

CHEMISTRY GRADS POST GAINS IN 2005

New bachelor's and Ph.D. degrees increase, while growth in women's share continues

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DURING THE 2004–05 ACADEMIC year, college and university departments with chemistry undergraduate programs approved by the American Chemical Society produced 10,947 chemistry graduates, up substantially from the 10,155 produced one year earlier. The departments with master's programs produced 1,745 master's graduates, down from 1,840 a year earlier. Those offering the Ph.D. had 2,051 Ph.D. graduates, up from 1,963 in 2003–04.

The bachelor's total was up by just over 1,000 from the 9,923 graduates three years earlier in 2001–02, and it approached the all-time high of 11,219 set in 1997–98. The 1,745 master's graduates in 2004–05 represented continuation of a decline from the all-time high of 2,098 graduates in 1995–96. The 2,051 Ph.D. graduates in 2004–05 were an extension to a 16-year plateau, holding at between just below 2,000 to just over 2,200 graduates per year.

THE ROLE of women in chemistry is continuing to grow. They earned 51.9% of the 2004–05 chemistry bachelor's degrees, 48.6% of the master's, and 34.4% of the Ph.D.s. These shares are up from 42.3%, 42.2%, and 31.4%, respectively, 10 years earlier in 1994–95. In the early 1970s, women earned about 17% of the bachelor's degrees from ACS-approved departments, 23% of the master's, and 8% of the Ph.D.s. Women first earned 50% or more of the bachelor's degrees in 2001–02.

All of these data are from the 2005 and earlier annual reports of the ACS Committee on Professional Training (CPT). These reports are produced by the society's Office of Professional Training, which has been directed by Cathy A. Nelson since 1992.

Additional data from these reports indi-

cate recent growth in the number of full-time Ph.D. graduate chemistry students. The number was up to 17,543 in the fall of 2004 from 15,132 in the fall of 2000. For full-time master's students at schools offering a master's as the highest degree, the parallel gain was from 1,082 to 1,351.

CPT's function is to assess, approve, and monitor undergraduate chemistry programs.

THE BIG PRODUCERS OF CHEMISTRY GRADUATES

Only five schools made the top 25 at all degree levels in 2004–05

NUMBER OF GRADUATES	BACHELOR'S	MASTER'S	PH.D.
California, U of, San Diego	139	42	40
North Carolina, U of, Chapel Hill	116	14	27
Illinois, U of, Urbana-Champaign	94	15	33
Michigan, U of, Ann Arbor	75	20	32
Michigan State U	62	13	32

SOURCE: 2005 report of the ACS Committee on Professional Training

FEDERAL GOVERNMENT FIGURES

National Center for Education Statistics also gathers data on graduates with chemistry degrees

	BACHELOR'S	MASTER'S	PH.D.
1995	9,706	2,062	2,211
1996	10,395	2,214	2,228
1997	10,609	2,203	2,202
1998	10,528	2,108	2,291
1999	10,068	2,002	2,143
2000	9,989	1,857	2,028
2001	9,466	1,952	2,056
2002	9,084	1,823	1,984
2003	9,006	1,777	2,092

SOURCE: National Center for Education Statistics

It has been doing so since 1941. ACS does not approve either master's or Ph.D. chemistry programs, although it surveys them periodically, most recently in the 1990s. CPT will complete a new survey of Ph.D. programs this fall.

Departments with approved bachelor's programs are required to report annually

to CPT the total number of degrees they award at all three levels, including those in other than the traditional chemistry disciplines.

THE STATISTICS gathered each year on chemistry graduates by the National Center for Education Statistics (NCES) and the National Science Foundation include only degrees in the traditional classic subdisciplines: analytical, applied, general, inorganic and nuclear, organic, physical, and polymer chemistry. They do not include degrees in chemistry-related disciplines such as biochemistry and materials science that may be awarded by chemistry departments.

CPT and NCES/NSF counts of chemistry master's and Ph.D. graduates are in reasonably close agreement. For bachelor's, there are wider differences because of the different definitions used for chemistry and the inclusion by NCES of graduates from

about 400 mostly small programs that are not ACS approved.

The bachelor's degrees reported by CPT are of two types: certified and not certified. Graduates who are awarded certified degrees by their department heads have completed a curriculum that satisfies ACS requirements. They are qualified for immediate and full ACS membership. Those with degrees that are not certified are eligible for society membership only after three years of professional experience or the acquisition of a higher degree in a chemical science.

