



1974 SURVEY REPORT

STARTING SALARIES AND EMPLOYMENT STATUS OF  
CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES

Office of Manpower Studies  
American Chemical Society  
Washington, D.C.





# American Chemical Society

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#### INTRODUCTORY REMARKS

The present survey is the twenty-third in the series conducted by the American Chemical Society. The main results of the surveys are published in Chemical and Engineering News. The November 7, 1974, issue of the magazine reported the preliminary results of the present survey, which was conducted during the summer of 1974.

The primary objective of the survey is to determine the salaries and occupational status of the students majoring in chemistry and chemical engineering who graduated during the academic year, and it covers the three degree levels: bachelor's, master's, and Ph.D. In addition, the survey provides information on major employer categories, on graduate study plans, on women and minority participation, and citizenship status.

The survey covers the graduates of chemistry departments approved by the ACS and chemical engineering departments accredited by the American Institute of Chemical Engineers and the Engineer's Council for Professional Development. The above departments provided the names and addresses of the graduates, and the Office of Manpower Studies (OMS) mailed the survey questionnaires to all those with addresses in the continental United States and Hawaii.

No effort was made to examine the characteristics of the graduates from departments that do not participate in the survey or of those graduates who did not mail back completed questionnaires. The results presented here, therefore, do not constitute a random sample of the 1974 graduates in chemistry and chemical engineering. The survey coverage, however, is so extensive that the results obtained can be considered as a very accurate description of the postgraduation status and salary levels of the new graduates.

The extent of the coverage of the present survey will not be known until the U. S. Office of Education publishes the number of degrees granted in chemistry and chemical engineering between

July 1, 1973, and June 30, 1974. Instead, the comparison of degrees granted in 1972 with the responses to the survey of the same year<sup>1</sup> are presented in Table 1. Assuming that the Office of Education figures are an accurate measure of the universe of 1972 graduates, the table presents the number of respondents to

Table 1

RESPONSES TO THE 1972 OMS SURVEY AS PERCENTAGE  
OF THE 1972 GRADUATES  
by Degree Level, Major, and Gender

Major and Gender	D E G R E E L E V E L		
	Bachelor's	Master's	Ph.D.
Chemistry			
Men	26.0	22.9	37.0
Women	26.5	24.0	32.2
Chemical Engineering			
Men	33.8	25.7	32.1
Women	37.8	-	-

Source: U. S. Department of Health, Education, and Welfare, Office of Education, unpublished figures. American Chemical Society, Starting Salary Survey, 1972.

the survey as percentage of that universe. With the exception of women chemical engineering<sup>2</sup> master's and Ph.D. recipients, the percentage of responses range from 22.9 to 37.8, quite satisfactory for the purposes of the survey.

It is expected that the present (1974) survey coverage is at least as extensive as (and probably better than) the 1972 one. During the summer of 1974, 11,524 questionnaires were mailed to the graduates of 522 chemistry and 122 chemical engineering departments. It is estimated that approximately ten percent of the letters did not reach their intended destination, because of the high mobility of the surveyed population. By September 30, 1974, 4,610 responses had been received, 4,583 of them usable. Table 2 presents the responses by degree level, gender, and major.

<sup>1</sup>The most recent year for which there are available figures for degrees granted in chemistry and chemical engineering by all four-year colleges and universities in the nation.

<sup>2</sup>Three master's and zero Ph.D. responses were received, out of twenty-eight master's and one Ph.D. degrees granted.

The following are some comments intended to facilitate the interpretation of the results. The questionnaires were manually edited, and those judged as useless were discarded. Many partially completed questionnaires were processed in order to extract the maximum amount of information. The discrepancies in the number of respondents in various tables reflect the use of these incomplete questionnaires.

Table 2

## VALID RESPONSES TO THE 1974 OMS SURVEY

by Degree Level, Major, and Gender

Major and Gender	D E G R E E L E V E L		
	Bachelor's	Master's	Ph.D.
Chemistry	2,610	351	552
Men	2,051	278	486
Women	559	73	66
Chemical Engineering	826	154	90
Men	793	152	89
Women	33	2	1

Question 9 (see questionnaire) was edited in order to eliminate multiple check marks and to reflect as accurately as possible the employment status of the respondent. The terms "full-time" and "inexperienced" as used in the tables refer to those employed full-time in the fields of chemistry and chemical engineering and who have less than 52 weeks of prior experience.

