates of Asian decent are U.S. citizens and the majority (80%) are here on temporary visas.
SCOPE AND METHOD

OBJECTIVES

The 1992 Starting Salary Survey is the 41st in the series of annual surveys conducted by the American Chemical Society. Summaries of the results of these surveys appear annually in the "Employment Outlook" edition of the Chemical & Engineering News. This year preliminary results were published on October 19.

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 1991-92 academic year. The survey covers bachelor's, master's and doctoral degree recipients. In addition, 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 September, 1991 and June, 1992. Approximately one-fourth of all departments provided names and addresses to ACS by the end of August. During the summer of 1992, 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 from July through August to 9,209 graduates. Approximately 3 weeks after each initial mailing, a second questionnaire and cover letter were sent to non-respondents. By the cutoff date of October 12, ACS had received 4,682 usable responses. Another 482 questionnaires were returned as non deliverable. A comparison of characteristics of respondents with graduates from departments that did not participate in the survey and with graduates who did not mail back completed questionnaires can be found in the Technical Notes.

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. The term "chemical engineer" refers to one who received a degree in chemical engineering. Salary tables are based only on salaries of those who found full-time employment in chemistry or chemical engineering. Postdoctoral salaries are analyzed separately. Salaries are reported in U.S. dollars.

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 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 PhDs 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

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

In Table B-1a for example, 2,071 respondents classified as chemists indicated their highest degree as the bachelor's degree. The percent of this group who are seeking employment is listed as 8.9% (p=8.9). A "95% confidence interval" for this percent may be approximated by taking n and p to be about 2000 and 10%. The above table shows an approximate sampling error of 1.3%. Hence, the 95% confidence interval is 7.6% to 10.2%. 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.

NONRESPONSE AND SAMPLING ERROR

A comparison of several characteristics of the 1992 respondents with characteristics of the sample reveals that respondents were slightly more likely than nonrespondents to have bachelor's degrees, to be chemical engineering graduates, and if chemistry graduates, to have completed ACS approved programs.

Comparison of Survey Results and Sample Characteristics, 1992

<table>
<thead>
<tr>
<th></th>
<th>Starting Salary Respondents</th>
<th>Sample Characteristics</th>
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<tr>
<td></td>
<td>1992</td>
<td>1992</td>
</tr>
<tr>
<td></td>
<td>N=4,682</td>
<td>N=9,209</td>
</tr>
<tr>
<td>Chemistry</td>
<td>78%</td>
<td>80%</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>22%</td>
<td>20%</td>
</tr>
<tr>
<td>Chemistry Bachelor's</td>
<td>75%</td>
<td>73%</td>
</tr>
<tr>
<td>Master's</td>
<td>10%</td>
<td>12%</td>
</tr>
<tr>
<td>Doctorate</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>Bachelor's ACS approved</td>
<td>45%</td>
<td>42%</td>
</tr>
<tr>
<td>Non-approved</td>
<td>55%</td>
<td>58%</td>
</tr>
<tr>
<td>Chemical Engineering Bachelor's</td>
<td>76%</td>
<td>73%</td>
</tr>
<tr>
<td>Master's</td>
<td>13%</td>
<td>16%</td>
</tr>
<tr>
<td>Doctorate</td>
<td>11%</td>
<td>11%</td>
</tr>
</tbody>
</table>
Comparisons between the 1991 sample and the 1991 population of graduates (the last year for which data are currently available) indicate that the sample drawn was slightly biased toward BS graduates and chemistry graduates. Departments that send in the names and addresses of graduates before September have slightly more bachelor’s graduates, slightly less MS and PhD graduates, and are slightly more likely to be chemistry than chemical engineering departments.

**Comparison of Survey Results, Sample Characteristics, and Population Characteristics, 1991**

<table>
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<tr>
<th>Salary Results 1991</th>
<th>Sample Characteristics 1991</th>
<th>Characteristics of All graduates 1991</th>
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<tbody>
<tr>
<td>N=4,662</td>
<td>N=9,001</td>
<td>N=16,184</td>
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<tr>
<td>Chemistry</td>
<td>75%</td>
<td>76%</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>25%</td>
<td>24%</td>
</tr>
<tr>
<td>Chemistry Bachelor's</td>
<td>73%</td>
<td>72%</td>
</tr>
<tr>
<td>Master's</td>
<td>10%</td>
<td>12%</td>
</tr>
<tr>
<td>Doctorate</td>
<td>17%</td>
<td>16%</td>
</tr>
<tr>
<td>Bachelor's ACS approved</td>
<td>45%</td>
<td>40%</td>
</tr>
<tr>
<td>Non-approved</td>
<td>55%</td>
<td>60%</td>
</tr>
<tr>
<td>Chemical Engineering Bachelor's</td>
<td>74%</td>
<td>72%</td>
</tr>
<tr>
<td>Master's</td>
<td>14%</td>
<td>16%</td>
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<tr>
<td>Doctorate</td>
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<td>11%</td>
</tr>
<tr>
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<td>Page</td>
<td></td>
</tr>
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<td>A-19</td>
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<td>A-22</td>
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</table>

**LIST OF TABLES**

**SALARIES OF RESPONDENTS**

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<thead>
<tr>
<th>Full-time Chemists</th>
<th>Degree</th>
<th>Experience</th>
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<tbody>
<tr>
<td>Full-time Chemical Engineers</td>
<td>Degree</td>
<td>Experience</td>
<td>A-2</td>
<td>26</td>
</tr>
<tr>
<td>Full-time Inexperienced Chemists in Private Industry</td>
<td>Degree</td>
<td>Sex</td>
<td>A-3</td>
<td>27</td>
</tr>
<tr>
<td>Full-time Inexperienced Chemical Engineers in Private Industry</td>
<td>Degree</td>
<td>Sex</td>
<td>A-4</td>
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</table>

<table>
<thead>
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<tr>
<td>Men</td>
<td>A-7</td>
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<tr>
<td>Women</td>
<td>A-8</td>
<td></td>
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<tr>
<td>Industry</td>
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<td>Work Function</td>
<td>A-11</td>
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<td>ACS-Approved Curriculum</td>
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<tr>
<td>Degree Specialty</td>
<td>MS and PhD</td>
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<td>Geographic Region</td>
<td>A-14</td>
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<table>
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<th>Full-time Inexperienced Chemical Engineers</th>
<th>Degree</th>
<th>Sex</th>
<th>A-15</th>
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<tbody>
<tr>
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<td>Industry</td>
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<td>Work Function</td>
<td>A-21</td>
<td></td>
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<td>45</td>
</tr>
<tr>
<td>Geographic Region</td>
<td>A-22</td>
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<td></td>
<td>46</td>
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### EMPLOYMENT STATUS