The percentage of degrees that are certified has been on a long, if irregular, decline. In 2004–05, it went up marginally to 35.9% from 35.7% one year earlier, but it was down from 40.1% in 1998–99 and 39.9% in 1994–95.

Certification is to an extent an option for the departments. Many graduates with noncertified degrees have in fact met ACS's certification requirements. Policies vary by department. For example, in 2004–05, all 142 chemistry bachelor's degrees from the University of Texas, Austin, were certified, whereas at the University of California, Los

Angeles, only eight of 202 were.

CPT also gathers annual data on chemical engineering degrees from departments accredited by the American Institute of Chemical Engineers (AIChE) and the Accreditation Board for Engineering & Technology (ABET). However, these departments are not required to respond to

CHEMISTRY GRADUATES

ACS's count shows gains for bachelor's and doctoral graduates and a decline for master's in 2004–05

	BACHELOR'S				MASTER'S	PH.D.
	TOTAL	CERTIFIED	NOT CERTIFIED	% CERTIFIED		
1995	9,947	3,971	5,976	39.9%	1,878	2,127
1996	10,902	4,309	6,593	39.5	2,098	2,127
1997	11,184	4,253	6,931	38.0	2,086	2,174
1998	11,219	4,247	6,972	37.9	1,980	2,208
1999	10,979	4,406	6,573	40.1	1,925	2,093
2000	10,669	4,150	6,519	38.9	1,796	1,982
2001	10,323	3,917	6,406	37.9	1,832	2,028
2002	9,923	3,713	6,210	37.4	1,701	1,955
2003	10,068	3,739	6,329	37.1	1,614	2,007
2004	10,155	3,622	6,533	35.7	1,840	1,963
2005	10,947	3,925	7,022	35.9	1,745	2,051

SOURCE: Annual reports of the ACS Committee on Professional Training

GRADUATE STUDENT ENROLLMENT

Number of full-time chemistry graduate students has been growing steadily for the past five years

	NO. OF DEPARTMENTS	FIRST-YEAR GRADUATE STUDENTS		ALL GRADUATE STUDENTS		
		FULL-TIME	PART-TIME	FULL-TIME	PART-TIME	
MASTER'S						
2000	123	395	175	1,082	736	
2001	121	447	167	1,192	644	
2002	121	446	160	1,188	636	
2003	114	464	149	1,192	604	
2004	110	526	141	1,351	549	
PH.D.						
2000	195	3,597	183	15,132	985	
2001	192	3,729	180	16,092	811	
2002	193	3,827	176	16,588	823	
2003	196	3,777	319	17,258	1,095	
2004	195	3,870	161	17,543	941	

NOTE: Master's departments are defined as those whose highest offering for chemists is the master's degree.

SOURCE: Annual reports of the ACS Committee on Professional Training

CPT, hence the data are not complete.

Of the 634 departments with ACS-approved chemistry programs, all but five produced at least one bachelor's graduate in 2004–05. Of the 305 departments with master's programs, all but 22 had at least one graduate. At the doctoral level, 187 of 195 schools with programs awarded at least one degree.

CPT's annual reports were delayed in the late 1990s by a switch to electronic data handling. Five years of data, from 1996–97 to 2000–01, became available in 2003 (C&EN, Aug. 25, page 46, 2003). Data for 2001–02 followed in 2004 (C&EN, March 29, 2004, page 48). Data for 2002–03 and 2003–04 came last year (C&EN, Feb. 7, 2005, page 38, and Sept. 26, 2005, page 52). This report brings CPT back to its traditional schedule for reporting its data.

School-by-school data on 2004–05

chemistry and chemical engineering graduates are presented in a table at the end of this article and on the Web at chemistry.org/cpt/annrpt.html.

In 2004–05, the top three producers of chemistry bachelor's graduates were the University of California, Los Angeles, with 202; the University of Washington, with 188; and the University of Texas, Austin, with 142. These three schools also led for the combined five years from 2000–01 to 2004–05 with totals of 990, 852, and 626, respectively.

Other big producers were the University of California, San Diego, and North Carolina State University with five-year totals of 571 and 527, respectively.