Prepared by the Office of  
Manpower Studies

April, 1975

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## EMPLOYMENT STATUS OF CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES

by Degree: Summer of 1973 and Summer of 1974

Major and Employment Status	Bachelor's		Degree Level		Ph.D.	
	1974		1973		1973	
	1973	1974	1973	1974	1973	1974
<b>CHEMISTRY</b>						
Full-time employed	25.2%	24.5%	48.6%	47.9%	49.1%	48.7%
Postdoctoral/grad. asst.	22.8	28.1	29.3	31.9	40.0	43.1
Part-time/summer employment	16.8	17.8	2.1	3.7	1.6	2.2
Employed outside field	10.5	7.3	5.6	4.0	2.4	1.8
Military/Peace Corps, etc.	2.3	2.0	1.2	1.1	0.9	1.1
Unemployed	4.1	4.9	4.2	5.4	3.4	1.6
Not seeking employment	18.4	15.3	8.9	6.0	2.5	1.4
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number of Responses	2661	2610	426	351	552	552
<b>CHEMICAL ENGINEERING</b>						
Full-time employed	61.9%	69.4%	58.6%	70.8%	77.8%	94.4%
Postdoctoral/grad. asst.	13.2	15.0	17.7	16.2	12.0	4.4
Part-time/summer employment	7.0	5.6	3.7	1.9	0.9	1.1
Employed outside field	7.1	3.6	6.5	3.2	4.6	-
Military/Peace Corps, etc.	3.0	2.3	3.7	1.9	1.9	-
Unemployed	3.0	1.1	2.3	3.2	2.8	-
Not seeking employment	4.6	3.0	7.4	2.6	-	-
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number of responses	953	826	215	154	108	90



## EMPLOYMENT STATUS OF CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES

by Degree and Gender: 1974

Major and Employment Status	D E G R E E L E V E L																	
	BACHELOR'S				MASTER'S				Ph.D.									
	Men %	Women %	Total No.	Total %	Men %	Women %	Total No.	Total %	Men %	Women %	Total No.	Total %						
<b>CHEMISTRY</b>																		
Full-time employed	22.9	470	30.2	169	24.5	639	48.6	135	45.2	33	47.9	168	50.0	243	39.4	26	48.7	269
Part-time/summer employment	18.6	382	14.8	83	17.8	465	3.2	9	5.5	4	3.7	13	1.4	7	7.6	5	2.2	12
Postdoctoral/grad. asst.	28.0	574	28.6	160	28.1	734	32.0	89	31.5	23	31.9	112	42.6	207	47.0	31	43.1	238
Employed outside field	7.2	148	7.5	42	7.3	190	4.3	12	2.7	2	4.0	14	2.1	10	-	0	1.8	10
Military/Peace Corps, etc.	2.4	49	0.7	4	2.0	53	1.4	4	-	0	1.1	4	1.2	6	-	0	1.1	6
Unemployed	5.1	104	4.5	25	4.9	129	5.4	15	5.5	4	5.4	19	1.2	6	4.5	3	1.6	9
Not seeking employment	15.8	324	13.6	76	15.3	400	5.0	14	9.6	7	6.0	21	1.4	7	1.5	1	1.4	8
Number of responses		2051		559		2610		278		73		351		486		66		552
<b>CHEMICAL ENGINEERING</b>																		
Full-time employed	68.9	546	81.8	27	69.4	573	71.1	108	50.0	1	70.8	109	95.5	85	-	0	94.4	85
Part-time/summer employment	5.5	44	6.1	2	5.6	46	2.0	3	-	0	1.9	3	1.1	1	-	0	1.1	1
Postdoctoral/grad. asst.	15.4	122	6.1	2	15.0	124	16.4	25	-	0	16.2	25	3.4	3	100.0	1	4.4	4
Employed outside field	3.7	29	3.0	1	3.6	30	3.3	5	-	0	3.2	5	-	0	-	0	-	0
Military/Peace Corps, etc.	2.3	18	3.0	1	2.3	19	2.0	3	-	0	1.9	3	-	0	-	0	-	0
Unemployed	1.1	9	-	0	1.1	9	2.6	4	50.0	1	3.2	5	-	0	-	0	-	0
Not seeking employment	3.2	25	-	0	3.0	25	2.6	4	-	0	2.6	4	-	0	-	0	-	0
Number of responses		793		33		826		152		2		154		89		1		90

## EMPLOYMENT STATUS OF CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES

by Degree and Minority Classification: 1974

Major and Employment Status	D E G R E E L E V E L													
	BACHELOR'S				MASTER'S				Ph.D.					
	%	No.	Non- minorities	%	No.	Minorities	%	No.	Non- minorities	%	No.	Minorities	%	No.
<b>CHEMISTRY</b>														
Full-time employed	23.6	35	23.8	516	38.5	15	48.0	129	39.7	25	50.3	226		
Postdoctoral/grad. asst.	23.6	35	29.2	632	25.6	10	32.7	88	57.1	36	41.0	184		
Part-time/summer employ.	18.9	28	17.9	388	2.6	1	4.1	11	1.6	1	2.0	9		
Employed outside field	5.4	8	7.6	164	7.7	3	4.1	11	-	0	2.2	10		
Military, Peace Corps, etc.	-	0	2.0	44	-	0	1.1	3	-	0	1.1	5		
Unemployed	9.5	14	4.6	100	7.7	3	5.6	15	1.6	1	1.8	8		
Not seeking employment	18.9	28	14.9	323	17.9	7	4.5	12	-	0	1.6	7		
Number of responses		148		2167		39		269		63		449		
<b>CHEMICAL ENGINEERING</b>														
Full-time employed	74.3	26	68.9	468	50.0	13	75.9	82	93.8	15	94.6	53		
Postdoctoral/grad. asst.	11.4	4	15.8	107	30.8	8	14.8	16	6.2	1	5.4	3		
Part-time/summer employ.	5.7	2	5.3	36	3.8	1	0.9	1	-	0	-	0		
Employed outside field	2.9	1	3.4	23	3.8	1	3.7	4	-	0	-	0		
Military, Peace Corps, etc.	-	0	2.4	16	-	0	1.9	2	-	0	-	0		
Unemployed	2.9	1	1.2	8	7.7	2	-	0	-	0	-	0		
Not seeking employment	2.9	1	3.1	21	3.8	1	2.8	3	-	0	-	0		
Number of responses		35		679		26		108		16		56		