<table>
<thead>
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<th>Employment Status</th>
<th>Degree</th>
<th>Sex</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Chemists</td>
<td>B-1a</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>Plans for Advanced Study</td>
<td>B-1b</td>
<td>48</td>
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<td>B-2a</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>Plans for Advanced Study</td>
<td>B-2b</td>
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<td>Citizenship</td>
<td>B-3a</td>
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<td>Citizenship</td>
<td>B-3b</td>
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<td>ACS Approved Curriculum</td>
<td>BS</td>
<td>B-4a</td>
</tr>
<tr>
<td>Plans for Advanced Study</td>
<td>ACS Approved Curriculum</td>
<td>BS</td>
<td>B-4b</td>
</tr>
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<td>B-5</td>
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<tr>
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<th>Degree</th>
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<td>Citizenship</td>
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### ADVANCED FURTHER STUDIES

#### Part-time Study

**Chemistry Graduates**

<table>
<thead>
<tr>
<th>Field of Advanced Study</th>
<th>Degree</th>
<th>Sex</th>
<th>Page</th>
</tr>
</thead>
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<tr>
<td>ACS Approved Curriculum</td>
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**Chemical Engineering Graduates**

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#### Full-time Study

**Chemistry Graduates**

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**Chemical Engineering Graduates**

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<th>Sex</th>
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</thead>
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<td>C-5</td>
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</table>

### BS Chemistry and Chemical Engineering Graduates Not Employed and Not Seeking Employment

**Chemistry Graduates**

<table>
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<tr>
<th>Sex</th>
<th>Plans for Further Studies</th>
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**Chemical Engineering Graduates**

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### AGE DISTRIBUTION OF RESPONDENTS

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<td>MS</td>
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<table>
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<th>Postdoctoral Chemists</th>
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### NUMBER OF JOB OFFERS

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<td>Full-time Employed Experienced Chemists</td>
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<tr>
<td>Full-time Employed Inexperienced Chemical Engineers</td>
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<td>Full-time Employed Experienced Chemical Engineers</td>
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### ETHNIC CLASSIFICATION AND CITIZENSHIP

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<td>Minority Chemistry Graduates</td>
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<td></td>
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</tr>
<tr>
<td>All Chemical Engineering Graduates</td>
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<td>89</td>
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<tr>
<td>Minority Chemical Engineering Graduates</td>
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### Table A-1

**SALARIES of CHEMISTS employed FULL-TIME by DEGREE and EXPERIENCE**  
1992 Starting Salary Survey

<table>
<thead>
<tr>
<th>WORK EXPERIENCE</th>
<th>Highest Degree</th>
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<tbody>
<tr>
<td></td>
<td>BS</td>
<td>MS</td>
<td>PHD</td>
<td></td>
</tr>
<tr>
<td><strong>Less than 12 months</strong></td>
<td>24,000</td>
<td>31,500</td>
<td>47,500</td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>24,764</td>
<td>31,626</td>
<td>43,499</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>5,353</td>
<td>6,755</td>
<td>10,947</td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>371</td>
<td>52</td>
<td>124</td>
<td></td>
</tr>
<tr>
<td><strong>12-36 months</strong></td>
<td>25,500</td>
<td>30,000</td>
<td>48,000</td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>25,804</td>
<td>30,579</td>
<td>42,648</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>5,279</td>
<td>5,777</td>
<td>12,061</td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>166</td>
<td>44</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td><strong>More than 36 months</strong></td>
<td>30,000</td>
<td>35,000</td>
<td>46,000</td>
<td></td>
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<tr>
<td>Median</td>
<td>29,715</td>
<td>35,705</td>
<td>43,433</td>
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<tr>
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<td>7,712</td>
<td>9,513</td>
<td>12,225</td>
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<td><strong>TOTAL</strong></td>
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<td>32,000</td>
<td>48,000</td>
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</tr>
<tr>
<td>Median</td>
<td>25,812</td>
<td>32,768</td>
<td>43,321</td>
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</tr>
<tr>
<td>Mean</td>
<td>6,016</td>
<td>7,886</td>
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<td>Count</td>
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Table A-2

SALARIES of CHEMICAL ENGINEERS employed FULL-TIME
by DEGREE and EXPERIENCE
1992 ACS Starting Salary Survey

<table>
<thead>
<tr>
<th>WORK EXPERIENCE</th>
<th>BS</th>
<th>MS</th>
<th>PHD</th>
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</thead>
<tbody>
<tr>
<td>Less than 12 months</td>
<td>40,000</td>
<td>41,500</td>
<td>54,000</td>
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<tr>
<td>Median</td>
<td>38,235</td>
<td>40,162</td>
<td>52,368</td>
</tr>
<tr>
<td>Mean</td>
<td>4,299</td>
<td>4,896</td>
<td>7,268</td>
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<tr>
<td>Std Dev</td>
<td>267</td>
<td>22</td>
<td>47</td>
</tr>
<tr>
<td>Count</td>
<td>267</td>
<td>22</td>
<td>47</td>
</tr>
<tr>
<td>12-36 months</td>
<td>39,650</td>
<td>41,695</td>
<td>54,000</td>
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<tr>
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<td>39,035</td>
<td>41,569</td>
<td>52,500</td>
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<td>Mean</td>
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<td>8,777</td>
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<td>Std Dev</td>
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<tr>
<td>Count</td>
<td>136</td>
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<td>14</td>
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<tr>
<td>More than 36 months</td>
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<td>60,000</td>
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<tr>
<td>Median</td>
<td>36,203</td>
<td>46,066</td>
<td>60,085</td>
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<td>Mean</td>
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<td>11,000</td>
<td>14,586</td>
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<td>Median</td>
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<td>53,749</td>
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<tr>
<td>Mean</td>
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<td>9,521</td>
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<td>Std Dev</td>
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<tr>
<td>Count</td>
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Table A-3

SALARIES of INEXPERIENCED CHEMISTS employed FULL-TIME in PRIVATE INDUSTRY by SEX and DEGREE
1992 Starting Salary Survey

<table>
<thead>
<tr>
<th>Highest Degree</th>
<th>BS</th>
<th>MS</th>
<th>PHD</th>
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<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>Male</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>26,000</td>
<td>35,000</td>
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<tr>
<td>Mean</td>
<td>26,362</td>
<td>35,112</td>
<td>49,980</td>
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<tr>
<td>Std Dev</td>
<td>5,044</td>
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<td>6,893</td>
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<td>Count</td>
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<td>54</td>
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<tr>
<td><strong>Female</strong></td>
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<td></td>
<td></td>
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<tr>
<td>Median</td>
<td>25,000</td>
<td>33,500</td>
<td>50,350</td>
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<td>Mean</td>
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<td>5,532</td>
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<td>Count</td>
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<td>30</td>
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<tr>
<td><strong>TOTAL</strong></td>
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<td></td>
<td></td>
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<tr>
<td>Median</td>
<td>25,000</td>
<td>35,000</td>
<td>50,650</td>
</tr>
<tr>
<td>Mean</td>
<td>26,115</td>
<td>34,439</td>
<td>49,626</td>
</tr>
<tr>
<td>Std Dev</td>
<td>5,292</td>
<td>6,348</td>
<td>6,423</td>
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<tr>
<td>Count</td>
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<td>33</td>
<td>84</td>
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Table A-4