The biggest producers of Ph.D. chemists in 2004–05 were Massachusetts Institute of Technology, with 48 graduates; the University of California, Berkeley, with 43; and

TOP 10 PRODUCERS OF CHEMICAL ENGINEERING GRADUATES, 2004–05

BACHELOR'S GRADUATES		
1	Pennsylvania State U	111
2	Georgia Institute of Technology	106
3	Texas, U of, Austin	103
4	Minnesota, U of, Twin Cities	96
5	California, U of, Berkeley	94
5	North Carolina State U	94
7	Texas A&M U, College Station	89
8	Purdue U	81
9	Puerto Rico, U of, Mayagüez	80
9	Wisconsin, U of, Madison	80

MASTER'S GRADUATES		
1	Lamar U	55
2	Illinois Institute of Technology	45
3	Massachusetts Institute of Technology	29
3	Stanford U	29
5	Yale	27
6	Cleveland State U	26
7	Michigan, U of, Ann Arbor	24
7	South Florida, U of	24
9	Georgia Institute of Technology	22
10	Cornell U	21
10	North Carolina State U	21

DOCTORAL GRADUATES		
1	Massachusetts Institute of Technology	41
2	Georgia Institute of Technology	28
2	Minnesota, U of, Twin Cities	28
4	Texas, U of, Austin	22
5	Ohio State U	19
6	California, U of, Los Angeles	18
6	Florida, U of	18
6	Purdue U	18
9	California, U of, Berkeley	16
9	Connecticut, U of	16
9	Lehigh U	16
9	Wisconsin, U of, Madison	16

SOURCE: 2005 report of the ACS Committee on Professional Training

the University of Florida and Stanford University, both with 42. Over the five years from 2000–01 to 2004–05, the University of California, Berkeley, leads with a total of 285. Second is Purdue University with 215, and the University of Illinois, Urbana-Champaign, is third with 204.

THE DATA on master's chemistry graduates tend to be somewhat volatile. For instance, Yale University reported nine such graduates in 2003–04. For 2004–05, it reported 39. This was high enough to put the school in second place behind the University of California, San Diego, with 42. Third was Cornell University with 33.

The number of bachelor's chemical engineering graduates reported to CPT is on the decline. The tally of 4,418 for 2004–05 was down by 341 from 4,759 a year earlier. This total, in turn, had been down by 205 from 2002–03. And it would have been down further but for the inclusion in 2003–04 of 91 graduates from the then newly AICHE/ABET-accredited program at Western Michigan University. This school reported only 12 such graduates in 2004–05.

The largest producers of chemical engineering graduates in 2004–05 were Pennsylvania State University with 111 bachelor's, Lamar University with 55 master's, and Massachusetts Institute of Technology with 41 Ph.D.s. ■

CHEMISTRY GRADUATES BY GENDER

Women posted further gains in 2005 at all degree levels

BACHELOR'S GRADUATES	TOTAL	MEN	WOMEN	% WOMEN
1995	9,947	5,740	4,207	42.3%
1996	10,902	6,260	4,642	42.6
1997	11,184	6,238	4,946	44.2
1998	11,219	6,143	5,076	45.2
1999	10,979	6,012	4,967	45.2
2000	10,669	5,746	4,923	46.1
2001	10,323	5,409	4,914	47.6
2002	9,923	4,958	4,965	50.0
2003	10,068	5,100	4,968	49.3
2004	10,155	4,987	5,168	50.9
2005	10,947	5,264	5,683	51.9

MASTER'S GRADUATES	TOTAL	MEN	WOMEN	% WOMEN
1995	1,878	1,086	792	42.2%
1996	2,098	1,186	912	43.5
1997	2,086	1,234	852	40.8
1998	1,980	1,087	893	45.1
1999	1,925	1,097	828	43.0
2000	1,796	1,036	760	42.3
2001	1,832	1,092	740	40.4
2002	1,701	922	779	45.8
2003	1,614	873	741	45.9
2004	1,840	976	864	47.0
2005	1,745	897	848	48.6

DOCTORAL GRADUATES	TOTAL	MEN	WOMEN	% WOMEN
1995	2,127	1,459	668	31.4%
1996	2,127	1,475	652	30.7
1997	2,174	1,526	648	29.8
1998	2,208	1,509	699	31.7
1999	2,093	1,454	639	30.5
2000	1,982	1,339	643	32.4
2001	2,028	1,335	693	34.2
2002	1,955	1,307	648	33.2
2003	2,007	1,368	639	31.8
2004	1,963	1,314	649	33.1
2005	2,051	1,346	705	34.4

SOURCE: Annual reports of the ACS Committee on Professional Training

TOP 25 CHEMISTRY PRODUCERS IN 2004–05

TOTAL BACHELOR'S GRADUATES

1	California, U of, Los Angeles	202
2	Washington, U of	188
3	Texas, U of, Austin	142
4	California, U of, San Diego	139
5	North Carolina, U of, Chapel Hill	116