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AVERAGE NUMBER OF FIRM JOB OFFERS  
to Chemistry and Chemical Engineering Graduates  
Who Accepted Full-time Employment: 1974

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	Degree Level		
	Bachelor's	Master's	Ph.D.
Inexperienced chemists	1.8	1.9	2.0
Experienced chemists	1.7	2.1	2.4
Inexperienced chemical engineers	4.7	3.6	3.0
Experienced chemical engineers	5.0	3.2	4.0

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## STARTING YEARLY SALARIES OF INEXPERIENCED FULL-TIME EMPLOYED CHEMISTRY GRADUATES

by Degree: Summer of 1973 and Summer of 1974

Salaries	Degree Level					
	BACHELOR'S		MASTER'S		Ph.D.	
	1973	1974	1973	1974	1973	1974
Lower 10%	\$ 7,200	\$ 7,500	\$ 7,700	\$ 8,500	\$ 9,100	\$11,000
Lower 25%	7,800	8,400	9,000	10,000	10,800	14,500
Median	9,000	9,900	10,500	11,700	14,900	16,200
Upper 75%	10,000	11,000	11,600	12,700	16,000	17,400
Upper 90%	10,600	11,700	12,200	13,500	16,800	18,400
Number of Responses	487	463	119	90	145	159
Arithmetic Mean	8,929	9,690	10,215	11,536	13,581	15,593
Standard Deviation	1,425	1,711	1,881	1,969	3,010	2,723

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## STARTING YEARLY SALARIES OF INEXPERIENCED FULL-TIME EMPLOYED CHEMISTRY GRADUATES

by Degree, Gender, and Employer: 1974

Degree and Employer	G E N D E R								
	Men			Women			Total		
	No.	Median	Mean	No.	Median	Mean	No.	Median	Mean
<b>BACHELOR'S</b>									
Industry	230	10,400	10,100	88	10,800	10,544	318	10,500	10,223
College/university	23	7,600	7,555	14	7,800	7,759	37	7,700	7,632
High school	14	7,700	7,837	6	8,300	8,347	20	8,100	7,990
Federal government	11	9,400	9,758	3	-	8,000	14	9,100	9,381
State/local government	19	9,200	9,117	3	-	11,231	22	9,300	9,405
Hospital/ind. lab.	20	8,600	8,969	12	8,500	8,321	32	8,500	8,726
Non-profit organization	4	-	8,725	6	8,100	8,383	10	8,600	8,520
Other	5	10,100	9,658	4	-	7,965	9	8,300	8,906
All employers	326	9,800	9,664	136	10,000	9,752	462	9,900	9,690
<b>MASTER'S</b>									
Industry	55	12,300	12,134	12	11,900	11,570	67	12,100	12,033
College/university	3	-	9,333	2	-	8,580	5	9,000	9,032
High school	5	10,800	11,449	0	-	-	5	10,800	11,449
Federal government	1	-	8,055	0	-	-	1	-	8,055
State/local government	2	-	9,060	0	-	-	2	-	9,060
Hospital/ind. lab.	1	-	11,000	3	-	9,433	4	-	9,825
Non-profit organization	2	-	12,350	1	-	8,400	3	-	11,033
Other	2	-	11,250	1	-	8,500	3	-	10,333
All employers	71	12,000	11,789	19	11,300	10,589	90	11,800	11,536
<b>Ph.D.</b>									
Industry	108	16,500	16,836	7	16,400	16,555	115	16,500	16,819
College/university	23	11,500	11,577	8	11,100	10,813	31	11,400	11,379
High school	1	-	8,800	0	-	-	1	-	8,800
Federal government	6	16,700	16,679	0	-	-	6	16,700	16,679
State/local government	2	-	13,750	0	-	-	2	-	13,750
Hospital, ind. lab.	3	-	12,833	0	-	-	3	-	12,833
Non-profit organization	0	-	-	0	-	-	0	-	-
Other	1	-	17,520	0	-	-	1	-	17,520
All employers	144	16,300	15,812	15	13,000	13,493	159	16,200	15,593

B-3

STARTING YEARLY SALARIES OF INEXPERIENCED FULL-TIME EMPLOYED M.S. AND Ph.D. CHEMISTRY GRADUATES  
by Chemical Specialty: 1974