SALARIES of INEXPERIENCED CHEMICAL ENGINEERS employed FULL-TIME in PRIVATE INDUSTRY by SEX and DEGREE
1992 ACS Starting Salary Survey

<table>
<thead>
<tr>
<th>Highest Degree</th>
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<th>MS</th>
<th>PHD</th>
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<tr>
<td><strong>Sex</strong></td>
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<td></td>
<td></td>
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<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Median</td>
<td>40,000</td>
<td>40,800</td>
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<tr>
<td>Mean</td>
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<td>39,641</td>
<td>53,922</td>
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<tr>
<td>Std Dev</td>
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<td>5,660</td>
<td>3,994</td>
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<td>Count</td>
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<tr>
<td>Female</td>
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<td>Median</td>
<td>40,000</td>
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<td>56,000</td>
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<tr>
<td>Median</td>
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<td>55,000</td>
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Table A-5

SALARIES of INEXPERIENCED CHEMISTS employed FULL-TIME by SEX and DEGREE
1992 Starting Salary Survey

<table>
<thead>
<tr>
<th>Highest Degree</th>
<th>BS</th>
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<th>PHD</th>
</tr>
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<tr>
<td><strong>Sex</strong></td>
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<tr>
<td><strong>Male</strong></td>
<td></td>
<td></td>
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<tr>
<td>Median</td>
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<td><strong>Female</strong></td>
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<td></td>
<td></td>
</tr>
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<td>Median</td>
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<td>9,990</td>
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<tr>
<td>Median</td>
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<td>31,500</td>
<td>47,500</td>
</tr>
<tr>
<td>Mean</td>
<td>24,764</td>
<td>31,626</td>
<td>43,499</td>
</tr>
<tr>
<td>Std Dev</td>
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<td>6,755</td>
<td>10,947</td>
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<tr>
<td>Count</td>
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## Table A-6

### SALARIES of INEXPERIENCED CHEMISTS employed FULL-TIME

**by DEGREE and EMPLOYER**

**1992 ACS Starting Salary Survey**

<table>
<thead>
<tr>
<th>Employer</th>
<th>Highest Degree</th>
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<th>PHD</th>
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<tr>
<td><strong>Industry</strong></td>
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<td></td>
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<td>35,000</td>
<td>50,650</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>26,115</td>
<td>34,439</td>
<td>49,626</td>
</tr>
<tr>
<td>Std Dev</td>
<td></td>
<td>5,292</td>
<td>6,348</td>
<td>6,423</td>
</tr>
<tr>
<td>Count</td>
<td></td>
<td>259</td>
<td>33</td>
<td>84</td>
</tr>
<tr>
<td><strong>College or univ</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
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<td>18,500</td>
<td>25,000</td>
<td>28,000</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>19,504</td>
<td>24,712</td>
<td>29,120</td>
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<td>5,987</td>
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<td>Count</td>
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<tr>
<td><strong>High school</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td></td>
<td>23,000</td>
<td>27,500</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>23,182</td>
<td>27,500</td>
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<td>Count</td>
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<tr>
<td><strong>Federal govt</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
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<td>29,145</td>
<td>34,250</td>
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<tr>
<td>Mean</td>
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<td>28,684</td>
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</tr>
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<td>3,098</td>
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<td>Count</td>
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<td>8</td>
</tr>
<tr>
<td><strong>Military</strong></td>
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<tr>
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<td>40,000</td>
</tr>
<tr>
<td>Mean</td>
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<td>Std Dev</td>
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<td>3,577</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td></td>
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<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>State or local govt</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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**SALARIES of INEXPERIENCED CHEMISTS employed FULL-TIME**
by DEGREE and EMPLOYER - MEN only
1992 ACS Starting Salary Survey

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Table A-8

SALARIES of INEXPERIENCED CHEMISTS employed FULL-TIME by DEGREE and EMPLOYER - WOMEN only
1992 ACS Starting Salary Survey

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SALARIES of INEXPERIENCED CHEMISTS employed FULL-TIME by DEGREE and TYPE OF INDUSTRY 1992 ACS Starting Salary Survey

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Table A-10

SALVARIES of INEXPERIENCED CHEMISTS employed FULL-TIME in INDUSTRY by DEGREE and EMPLOYER SIZE 1992 ACS Starting Salary Survey

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Table A-11

SALARIES of INEXPERIENCED CHEMISTS employed FULL-TIME
by DEGREE and WORK FUNCTION
1992 ACS Starting Salary Survey

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**SALARIES of INEXPERIENCED BS CHEMISTS employed FULL-TIME by EMPLOYER and CERTIFICATION**

*1992 ACS Starting Salary Survey*

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Table A-13

SALARIES of INEXPERIENCED MS and PhD CHEMISTS employed FULL-TIME by DEGREE and DEGREE SPECIALTY 1992 ACS Starting Salary Survey

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SALARIES of INEXPERIENCED CHEMICAL ENGINEERS employed FULL-TIME by SEX and DEGREE  
1992 Starting Salary Survey

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Table A-16

SALARIES of INEXPERIENCED CHEMICAL ENGINEERS employed FULL-TIME by DEGREE and EMPLOYER
1992 ACS Starting Salary Survey

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Table A-17

SALARIES of INEXPERIENCED CHEMICAL ENGINEERS employed FULL-TIME
by DEGREE and EMPLOYER - MEN only
1992 ACS Starting Salary Survey

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**SALARIES of INEXPERIENCED CHEMICAL ENGINEERS employed FULL-TIME by DEGREE and EMPLOYER - WOMEN only**

1992 ACS Starting Salary Survey

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Table A-20

SALARIES of INEXPERIENCED CHEMICAL ENGINEERS employed FULL-TIME
by DEGREE and EMPLOYER SIZE
1992 ACS Starting Salary Survey

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### Table A-21

**SALARIES of INEXPERIENCED CHEMICAL ENGINEERS employed FULL-TIME by DEGREE and WORK FUNCTION**

1992 ACS Starting Salary Survey

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Table A-22

SALARIES of INEXPERIENCED CHEMICAL ENGINEERS employed FULL-TIME
by DEGREE and GEOGRAPHIC REGION
1992 ACS Starting Salary Survey