6	Virginia, U of	113
7	Illinois, U of, Chicago	102
8	North Carolina State U	101
9	Illinois, U of, Urbana-Champaign	94
10	California, U of, Berkeley	89

11	Minnesota, U of, Twin Cities	81
12	Michigan, U of, Ann Arbor	75
13	Colorado, U of, Boulder	67
14	California, U of, Irvine	66
14	Florida State U	66

16	Indiana U, Bloomington	65
17	Florida, U of	64
18	Michigan State U	62
19	Puerto Rico, U of, Rio Piedras	61
20	State U of New York, Binghamton	60

21	Maryland, U of, College Park	58
22	Brigham Young U	57
22	William & Mary, C of	57
24	New York U	55
25	California, U of, Santa Barbara	54

CERTIFIED BACHELOR'S GRADUATES

1	Texas, U of, Austin	142
2	North Carolina, U of, Chapel Hill	116
3	California, U of, San Diego	97
4	Michigan, U of, Ann Arbor	75
5	William & Mary, C of	49

6	California, U of, Santa Barbara	47
7	North Carolina State U	46
8	Illinois, U of, Chicago	45
9	Virginia, U of	42
10	Delaware, U of	39

11	Utah, U of	37
12	Georgia Institute of Technology	32
13	Illinois State U	31
14	North Carolina, U of, Wilmington	30
15	Massachusetts Inst. of Technology	29

15	Purdue U	29
17	Charleston, C of	26
17	U. S. Naval Academy	26
19	California, U of, Davis	24
19	Georgia Southern U	24

19	San Diego State U	24
22	Minnesota, U of, Twin Cities	23
23	Boston U	22
23	Chicago, U of	22
23	Cincinnati, U of	22

23	Illinois, U of, Urbana-Champaign	22
23	Puerto Rico, U of, Rio Piedras	22
23	Truman State U	22

SOURCE: 2005 report of the ACS Committee on Professional Training

MASTER'S GRADUATES

1	California, U of, San Diego	42
2	Yale U	39
3	Cornell U	33
4	Columbia U	26
5	Oregon, U of	23

6	Chicago, U of	22
7	Harvard U	21
8	Michigan, U of, Ann Arbor	20
8	Rochester, U of	20
10	State U of New York, Stony Brook	19

11	California, U of, Irvine	18
11	Ohio State U	18
11	Rice U	18
14	City U of New York, Graduate Center	17
15	California, U of, Riverside	15

15	Georgia State U	15
15	Illinois, U of, Urbana-Champaign	15
15	Lehigh U	15
19	Missouri, U of, St. Louis	14
19	North Carolina, U of, Chapel Hill	14

19	Utah, U of	14
19	Wisconsin, U of, Madison	14
23	Brigham Young U	13
23	Illinois State U	13
23	Michigan State U	13
23	Northeastern U	13

DOCTORAL GRADUATES

1	Massachusetts Inst. of Technology	48
2	California, U of, Berkeley	43
3	Florida, U of	42
3	Stanford U	42
5	California, U of, San Diego	40

6	California Institute of Technology	38
7	Northwestern U	37
8	Purdue U	36
9	Pennsylvania State U	35
9	Texas, U of, Austin	35

11	Illinois, U of, Urbana-Champaign	33
11	Minnesota, U of, Twin Cities	33
11	Texas A&M U, College Station	33
14	Michigan State U	32
14	Michigan, U of, Ann Arbor	32

16	Georgia Institute of Technology	31
17	Chicago, U of	27
17	North Carolina, U of, Chapel Hill	27
17	Ohio State U	27
20	Columbia U	26

20	Harvard U	26
22	Princeton U	25
23	California, U of, Los Angeles	24
24	Colorado, U of, Boulder	23
24	Cornell U	23
24	Pennsylvania, U of	23
24	Pittsburgh, U of	23

CPT DATA, 2004-05

Chemistry and chemical engineering degrees awarded by schools with ACS-approved bachelor's chemistry programs