Chemical Specialty	D E G R E E L E V E L					
	MASTER'S			Ph.D.		
	No.	Median	Mean	No.	Median	Mean
Analytical	13	12,000	11,845	22	15,800	14,824
Biochemistry	7	10,000	10,843	3	-	12,653
Inorganic	16	11,000	11,066	19	16,500	16,311
Organic	34	11,900	11,323	63	16,500	15,821
Physical	10	11,600	11,294	38	16,300	15,614
Polymer	3	-	12,833	4	-	16,825
Other	4	-	13,563	10	15,500	14,798
All Specialties	87	11,800	11,536	159	16,200	15,593

## STARTING YEARLY SALARIES

of Inexperienced Full-time Employed B.S. and Ph.D. Chemistry and B.S. Chemical Engineering Graduates  
by Geographic Region: 1974

Geographic Region <sup>1</sup>	CHEMISTRY						CHEMICAL ENGINEERING					
	Bachelor's			Ph.D.			Bachelor's			Ph.D.		
	No.	Median	Mean	No.	Median	Mean	No.	Median	Mean	No.	Median	Mean
Pacific	33	9,500	9,261	13	16,600	15,691	58	12,600	12,617	58	12,600	12,617
Mountain	19	9,700	9,598	5	15,400	14,837	8	12,700	12,670	8	12,700	12,670
West North Central	31	9,100	9,070	10	16,400	16,560	24	12,500	12,167	24	12,500	12,167
West South Central	37	10,700	10,109	9	16,600	16,426	85	12,800	12,915	85	12,800	12,915
East North Central	103	10,500	9,938	29	16,100	15,092	70	12,800	12,844	70	12,800	12,844
East South Central	14	9,700	9,859	8	11,800	12,538	13	12,700	12,624	13	12,700	12,624
Middle Atlantic	106	10,400	10,154	41	16,400	16,180	110	12,600	12,564	110	12,600	12,564
South Atlantic	70	9,200	9,373	37	16,200	15,685	67	12,600	12,650	67	12,600	12,650
New England	49	8,600	9,002	7	15,800	15,143	30	12,500	12,361	30	12,500	12,361
All Regions	462	9,900	9,690	159	16,200	15,593	465	12,600	12,660	465	12,600	12,660

<sup>1</sup>See footnote on Table F-1.

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

by Degree: Summer of 1973 and Summer of 1974

Salaries	Degree Level					
	BACHELOR'S		MASTER'S		Ph.D.	
	1973	1974	1973	1974	1973	1974
Lower 10%	\$10,900	\$12,000	\$11,300	\$12,600	\$11,400	\$14,000
Lower 25%	11,300	12,300	12,000	13,200	13,600	16,800
Median	11,600	12,600	12,900	14,000	16,400	17,600
Upper 75%	11,900	13,000	13,200	14,500	17,100	18,600
Upper 90%	12,000	13,500	13,500	15,000	17,700	20,000
Number of Responses	457	467	72	75	38	43
Arithmetic Mean	11,500	12,660	12,636	13,901	15,341	17,495
Standard Deviation	844	743	980	974	2,521	1,879



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

by Degree and Employer: 1974

Employer	Degree Level													
	BACHELOR'S						MASTER'S						Ph.D.	
	No.	Median	Mean	No.	Median	Mean	No.	Median	Mean	No.	Median	Mean		
Industry	437	12,700	12,721	73	14,000	13,909	41	17,600	17,629					
College/university	0	-	-	0	-	-	1	-	17,500					
High School	0	-	-	0	-	-	0	-	-					
Federal government	13	11,300	11,348	1	-	13,440	0	-	-					
State/local government	4	-	11,320	0	-	-	0	-	-					
Hospital/independent lab.	0	-	-	1	-	13,800	0	-	-					
Non-profit organization	2	-	13,400	0	-	-	0	-	-					
Other	10	12,000	11,994	0	-	-	1	-	12,000					
All employers	466	12,600	12,660	75	14,000	13,901	43	17,600	17,495					

FIELDS OF FURTHER<sup>1</sup> STUDY OF CHEMISTRY GRADUATES

by Degree: Summer of 1973 and Summer of 1974

Fields of Further Study	D E G R E E L E V E L											
	BACHELOR'S				MASTER'S				Ph.D.			
	1973		1974		1973		1974		1973		1974	
%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	
Chemical Science	43.5	752	50.9	911	72.0	144	76.2	138	-	-	-	0
Business Administration	4.9	84	3.9	70	6.0	12	3.9	7	12.0	3	33.3	8
Dentistry	4.7	81	4.5	80	0.5	1	0.6	1	-	-	4.2	1
Law	0.8	13	1.2	22	1.0	2	1.7	3	4.0	1	4.2	1
Medicine	32.3	559	27.1	485	4.0	8	6.6	12	40.0	10	25.0	6
Pharmacology	1.9	32	2.0	36	4.0	8	1.1	2	4.0	1	-	0
Other Physical Science	1.3	22	2.1	38	2.5	5	1.7	3	4.0	1	12.5	3
Other Biological Science	4.3	75	3.7	66	4.0	8	1.1	2	36.0	9	8.3	2
Other	6.4	110	4.6	82	6.0	12	7.2	13	-	-	12.5	3
Total, Planning Further Studies		1728		1790		200		181		25		24
Total Responses		2661		2610		426		351		552		552
All Planning Further Studies as % of All Responses		64.9		68.6		46.9		51.6		4.5		4.3

<sup>1</sup>Included are all those who indicated that they will attend school in fall 1974.