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Table B-1a

CHEMISTRY GRADUATES
by EMPLOYMENT STATUS, SEX, and DEGREE
1992 Starting Salary Survey
Table B-1b

CHEMISTRY GRADUATES
by PLANS FOR FURTHER STUDIES IN FALL 1992, SEX, and DEGREE
1992 Starting Salary Survey

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<th>Masters</th>
<th></th>
<th>Doctorate</th>
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<td>Male</td>
<td>Female</td>
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<td>1471</td>
<td>98</td>
<td>48</td>
<td>146</td>
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<td>Yes, part-time</td>
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<td>7.9%</td>
<td>7.5%</td>
<td>5.4%</td>
<td>9.6%</td>
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### Table B-2a

**CHEMISTRY GRADUATES**  
by EMPLOYMENT STATUS, CITIZENSHIP, and DEGREE  
1992 Starting Salary Survey

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<th>U.S. Permanent Resident</th>
<th>Other Visa</th>
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## Table B-2b

**CHEMISTRY GRADUATES**

by **PLANS FOR FURTHER STUDIES IN FALL 1992, CITIZENSHIP, and DEGREE**

1992 Starting Salary Survey

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<th>U.S. Permanent Resident</th>
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### BS CHEMISTRY GRADUATES
by EMPLOYMENT STATUS, ETHNICITY, and DEGREE
1992 Starting Salary Survey

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<th>Black</th>
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<th>Subcont Indian</th>
<th>Chinese</th>
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<td>11.8%</td>
<td>20.5%</td>
<td>35.7%</td>
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<tr>
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<td>8.3%</td>
<td>8.2%</td>
<td>6.6%</td>
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<tr>
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### Table B-3a (Continued)

#### MS CHEMISTRY GRADUATES
by EMPLOYMENT STATUS, ETHNICITY, and DEGREE
1992 Starting Salary Survey

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**PhD CHEMISTRY GRADUATES**  
by EMPLOYMENT STATUS, ETHNICITY, and DEGREE  
1992 Starting Salary Survey

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Table B-3b

CHEMISTRY GRADUATES
by PLANS FOR FURTHER STUDIES IN FALL 1992, ETHNICITY, and DEGREE
1992 Starting Salary Survey

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**TOTAL**                  |             |           |                |             |       |      |       |       |
<p>| | | | | | | | | |
|                           |             |           |                |             |       |      |       |       |
|                           | 55.3%       | 1462      | 955            | 557         | 547   | 375  | 1000  | 347   |</p>
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Table B-4a

BS CHEMISTRY GRADUATES
by EMPLOYMENT STATUS and CERTIFICATION
1992 Starting Salary Survey

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Table B-4b

BS CHEMISTRY GRADUATES
by PLANS FOR FURTHER STUDIES IN FALL 1992 and CERTIFICATION
1992 Starting Salary Survey

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### Table B-5

**MASTERS CHEMISTRY GRADUATES**  
by EMPLOYMENT STATUS and DEGREE SPECIALTY  
1992 Starting Salary Survey

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<th>FELLOWSHIP</th>
<th>SEEKING EMPL</th>
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Table B-6

**PhD CHEMISTRY GRADUATES**

**by EMPLOYMENT STATUS and DEGREE SPECIALTY**

**1992 Starting Salary Survey**

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<th>FT IN NONCHEM</th>
<th>FELLOW-SHIP</th>
<th>SEEKING EMPL</th>
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</table>
Table B-7b

CHEMICAL ENGINEERING GRADUATES
by PLANS FOR FURTHER STUDIES IN FALL 1992, SEX, and DEGREE
1992 Starting Salary Survey

| Pursue Advanced Studies in Fall 1992 | Bachelors | | Masters | | Doctorate | |
|---|---|---|---|---|---|---|---|
| | Male | Female | TOTAL | Male | Female | TOTAL | Male | Female | TOTAL |
| Yes, full-time | 26.2% | 16.1% | 22.4% | 42.3% | 55.2% | 45.2% | 2.2% | .0% | 1.9% |
| | 123 | 45 | 168 | 41 | 16 | 57 | 2 | 0 | 2 |
| Yes, part-time | 8.3% | 6.8% | 7.7% | 6.2% | 3.4% | 5.6% | 3.4% | .0% | 2.9% |
| | 39 | 19 | 58 | 6 | 1 | 7 | 3 | 0 | 3 |
| No | 65.5% | 77.1% | 69.8% | 51.5% | 41.4% | 49.2% | 94.4% | 100.0% | 95.2% |
| | 308 | 215 | 523 | 50 | 12 | 62 | 84 | 16 | 100 |
| TOTAL | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| | 470 | 279 | 749 | 97 | 29 | 126 | 89 | 16 | 105 |
### CHEMICAL ENGINEERING GRADUATES

**by EMPLOYMENT STATUS, CITIZENSHIP, and DEGREE**

1992 Starting Salary Survey

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<th>U.S. Permanent Resident</th>
<th>Other Visa</th>
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<tr>
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<td>37.5%</td>
<td>62.4%</td>
</tr>
<tr>
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<td>12.1%</td>
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<td>24.2%</td>
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<td>18.3%</td>
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Table B-8b

CHEMICAL ENGINEERING
by PLANS FOR FURTHER STUDIES IN FALL 1992, CITIZENSHIP, and DEGREE
1992 Starting Salary Survey

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Table B-9a

CHEMICAL ENGINEERING GRADUATES
by EMPLOYMENT STATUS, ETHNICITY, and DEGREE
1992 Starting Salary Survey

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Table B-9a (Continued)

CHEMICAL ENGINEERING GRADUATES
by EMPLOYMENT STATUS, ETHNICITY, and DEGREE
1992 Starting Salary Survey

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### Table B-9a (Continued)

**CHEMICAL ENGINEERING GRADUATES**

*by EMPLOYMENT STATUS, ETHNICITY, and DEGREE*

1992 Starting Salary Survey

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<tr>
<td>Chinese</td>
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<td>Subcont Indian</td>
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<td>Other Asian</td>
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<td>Black</td>
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<tr>
<td>Hisp</td>
<td></td>
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| Full-Time in Non-Chemistry |       |
| 0%                          |       |
| 5.6%                        |       |
| 0%                          |       |
| 20.0%                       |       |
| 0%                          |       |
| 0%                          |       |
| 5.6%                        |       |
| 0%                          | 5.6%  |

| Fellowship          |       |
| 0%                 |       |
| 16.7%              |       |
| 41.7%              |       |
| 20.0%              |       |
| 0%                 |       |
| 0%                 |       |
| 11.3%              |       |
| 0%                 | 15.7% |

| Seeking Employment |       |
| 0%                |       |
| 11.1%             |       |
| 0%                |       |
| 20.0%             |       |
| 0%                |       |
| 0%                |       |
| 4.2%              |       |
| 0%                | 5.6%  |

| TOTAL              |       |
| 0%                 |       |
| 100.0%             |       |
| 100.0%             |       |
| 100.0%             |       |
| 100.0%             |       |
| 100.0%             |       |
| 0%                 | 100.0%|
### Table B-9b

**CHEMICAL ENGINEERING GRADUATES**

by PLANS FOR FURTHER STUDIES IN FALL 1992, ETHNICITY, and DEGREE

1992 Starting Salary Survey

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Table B-9b (Continued)

CHEMICAL ENGINEERING GRADUATES
by PLANS FOR FURTHER STUDIES IN FALL 1992, ETHNICITY, and DEGREE
1992 Starting Salary Survey

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### Table C-2

BS Chemistry Graduates Who Plan Part-Time Studies in Fall 1992

by Field of Advanced Study and Certification

1992 Starting Salary Survey

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<tr>
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<td>1.6%</td>
<td>8.7%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>6</td>
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<td>4.3%</td>
</tr>
<tr>
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<td>3</td>
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<td>8.7%</td>
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<tr>
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<td><strong>Life science</strong></td>
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<td>4.3%</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>3</td>
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<tr>
<td><strong>Medicine</strong></td>
<td>3.9%</td>
<td>.0%</td>
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<tr>
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<td>1.4%</td>
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</tr>
<tr>
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<td>16</td>
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Table C-3

CHEMICAL ENGINEERING GRADUATES WHO PLAN PART-TIME STUDIES IN FALL 1992
by FIELD OF ADVANCED STUDY, SEX, and DEGREE
1992 Starting Salary Survey

<p>| Field of Further Studies | Bachelors | | | Masters | | | |
|--------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
|                          | Male | Female | TOTAL | Male | Female | TOTAL |
| Chemistry                | .0%  | 10.5% | 3.4%  | .0%  | .0%  | .0%  |
|                          | 0    | 2      | 2      | 0    | 0      | 0      |
| Other phys sci           | 2.6% | .0%   | 1.7%  | .0%  | .0%  | .0%  |
|                          | 1    | 0      | 1      | 0    | 0      | 0      |
| Chem or biochem eng      | 46.2%| 26.3% | 39.7% | 33.3%| 100.0%| 42.9% |
|                          | 18   | 5      | 23     | 2    | 1      | 3      |
| Other eng                | 15.4%| 5.3%  | 12.1% | .0%  | .0%  | .0%  |
|                          | 6    | 1      | 7      | 0    | 0      | 0      |
| Medicine                 | 2.6% | .0%   | 1.7%  | .0%  | .0%  | .0%  |
|                          | 1    | 0      | 1      | 0    | 0      | 0      |
| Business                 | 30.8%| 31.6% | 31.0% | 50.0%| .0%  | 42.9% |
|                          | 12   | 6      | 18     | 3    | 0      | 3      |
| Education                | .0%  | 5.3%  | 1.7%  | .0%  | .0%  | .0%  |
|                          | 0    | 1      | 1      | 0    | 0      | 0      |
| Law                      | .0%  | 5.3%  | 1.7%  | .0%  | .0%  | .0%  |
|                          | 0    | 1      | 1      | 0    | 0      | 0      |
| Other                    | 2.6% | 15.8% | 6.9%  | 16.7%| .0%  | 14.3% |
|                          | 1    | 3      | 4      | 1    | 0      | 1      |
| TOTAL                    | 100.0%| 100.0%| 100.0%| 100.0%| 100.0%| 100.0%|</p>
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Table C-5

BS CHEMISTRY GRADUATES WHO PLAN FULL-TIME STUDIES IN FALL 1992
by FIELD OF ADVANCED STUDY and CERTIFICATION
1992 Starting Salary Survey

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### Table C-6

**CHEMICAL ENGINEERING GRADUATES WHO PLAN FULL-TIME STUDIES IN FALL 1992**

*by FIELD OF ADVANCED STUDY, SEX, and DEGREE*

1992 Starting Salary Survey

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Table C-7

BS CHEMISTRY GRADUATES WHO ARE NOT EMPLOYED and NOT SEEKING EMPLOYMENT by SEX and PLANS FOR FURTHER STUDIES 1992 Starting Salary Survey

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Table C-8
BS CHEMICAL ENGINEERING GRADUATES WHO ARE NOT EMPLOYED and NOT SEEKING EMPLOYMENT by SEX and PLANS FOR FURTHER STUDIES 1992 Starting Salary Survey
Table D-1

BS CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES by AGE and SEX
1992 Starting Salary Survey

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### Table D-2

**MS CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES**  
by AGE and SEX  
1992 Starting Salary Survey

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Table D-3

PhD CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES
by AGE and SEX
1992 Starting Salary Survey

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Table D-4

CHEMISTRY POSTDOCTORAL RECIPIENTS
by AGE and SEX
1992 Starting Salary Survey

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**Table E-1**

**FULL-TIME EMPLOYED INEXPERIENCED CHEMISTS**
by NUMBER OF JOB OFFERS, SEX, and DEGREE
1992 Starting Salary Survey

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<th>Master Male</th>
<th>Master Female</th>
<th>Master Total</th>
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<th>Doctorate Female</th>
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<td>36.7% 11</td>
<td>45.2% 28</td>
<td>42.7% 38</td>
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<td>21.9% 7</td>
<td>46.7% 14</td>
<td>33.9% 21</td>
<td>32.6% 29</td>
<td>25.0% 10</td>
<td>30.2% 39</td>
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<td>13.3% 4</td>
<td>12.9% 8</td>
<td>16.9% 15</td>
<td>27.5% 11</td>
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<td>3.8% 8</td>
<td>3.9% 16</td>
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<td>6.5% 4</td>
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<td>0% 0</td>
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<td>.0% 1</td>
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Table E-2