C-3

FIELDS OF FURTHER<sup>1</sup> STUDY OF B.S. AND M.S. CHEMISTRY GRADUATES

by Gender: 1974

Fields of Further Study	D E G R E E L E V E L											
	BACHELOR'S						MASTER'S					
	Men		Women		Total		Men		Women		Total	
%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	
Chemical Science	50.0	726	54.6	185	50.9	911	78.5	117	65.6	21	76.2	138
Business Administration	4.4	64	1.8	6	3.9	70	4.7	7	-	0	3.9	7
Dentistry	5.2	76	1.2	4	4.5	80	0.7	1	-	0	0.6	1
Law	1.1	16	1.8	6	1.2	22	2.0	3	-	0	1.7	3
Medicine	27.7	402	24.5	83	27.1	485	5.4	8	12.5	4	6.6	12
Pharmacy	2.1	31	1.5	5	2.0	36	-	0	6.3	2	1.1	2
Other Physical Science	2.3	33	1.5	5	2.1	38	1.3	2	3.1	1	1.7	3
Other Biological Science	3.0	43	6.8	23	3.7	66	1.3	2	-	0	1.1	2
Other	4.1	60	6.5	22	4.6	82	6.0	9	12.5	4	7.2	13
Total, Planning Further Studies		1451		339		1790		149		32		181
Total Responses		2051		559		2610		278		73		351
All Planning Further Studies as % of All Responses		70.7		60.6		68.6		53.6		43.8		51.6

<sup>1</sup>Included are all those who indicated that they will attend school in fall 1974.

## AGE DISTRIBUTION OF B.S. CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES

by Gender: 1974

Age	CHEMISTRY				CHEMICAL ENGINEERING						
	Men		Women		Men		Women		Total		
	%	No.	%	No.	%	No.	%	No.	%	No.	
20	0.7	14	1.8	10	0.9	24	0.1	1	0.1	1	
21	6.8	139	12.3	68	8.0	207	4.2	33	4.2	34	
22	59.9	1224	66.8	371	61.4	1595	52.3	411	75.8	436	
23	17.4	356	12.8	71	16.4	427	27.1	213	15.2	218	
24	4.2	85	2.2	12	3.7	97	6.6	52	6.1	54	
25	2.1	42	0.9	5	1.8	47	2.2	17	2.1	17	
26	1.9	39	0.9	5	1.7	44	1.9	15	1.8	15	
27	2.5	51	0.7	4	2.1	55	2.0	16	2.0	16	
28	1.2	24	0.5	3	1.0	27	1.4	11	1.3	11	
29	0.5	10	0.4	2	0.5	12	0.8	6	0.7	6	
30-34	2.0	40	0.5	3	1.7	43	1.1	9	1.1	9	
35-39	0.6	13	-	0	0.5	13	0.3	2	0.2	2	
40-49	0.2	5	0.2	1	0.2	6	-	0	-	0	
50 or More	0.0	1	-	0	0.0	1	-	0	-	0	
Total		2043		555		2598		786		33	819

D-2

## AGE DISTRIBUTION OF M.S. CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES

by Gender: 1974

Age	CHEMISTRY				CHEMICAL ENGINEERING					
	Men		Women		Men		Women		Total	
	%	No.	%	No.	%	No.	%	No.	%	No.
20	-	0	1.4	1	0.3	1	-	0	-	0
21	-	0	4.2	3	0.9	3	-	0	-	0
22	2.6	7	1.4	1	2.3	8	4.7	7	4.6	7
23	3.3	9	2.8	2	3.2	11	13.3	20	13.2	20
24	15.0	41	22.2	16	16.5	57	24.0	36	24.3	37
25	25.2	69	19.4	14	24.0	83	18.7	28	19.1	29
26	13.1	36	22.2	16	15.0	52	14.7	22	14.5	22
27	9.9	27	4.2	3	8.7	30	8.7	13	8.6	13
28	8.4	23	4.2	3	7.5	26	6.0	9	5.9	9
29	6.2	17	4.2	3	5.8	20	3.3	5	3.3	5
30-34	11.3	31	8.3	6	10.7	37	4.7	7	4.6	7
35-39	2.6	7	2.8	2	2.6	9	1.3	2	1.3	2
40-49	1.8	5	2.8	2	2.0	7	0.7	1	0.7	1
50 or More	0.7	2	-	0	0.6	2	-	0	-	0
Total		274		72		346		150		152