FULL-TIME EMPLOYED EXPERIENCED CHEMISTS
by NUMBER OF JOB OFFERS, SEX, and DEGREE
1992 Starting Salary Survey

| Offers of Employment | Bachelors | | Masters | | Doctorate | |
|----------------------|-----------|------------|---------|------------|---------|---------|---------|
|                      | Male      | Female     | Total   | Male      | Female   | Total   | Male    | Female   | Total   |
| 1                    | 42.8%     | 41.2%      | 42.0%   | 44.7%     | 32.4%    | 39.3%   | 50.0%   | 54.2%    | 51.0%   |
|                      | 62        | 49         | 111     | 21        | 12       | 33      | 36      | 13       | 49      |
| 2                    | 29.0%     | 30.3%      | 29.5%   | 29.8%     | 54.1%    | 40.5%   | 29.2%   | 12.5%    | 25.0%   |
|                      | 42        | 36         | 78      | 14        | 20       | 34      | 21      | 3        | 24      |
| 3                    | 17.2%     | 17.6%      | 17.4%   | 8.5%      | 13.5%    | 10.7%   | 12.5%   | 25.0%    | 15.6%   |
|                      | 25        | 21         | 46      | 4         | 5        | 9       | 9       | 6        | 15      |
| 4                    | 5.5%      | 6.7%       | 6.1%    | 6.4%      | .0%      | 3.6%    | 2.8%    | 8.3%     | 4.2%    |
|                      | 8         | 8          | 16      | 3         | 0        | 3       | 2       | 2        | 4       |
| 5                    | 2.1%      | 3.4%       | 2.7%    | 10.6%     | .0%      | 6.0%    | 5.6%    | .0%      | 4.2%    |
|                      | 3         | 4          | 7       | 5         | 0        | 5       | 4       | 0        | 4       |
| 6 or 7               | 2.1%      | .8%        | 1.5%    | .0%       | .0%      | .0%     | .0%     | .0%      | .0%     |
|                      | 3         | 1          | 4       | 0         | 0        | 0       | 0       | 0        | 0       |
| 8 or 9               | .7%       | .0%        | .4%     | .0%       | .0%      | .0%     | .0%     | .0%      | .0%     |
|                      | 1         | 0          | 1       | 0         | 0        | 0       | 0       | 0        | 0       |
| 10 OR MORE           | .7%       | .0%        | .4%     | .0%       | .0%      | .0%     | .0%     | .0%      | .0%     |
|                      | 1         | 0          | 1       | 0         | 0        | 0       | 0       | 0        | 0       |
| Total                | 100.0%    | 100.0%     | 100.0%  | 100.0%    | 100.0%   | 100.0%  | 100.0%  | 100.0%   | 100.0%  |
|                      | 145       | 119        | 264     | 47        | 37       | 84      | 72      | 24       | 96      |
Table E-3

FULL-TIME Employed INEXPERIENCED CHEMICAL ENGINEERS  
by NUMBER OF JOB OFFERS, SEX, and DEGREE  
1992 Starting Salary Survey

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<th>Masters</th>
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Table E-4

FULL-TIME EMPLOYED EXPERIENCED CHEMICAL ENGINEERS
by NUMBER OF JOB OFFERS, SEX, and DEGREE
1992 Starting Salary Survey

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### Table F-1

#### CHEMISTRY GRADUATES
by CITIZENSHIP, ETHNICITY, and DEGREE
1992 Starting Salary Survey

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<td>100.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td>US Naturalized</td>
<td>0.0%</td>
<td>4.0%</td>
</tr>
<tr>
<td>US Permanent Res Visa</td>
<td>0.0%</td>
<td>11.0%</td>
</tr>
<tr>
<td>Other visa</td>
<td>0.0%</td>
<td>83.0%</td>
</tr>
<tr>
<td>Total</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>
Table F-2

CHEMISTRY GRADUATES
by CITIZENSHIP, SEX, and DEGREE
1992 Starting Salary Survey

<table>
<thead>
<tr>
<th>Citizenship</th>
<th>Bachelors</th>
<th></th>
<th>Masters</th>
<th></th>
<th>Doctorate</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
</tr>
<tr>
<td>US Native</td>
<td>91.3%</td>
<td>92.0%</td>
<td>91.6%</td>
<td>68.4%</td>
<td>64.5%</td>
<td>66.8%</td>
</tr>
<tr>
<td></td>
<td>1386</td>
<td>1057</td>
<td>2443</td>
<td>143</td>
<td>100</td>
<td>243</td>
</tr>
<tr>
<td>US Naturalized</td>
<td>5.4%</td>
<td>4.4%</td>
<td>4.9%</td>
<td>2.9%</td>
<td>7.1%</td>
<td>4.7%</td>
</tr>
<tr>
<td></td>
<td>82</td>
<td>50</td>
<td>132</td>
<td>6</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>US Permanent Res Visa</td>
<td>2.6%</td>
<td>3.1%</td>
<td>2.8%</td>
<td>3.3%</td>
<td>5.2%</td>
<td>4.1%</td>
</tr>
<tr>
<td></td>
<td>39</td>
<td>36</td>
<td>75</td>
<td>7</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>Other visa</td>
<td>.7%</td>
<td>.5%</td>
<td>.6%</td>
<td>25.4%</td>
<td>23.2%</td>
<td>24.5%</td>
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<td></td>
<td>11</td>
<td>6</td>
<td>17</td>
<td>53</td>
<td>36</td>
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<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td></td>
<td>1518</td>
<td>1149</td>
<td>2667</td>
<td>209</td>
<td>155</td>
<td>364</td>
</tr>
</tbody>
</table>

|                      | Male      | Female   | Total   |
| Doctorate            | 64.7%     | 65.4%    | 64.9%   |
|                      | 246       | 100      | 346     |
| US Naturalized       | 2.1%      | 2.6%     | 2.3%    |
|                      | 8         | 4        | 12      |
| US Permanent Res Visa| 2.9%      | 11.1%    | 5.3%    |
|                      | 11        | 17       | 28      |
| Other visa           | 30.3%     | 20.9%    | 27.6%   |
|                      | 115       | 32       | 147     |
| Total                | 100.0%    | 100.0%   | 100.0%  |
|                      | 380       | 153      | 533     |
Table F-3

MINORITY CHEMISTRY GRADUATES
by MINORITY CLASSIFICATION, SEX, AND DEGREE
1992 Starting Salary Survey

<table>
<thead>
<tr>
<th>MINORITY CLASSIFICATION</th>
<th>Bachelors</th>
<th>Masters</th>
<th>Doctorate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
</tr>
<tr>
<td>American Indian</td>
<td>5.8%</td>
<td>3.1%</td>
<td>4.5%</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>Chinese</td>
<td>19.9%</td>
<td>15.1%</td>
<td>17.6%</td>
</tr>
<tr>
<td></td>
<td>41</td>
<td>29</td>
<td>70</td>
</tr>
<tr>
<td>Subcont Indian</td>
<td>6.8%</td>
<td>7.3%</td>
<td>7.0%</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>14</td>
<td>28</td>
</tr>
<tr>
<td>Other Asian</td>
<td>32.0%</td>
<td>25.5%</td>
<td>28.9%</td>
</tr>
<tr>
<td></td>
<td>66</td>
<td>49</td>
<td>115</td>
</tr>
<tr>
<td>Black</td>
<td>15.0%</td>
<td>25.5%</td>
<td>20.1%</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>49</td>
<td>80</td>
</tr>
<tr>
<td>Hispanic</td>
<td>16.0%</td>
<td>15.6%</td>
<td>15.8%</td>
</tr>
<tr>
<td></td>
<td>33</td>
<td>30</td>
<td>63</td>
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<tr>
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<td>4.4%</td>
<td>7.8%</td>
<td>6.0%</td>
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<td></td>
<td>9</td>
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<td>100.0%</td>
</tr>
<tr>
<td></td>
<td>206</td>
<td>192</td>
<td>398</td>
</tr>
</tbody>
</table>
Table F-4

CHEMICAL ENGINEERING GRADUATES
by CITIZENSHIP, ETHNICITY, and DEGREE
1992 Starting Salary Survey

<table>
<thead>
<tr>
<th>Citizenship</th>
<th>MINORITY CLASSIFICATION</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Amer Indian</td>
<td>Chinese</td>
</tr>
<tr>
<td>US Native</td>
<td>100.0%</td>
<td>53.8%</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>US Naturalized</td>
<td>.0%</td>
<td>38.5%</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>US Permanent Res Visa</td>
<td>.0%</td>
<td>.0%</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other visa</td>
<td>.0%</td>
<td>7.7%</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Citizenship</td>
<td>US Naturalized</td>
<td>US Permanent Res Visa</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Amer Indian</td>
<td>0%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Subcont Asian</td>
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<td>12.5%</td>
</tr>
<tr>
<td>Black</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>White</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Other</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>
Table F-4 (Continued)

CHEMICAL ENGINEERING GRADUATES
by CITIZENSHIP, ETHNICITY, and DEGREE
1992 Starting Salary Survey

<table>
<thead>
<tr>
<th>Citizenship</th>
<th>MINORITY CLASSIFICATION</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Amer Indian</td>
<td>Chinese</td>
</tr>
<tr>
<td>US Native</td>
<td>.0%</td>
<td>10.5%</td>
</tr>
<tr>
<td>0</td>
<td>2</td>
<td>1</td>
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<tr>
<td>US Naturalized</td>
<td>.0%</td>
<td>15.8%</td>
</tr>
<tr>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>US Permanent Res Visa</td>
<td>.0%</td>
<td>10.5%</td>
</tr>
<tr>
<td>0</td>
<td>2</td>
<td>1</td>
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<tr>
<td>Other visa</td>
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<td>100.0%</td>
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<td>Bachelors</td>
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</tr>
<tr>
<td>-----------------------------</td>
<td>-----------</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Male</td>
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<td>US Native</td>
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<td>93.0%</td>
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</tr>
<tr>
<td>US Naturalized</td>
<td></td>
<td>4.2%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>US Permanent Res Visa</td>
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<td>1.9%</td>
</tr>
<tr>
<td></td>
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<tr>
<td>Other visa</td>
<td></td>
<td>.8%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100.0%</td>
</tr>
<tr>
<td>Race</td>
<td>Male</td>
<td>Female</td>
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<td>--------------------</td>
<td>------</td>
<td>--------</td>
</tr>
<tr>
<td>American Indian</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinese</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subcont Indian</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Asian</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
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<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Dear Colleague:

Every year, the American Chemical Society conducts a mail survey of persons who have recently earned degrees in chemistry or chemical engineering. Published results, which include information about salaries and employment, are useful to the profession, and especially to those beginning their careers.

I urge you, as a service to your colleagues and profession, to respond to this year's questionnaire. The procedure is confidential. The information you provide will be combined with returns from other graduates so that only aggregated data will be available. To ensure confidentiality, your name and address will not be coded with the information you provide.

Please complete this questionnaire and return it promptly. For your convenience, I have enclosed a self-addressed, postage-paid envelope. Results of the survey will be published in the Chemical and Engineering News' Career Issue this October and in a more extensive report later in the year.

Thank you for your assistance with this survey. I extend my best wishes for every success in your professional pursuits.

Sincerely,

John K Crum

Enclosure
1. **Highest degree earned:**
   - Bachelor's: □ 1
   - Master's: □ 2
   - Doctorate: □ 3

2. **Field of highest degree:**
   - Chemical engineering: □ 01
   - Biochemical engineering: □ 02
   - Biochemistry: □ 03
   - General chemistry: □ 04
   - Analytical chemistry: □ 05
   - Inorganic chemistry: □ 06
   - Organic chemistry: □ 07
   - Physical chemistry: □ 08
   - Polymer chemistry: □ 09
   - Other chemistry: □ 10
   - Other (please specify): □ 11

3. **Please describe the school that granted your degree:**
   - a. Public: □ 1
     - Private: □ 2
   - b. Total number of students:
     - Less than 1,500: □ 1
     - 1,500 to 4,999: □ 2
     - 5,000 to 9,999: □ 3
     - 10,000 to 19,999: □ 4
     - 20,000 or more: □ 5
   - c. The highest degree offered by your department is:
     - BS: □ 1
     - MS: □ 2
     - PhD: □ 3
   - d. Location of school. Please give first three digits of zip code: ________
   - e. Is the school an historically or predominantly black institution?
     - Yes: □ 1
     - No: □ 2
   - f. Is the school a traditionally women's institution?
     - Yes: □ 1
     - No: □ 2

4. **How would you rate the state of equipment and instrumentation in your chemistry or chemical engineering classes?**
   - a. The type of equipment was:
     - Excellent: □ 1
     - Adequate: □ 2
     - Inadequate: □ 3
   - b. The access to equipment was:
     - Excellent: □ 1
     - Adequate: □ 2
     - Inadequate: □ 3
   - c. How up-to-date was the equipment?
     - Extremely: □ 1
     - Moderately: □ 2
     - Not at all: □ 3

5. **How would you rate the state of computer equipment and software in your chemistry or chemical engineering classes?**
   - a. The type of computer equipment was:
     - Excellent: □ 1
     - Adequate: □ 2
     - Inadequate: □ 3
   - b. The type of computer software was:
     - Excellent: □ 1
     - Adequate: □ 2
     - Inadequate: □ 3
   - c. The access to computer equipment was:
     - Excellent: □ 1
     - Adequate: □ 2
     - Inadequate: □ 3
   - d. How up-to-date was the computer equipment?
     - Extremely: □ 1
     - Moderately: □ 2
     - Not at all: □ 3

6. **In your chemistry classes, did you get a chance to:**
   - a. Work in teams?
     - Yes: □ 1
     - No: □ 2
   - b. Work on independent research projects?
     - Yes: □ 1
     - No: □ 2

7. **Did you participate in a chemistry or chemical engineering cooperative education program while in college?**
   - Yes: □ 1
   - No: □ 2

8. **Grade point average:**
   - [Use A = 4.00; B = 3.00; C = 2.00]
   - In your major: __________
   - Overall: __________