## AGE DISTRIBUTION OF Ph.D. CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES

by Gender: 1974

Age	CHEMISTRY				CHEMICAL ENGINEERING					
	Men		Women		Men		Women		Total	
	%	No.	%	No.	%	No.	%	No.	%	No.
24	0.4	2	-	0	0.4	2	-	0	-	0
25	1.2	6	-	0	1.1	6	-	1	1.1	1
26	10.1	49	13.6	9	10.5	58	-	16	17.8	16
27	23.5	114	18.2	12	22.9	126	100.0	18	21.1	19
28	16.1	78	22.7	15	16.9	93	-	11	12.2	11
29	12.8	62	7.6	5	12.2	67	-	11	12.2	11
30	8.2	40	12.1	8	8.7	48	-	8	8.9	8
31	7.0	34	10.6	7	7.4	41	-	7	7.8	7
32	4.5	22	-	0	4.0	22	-	7	7.8	7
33	4.9	24	3.0	2	4.7	26	-	3	3.3	3
34	3.5	17	1.5	1	3.3	18	-	3	3.3	3
35-39	6.4	31	7.6	5	6.5	36	-	4	4.4	4
40-49	1.2	6	1.5	1	1.3	7	-	0	-	0
50 or More	-	0	1.5	1	0.2	1	-	0	-	0
Total		485		66		551		89		90

E-1

## CITIZENSHIP OF CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES

by Degree: 1974

Major and Degree	U.S. Citizen		Non-U.S. Citizen		Total Responses
	%	No.	%	No.	
CHEMISTRY					
Bachelor's	98.1	2552	1.9	50	2602
Master's	87.7	306	12.3	43	349
Ph.D.	87.5	481	12.5	69	550
CHEMICAL ENGINEERING					
Bachelor's	96.8	798	3.2	26	824
Master's	76.5	117	23.5	36	153
Ph.D.	69.2	63	30.8	28	91



## MINORITY CLASSIFICATION OF CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES

by Degree: Summer of 1973 and Summer of 1974

Major and Minority Classification	D E G R E E L E V E L											
	Bachelor's			Master's			Ph.D.					
	1973	1974	1974	1973	1974	1974	1973	1974	1974	1973	1974	1974
CHEMISTRY												
Black	2.3	60	2.1	49	2.1	9	3.6	11	1.4	8	1.4	7
American Indian	0.2	4	0.2	4	-	-	-	0	-	-	0.2	1
Oriental	3.2	86	2.9	67	9.1	39	8.8	27	9.4	52	9.8	50
Spanish-Surnamed	0.7	19	1.2	28	0.9	4	0.3	1	1.1	6	1.0	5
Non-minorities	93.6	2492	93.6	2167	87.8	374	87.3	269	88.1	487	87.7	449
Total		2661		2315		426		308		553		512
CHEMICAL ENGINEERING												
Black	0.4	4	1.1	8	-	-	-	0	-	-	-	0
American Indian	0.1	1	0.6	4	-	-	-	0	-	-	-	0
Oriental	3.3	31	2.2	16	15.3	33	16.4	22	17.6	19	19.7	14
Spanish-Surnamed	0.4	4	1.0	7	0.5	1	3.0	4	1.9	2	2.8	2
Non-minorities	95.8	913	95.1	678	84.2	181	80.6	108	80.6	87	77.5	55
Total		953		713		215		134		108		71

E-3

## MINORITY CLASSIFICATION OF CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES

by Degree and Gender: 1974

Degree and Minority Classification	CHEMISTRY				CHEMICAL ENGINEERING							
	Men		Women		Men		Women		Total			
	%	No.	%	No.	%	No.	%	No.	%	No.		
<b>BACHELOR'S</b>												
Black	1.8	32	3.4	17	2.1	49	1.2	8	-	0	1.1	8
American Indian	0.2	4	-	0	0.2	4	0.4	3	3.2	1	0.6	4
Oriental	2.8	50	3.4	17	2.9	67	2.3	16	-	0	2.2	16
Spanish-Surnamed	1.1	20	1.6	8	1.2	28	1.0	7	-	0	1.0	7
Non-minorities	94.2	1708	91.6	459	93.6	2167	95.0	648	96.8	30	95.1	678
Total		1814		501		2315		682		31		713
<b>MASTER'S</b>												
Black	4.2	10	1.4	1	3.6	11	-	0	-	0	-	0
American Indian	0.0	0	-	0	-	0	-	0	-	0	-	0
Oriental	6.7	16	15.9	11	8.8	27	16.5	22	-	0	16.4	22
Spanish-Surnamed	0.0	0	1.4	1	0.3	1	3.0	4	-	0	3.0	4
Non-minorities	89.1	213	81.2	56	87.3	269	80.5	107	100.0	1	80.6	108
Total		239		69		308		133		1		134
<b>Ph.D.</b>												
Black	1.3	6	1.6	1	1.4	7	-	0	-	0	-	0
American Indian	0.2	1	-	0	0.2	1	-	0	-	0	-	0
Oriental	10.0	45	7.8	5	9.8	50	20.0	14	-	0	19.7	14
Spanish-Surnamed	0.9	4	1.6	1	1.0	5	2.9	2	-	0	2.8	2
Non-minorities	87.5	392	89.1	57	87.7	449	77.1	54	100.0	1	77.5	55
Total		448		64		512		70		1		71