9. **Will you pursue advanced studies in the fall of 1992?**
   - Yes, full-time: □ 1
   - Yes, part-time: □ 2
   - No: □ 3
   - a. If yes, field of further studies:
     - Chemistry: □ 01
     - Other physical science, computer science or math: □ 02
     - Chemical engineering or biochemical engineering: □ 03
     - Other engineering: □ 04
     - Biochemistry: □ 05
     - Life science: □ 06
     - Medicine: □ 07
     - Dentistry: □ 08
     - Pharmacy, pharmacology: □ 09
     - Business management: □ 10
     - Education: □ 11
     - Law: □ 12
     - Other: □ 13
10. Age at last birthday? ___ ___ years old

11. Sex?
   Male................................................................. ☐ 1
   Female............................................................... ☐ 2

12. Citizen or visa status:
   U.S. native......................................................... ☐ 1
   U.S. naturalized..................................................... ☐ 2
   U.S. permanent resident visa...................................... ☐ 3
   Other visa .......................................................... ☐ 4

13. Race or ethnic group:
   American Indian or Alaskan Native ............................. ☐ 1
   Chinese ..................................................................... ☐ 2
   Subcontinental Indian ................................................ ☐ 3
   Other Asian or Pacific islander ...................................... ☐ 4
   Black (not of Hispanic origin) ........................................ ☐ 5
   Hispanic .................................................................... ☐ 6
   White (not of Hispanic origin) ........................................ ☐ 7
   Other race or ethnic group ............................................ ☐ 8

14. Current employment status:
   Accepted or continuing full-time employment
      (excluding summer employment) .................................. ☐ 1
   Accepted a graduate assistantship, fellowship or
      postdoctoral fellowship ............................................ ☐ 2
   Part-time employment .................................................. ☐ 3
   Temporary/summer employment ..................................... ☐ 4
   Not employed ............................................................. ☐ 5

   a. If not continuing full-time employment, are you:
      seeking full-time, year-round employment .................... ☐ 1
      not seeking full-time, year-round employment ............... ☐ 2

IF YOU CHECKED BOX 3, 4, OR 5 IN QUESTION 14,
PLEASE STOP HERE AND RETURN THE QUESTIONNAIRE
IN THE ENVELOPE PROVIDED.

15. Your base annual salary from principal job:

   $ __________ per year

IF YOU HOLD AN ASSISTANTSHIP OR FELLOWSHIP,
PLEASE STOP HERE AND RETURN THE QUESTIONNAIRE
IN THE ENVELOPE PROVIDED.

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

   Specify number ______

17. Professional or technical work experience prior to
    graduation:
   Less than 12 months (or none) ..................................... ☐ 1
   12 to 36 months .................................................... ☐ 2
   More than 36 months ............................................... ☐ 3

18. Check the one specialty most related to your job:
   Chemical engineering............................................... ☐ 1
   Chemistry (including biochemistry) .............................. ☐ 2
   Other ........................................................................ ☐ 3

19. Check the one category that best describes your employer:
   Private industry ....................................................... ☐ 1
   College or university ................................................ ☐ 2
   High school or other school ....................................... ☐ 3
   Federal government (civilian) ..................................... ☐ 4
   Military ................................................................. ☐ 5
   State or local government .......................................... ☐ 6
   Hospital or independent laboratory ............................... ☐ 7
   Other ................................................................. ☐ 8

20. If you are employed in private industry, check the one category that best describes the type of industry:
   Nonmanufacturing .................................................... ☐ 01
   Manufacturing
      Aerospace ............................................................. ☐ 02
      Basic chemicals ................................................... ☐ 03
      Specialty chemicals ................................................ ☐ 04
      Agricultural chemicals ............................................. ☐ 05
      Electronics .......................................................... ☐ 06
      Petroleum, natural gas ............................................. ☐ 07
      Pharmaceuticals, personal care ................................. ☐ 08
      Plastics .............................................................. ☐ 09
      Other manufactures ............................................... ☐ 10

21. Check the one work function that best describes your
    job:
   Teaching ............................................................... ☐ 1
   Management or administration .................................... ☐ 2
   Basic Research ........................................................ ☐ 3
   Applied research/Development/Design ......................... ☐ 4
   Production/Quality control ....................................... ☐ 5
   Other ................................................................. ☐ 6

   a. Is your job classified as a technician position?
      Yes ......................................................................... ☐ 1
      No ......................................................................... ☐ 2

22. Employer’s approximate number of employees (total
    for the whole organization):
   Less than 500 ................................................................ ☐ 1
   500 to 2,499 ............................................................. ☐ 2
   2,500 to 9,999 .......................................................... ☐ 3
   10,000 to 24,999 ...................................................... ☐ 4
   25,000 or more ......................................................... ☐ 5

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

   ______ ______

Comments:
THANK YOU FOR YOUR PARTICIPATION

PLEASE RETURN THIS QUESTIONNAIRE PROMPTLY TO

ACS STARTING SALARY SURVEY
ROOM 440, 1155 16th Street, N.W., Washington, DC 20036
Workforce Reports: Workforce Reports, which are published three times a year, provide analyses of work force issues. Each issue is devoted to a single topic, for example BS chemists or women chemists. Reports are available from September 1990 through the present.

Suggested Reading List of Job Search Strategies recommends books and other literature covering topics relating to how to find a job including skill identification, resume preparation, cover letters, and interviewing.

Coping with Job Loss describes the trauma of termination and provides information on coping with the emotional, practical, and professional aftermath. Examines the grieving process, reviews sources of help and support, makes recommendations on organizing a job search.

Professional Employment Guidelines (PEG) addresses, for both employer and employee, good employment practices as the basis of sound professional relations. Topics include: terms of employment; employer environment; professional development; termination conditions; definition of multiple terminations; investigation of unprofessional conduct; patent rights for inventors; continuing education; and pension privileges.

Academic Professional Guidelines are extensions of the broader ACS Professional Employment Guidelines (PEG). Outlining reasonable and ethical professional conduct for faculty, students, associates, and administrators, the Guidelines are intended to enhance the relationships between these constituencies; and, to provide assistance on special issues that are of concern to chemical scientists in the academic environment.

Trade Secrets...Ethics and Law is an effort to familiarize chemists and chemical engineers with the technical maze they may encounter in the trade secrets field. This effort is not regarded as a final authoritative say on the subject; but, rather a guide which will alert scientists and engineers to this complex matter. A supplemental reading list is included.

Employment Agreements describes the salient aspects of employment agreements, or employment contracts, as they are often called. The booklet is not necessarily authoritative, nor is it intended to provide legal advice in interpreting the provisions of a specific contract. However, it is hoped that this information will assist the professional scientist or engineer in understanding such agreements and will thereby foster better working relationships between employer and employee. A recommended reading list is included.

ACS Career, Employment and Professional Resources: A Catalog of Publications, Programs & Services

The Chemist's Creed

For a free copy, please call or write:

Office of Professional Services
American Chemical Society
1155 16th Street, NW
Washington, DC 20036

Toll Free No.: (800) 227-5558