E-4

MINORITY AND CITIZENSHIP CLASSIFICATION  
of Chemistry and Chemical Engineering Graduates  
by Degree: 1974

Major, Degree and Citizenship	Minority Classification					Total Responses
	Black	American Indian	Oriental	Spanish	Non- Minority	
CHEMISTRY						
Bachelor's	49	4	67	28	2160	2308
U.S. Citizen	43	4	47	25	2142	2261
Non-U.S. Citizen	6	0	20	3	18	47
Master's	11	0	27	1	267	306
U.S. Citizen	8	0	4	0	253	265
Non-U.S. Citizen	3	0	23	1	14	41
Ph.D.	7	1	50	5	448	511
U.S. Citizen	6	1	4	4	431	446
Non-U.S. Citizen	1	0	46	1	17	65
CHEMICAL ENGINEERING						
Bachelor's	8	4	16	7	677	712
U.S. Citizen	7	4	11	3	662	687
Non-U.S. Citizen	1	0	5	4	15	25
Master's	0	0	22	4	107	133
U.S. Citizen	0	0	4	2	95	101
Non-U.S. Citizen	0	0	18	2	12	32
Ph.D.	0	0	14	2	56	72
U.S. Citizen	0	0	2	2	43	47
Non-U.S. Citizen	0	0	12	0	13	25

## GEOGRAPHIC DISTRIBUTION

of the Employment of Inexperienced Full-time Employed Chemistry and Chemical Engineering Graduates

by Degree: 1974

Geographic Region	CHEMISTRY			CHEMICAL ENGINEERING		
	Bachelor's %	Master's %	Ph.D. %	Bachelor's %	Master's %	Ph.D. %
Pacific	7.1	3.4	8.1	12.4	8.0	2.4
Mountain	4.1	1.1	3.1	1.7	2.7	7.1
West North Central	6.9	5.6	6.3	5.1	1.3	2.4
West South Central	8.0	10.1	5.6	18.3	17.3	19.0
East North Central	22.2	29.2	18.1	15.4	10.7	9.5
East South Central	3.0	5.6	5.0	2.8	4.0	2.4
Middle Atlantic	23.1	27.0	26.3	23.7	36.0	26.2
South Atlantic	15.1	7.9	23.1	14.3	9.3	26.2
New England	10.6	10.1	4.4	6.4	10.7	4.8
Total	464	89	160	469	75	42

Pacific - Wash., Oreg., Calif., AK., & HI.; Mountain - Mont., ID., Wym., Nev., Utah, Col., Ariz., & New Mex.;  
West North Central - N. Dak., Minn., S. Dak., Iowa, Nebr., Kan., Mo.; West South Central - Okla., Ark., Tex.,  
 & La.; East North Central - Wisc., Mich., Ill., Ind., & Ohio; East South Central - Ky., Tenn., Miss., & Ala.;  
Middle Atlantic - N.Y., Penn., & N.J.; South Atlantic - Del., Md.; W. Va., D.C., Va., N.C., S.C., Ga., & Fla.;  
New England - Me., N.H., Vt., Mass., Conn., and R.I.

## CERTIFIED AND NON-CERTIFIED CHEMISTRY BACHELORS

G-1

Employment Status of B.S. Chemistry Graduates: 1974

Employment Status	Certified <sup>1</sup>		Non-certified	
	%	No.	%	No.
Full-time employed	26.1	338	22.9	301
Graduate assistant	38.3	496	18.1	238
Part-time/summer employment	14.0	181	21.6	284
Employed outside field	5.0	65	9.5	125
Military/Peace Corps, etc.	3.1	40	1.0	13
Unemployed	4.6	59	5.3	70
Not seeking employment	9.0	117	21.5	283
Total		1296		1314

<sup>1</sup>A "certified bachelor" is one who has been certified by the chemistry department chairman to the American Chemical Society, as having successfully completed the curriculum in chemistry as approved by the ACS Committee on Professional Training, and is, therefore, eligible to become a member of ACS.

G-2

Fields of Advanced Study of B.S. Chemistry Graduates: 1974

Fields of Advanced Study	Certified <sup>1</sup>		Non-certified	
	%	No.	%	No.
Chemical science	69.8	629	31.7	282
Business administration	3.8	34	4.0	36
Dentistry	1.2	11	7.8	69
Law	1.0	9	1.5	13
Medicine	15.0	135	39.4	350
Pharmacology	1.2	11	2.8	25
Other physical science	1.8	16	2.5	22
Other biological science	22.2	20	5.2	46
Other	4.0	36	5.2	46
Total, planning advanced studies		901		889
Total responses		1296		1314
All planning advanced studies as % of all responses		69.5%		67.7%

<sup>1</sup>See footnote on Table G-1.

## CERTIFIED AND NON-CERTIFIED CHEMISTRY BACHELORS

G-3

Starting Yearly Salaries  
of Inexperienced Full-time Employed B.S. Chemistry Graduates  
by Employer: 1974

Employer	Certified <sup>1</sup>			Non-certified		
	No.	Median	Mean	No.	Median	Mean
Industry	186	10,800	10,414	132	10,100	9,954
College/university	14	7,300	7,245	23	8,000	7,868
High school	1	-	7,500	19	8,200	8,016
Federal government	7	9,200	9,465	7	9,000	9,298
State/local government	10	9,900	9,893	12	9,100	8,999
Hospital/independent lab.	22	8,900	9,249	10	8,000	7,575
Non-profit organization	8	8,600	8,475	2	-	8,700
Other	1	-	11,200	8	8,200	8,619
Total	249	10,500	10,016	213	9,000	9,307

<sup>1</sup>See footnote on Table G-1.

AMERICAN CHEMICAL SOCIETY

Starting Salary and Employment Status of 1974 Chemistry and Chemical Engineering Graduates

PLEASE DO NOT WRITE  
IN THIS SPACE

- 1 Sex: (1)  Male (2)  Female
- 2-3 Year of birth \_\_\_\_\_
- 4 Highest degree received in 1974: (1)  Bachelors (2)  Masters (3)  Doctors
- 5 Field of degree: (1)  Chemistry (2)  Chem. Engineering (3)  Other \_\_\_\_\_  
(specify)
- 6 If you received an advanced degree in chemistry, indicate field:
- |   |   |
|---|---|
| (1) <input type="checkbox"/> Analytical               | (5) <input type="checkbox"/> Organic                  |
| (2) <input type="checkbox"/> Biochemistry             | (6) <input type="checkbox"/> Physical                 |
| (3) <input type="checkbox"/> Inorganic                | (7) <input type="checkbox"/> Polymer                  |
| (4) <input type="checkbox"/> Medicinal/Pharmaceutical | (8) <input type="checkbox"/> Other _____<br>(specify) |
- 7 Citizenship: (1)  U.S. (2)  Non-U.S.
- 8 EEOC minority (or non-minority) category in which you are included:
- |  |   |
|--|---|
| (1) <input type="checkbox"/> Black/Negro   | (4) <input type="checkbox"/> Spanish-Surnamed (of Mexican, Puerto Rican, Cuban or Spanish origin) |
| (2) <input type="checkbox"/> American Indian   | (5) <input type="checkbox"/> Non-minority/none of the preceding categories                        |
| (3) <input type="checkbox"/> Oriental (of Chinese, Japanese, Korean or Taiwanese origin) |   |
- 9 Check the appropriate category if, following graduation, you:
- |  |
|--|
| (1) <input type="checkbox"/> Accepted (or continued) a full-time professional position in a field of chemistry or chemical engineering |
| (2) <input type="checkbox"/> Accepted a postdoctoral, graduate assistant position, or other fellowship                                 |
| (3) <input type="checkbox"/> Accepted part-time or summer employment   |
| (4) <input type="checkbox"/> Accepted employment outside the field of chemistry or chemical engineering                                |
| (5) <input type="checkbox"/> Entered military service, Peace Corps, VISTA, PHS, or the like  |
| (6) <input type="checkbox"/> Were unable to obtain employment  |
| (7) <input type="checkbox"/> Were not seeking employment   |
- 10 Do you plan further advanced studies in fall, 1974? (1)  Yes (2)  No
- 11 If you plan further advanced studies in fall, 1974, specify field:
- |   |   |
|---|---|
| (1) <input type="checkbox"/> Chemical Science (including bio-chemistry/chem. engineering) | (5) <input type="checkbox"/> Medicine                 |
| (2) <input type="checkbox"/> Business administration                                      | (6) <input type="checkbox"/> Pharmacy                 |
| (3) <input type="checkbox"/> Dentistry  | (7) <input type="checkbox"/> Other physical science   |
| (4) <input type="checkbox"/> Law  | (8) <input type="checkbox"/> Other biological science |
|   | (9) <input type="checkbox"/> Other _____<br>(specify) |
- 12-16 Starting salary (full-time employed only): \$ \_\_\_\_\_ per year
- 17-21 Graduate stipend or fellowship: \$ \_\_\_\_\_ per year
- 22 Technical work experience prior to graduation: (1)  <52 weeks (2)  ≥52 weeks
- 23 Employer classification (check the one category which best describes your employer):
- |  |   |
|--|---|
| (1) <input type="checkbox"/> Industry                    | (6) <input type="checkbox"/> Hospital, independent laboratory |
| (2) <input type="checkbox"/> College or university       | (7) <input type="checkbox"/> Other non-profit organization    |
| (3) <input type="checkbox"/> High school or other school | (8) <input type="checkbox"/> Other _____<br>(specify)         |
| (4) <input type="checkbox"/> Federal government          |   |
| (5) <input type="checkbox"/> State or local government   |   |
- 24-26 Geographic location of employment: State \_\_\_\_\_
- 26 How many firm offers of employment as a chemist or chemical engineer did you receive?: Specify \_\_\_\_\_

1 2 3

4 5 6

7 8

9 10 11

12 13 14 15 16

17 18 19 20 21

22 23

24 25 26

Please return within 10 days to the American Chemical Society  
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