	CHEMISTRY				CHEMICAL ENGINEERING		
	BACHELOR'S				B.S.	M.S.	PH.D.
	TOTAL	CERTIFIED	M.S.	PH.D.	B.S.	M.S.	PH.D.
A							
Abilene Christian U	16	2	—	—			
Agnes Scott C	1	1	—	—			
Akron, U of	7	6	3	9	a		
Alabama, U of							
Birmingham	22	9	3	2			
Huntsville	10	9	3	—	11	2	—
Tuscaloosa	19	3	6	11	35	3	4
Alaska Fairbanks, U of	6	5	7	5			
Albion C	25	1	—	—			
Albright C	9	2	—	—			
Alfred U	3	2	—	—			
Allegheny C	15	0	—	—			
Alma C	4	0	—	—			
American U	8	1	6	2			
Amherst C	15	5	—	—			
Andrews U	0	0	—	—			
Appalachian State U	16	4	—	—			
Arcadia U	4	1	—	—			
Arizona State U	28	13	5	13	29	9	0
Arizona, U of	24	18	7	10	31	2	4
Arkansas State U	36	15	2	—			
Arkansas Tech U	7	3	—	—			
Arkansas, U of							
Fayetteville	36	14	3	5	31	1	2
Little Rock	10	0	6	—			
Armstrong Atlantic State U	9	1	—	—			
Ashland U	4	2	—	—			
Auburn U	24	5	2	13	51	4	9
Augsburg C	6	3	—	—			
Augustana C							
Illinois	5	1	—	—			
South Dakota	11	2	—	—			
Austin C	16	0	—	—			
Austin Peay State U	6	0	—	—			
B							
Baldwin-Wallace C	8	0	—	—			
Ball State U	21	11	5	—			
Barnard C	14	2	—	—			
Bates C	11	0	—	—			
Baylor U	38	5	4	2			
Beloit C	10	1	—	—			
Bemidji State U	3	1	—	—			
Benedictine U	11	11	—	—			
Berry C	8	2	—	—			
Birmingham-Southern C	6	0	—	—			
Bloomsburg U	7	2	—	—			
Boise State U	5	5	—	—			
Boston C	20	11	5	10			
Boston U	27	22	4	18			
Bowdoin C	10	2	—	—			

	CHEMISTRY				CHEMICAL ENGINEERING		
	BACHELOR'S				B.S.	M.S.	PH.D.
	TOTAL	CERTIFIED	M.S.	PH.D.	B.S.	M.S.	PH.D.
C							
Bowling Green State U	9	5	5	4			
Bradley U	9	3	0	—			
Brandeis U	6	0	4	3			
Bridgewater State C	8	6	—	—			
Brigham Young U	57	17	13	9	57	0	2
Brown U	15	0	7	6	4	5	1
Bryn Mawr C	14	13	3	1			
Bucknell U	33	3	5	—	27	1	—
Butler U	38	1	—	—			
C							
California Inst. of Tech.	19	19	3	38	6	12	13
California Poly. State U	44	13	4	—			
California State Poly. U	26	11	1	—	a		
California State U							
Bakersfield	9	5	—	—			
Chico	8	5	—	—			
Dominguez Hills	6	1	—	—			
East Bay (formerly Hayward)	50	3	7	—			
Fresno	23	6	8	—			
Fullerton	44	0	11	—			
Long Beach	13	3	5	—	20	10	—
Los Angeles	19	5	5	—			
Northridge	23	18	3	—			
Sacramento	23	3	—	—			
San Bernardino	22	3	—	—			
San Marcos	9	7	—	—			
Stanislaus	7	1	—	—			
California, U of							
Berkeley	89	6	5	43	94	4	16
Davis	28	24	6	9	32	9	3
Irvine	66	5	18	21	24	9	4
Los Angeles	202	8	7	24	45	8	18
Riverside	20	10	15	11	17	2	5
San Diego	139	97	42	40	35	17	4
Santa Barbara	54	47	8	11	32	0	13
Santa Cruz	30	12	2	10			
Calvin C	7	0	—	—			
Canisius C	10	1	—	—			
Capital U	2	0	—	—			
Carleton C	20	0	—	—			
Carnegie Mellon U	25	19	10	6	33	10	13
Carroll C	12	1	—	—			
Carthage C	6	1	—	—			
Case Western Reserve U	35	8	2	13	19	3	4
Catholic U of America	4	1	0	0			
Centenary C of Louisiana	7	0	—	—			
Central Arkansas, U of	8	0	—	—			

	CHEMISTRY				CHEMICAL ENGINEERING		
	BACHELOR'S				B.S.	M.S.	PH.D.
	TOTAL	CERTIFIED	M.S.	PH.D.			
Central C	14	2	—	—			
Central Connecticut State U	4	2	—	—			
Central Florida, U of	22	8	8	0			
Central Michigan U	14	11	9	—			
Central Missouri State U	4	0	—	—			
Central Oklahoma, U of	32	1	—	—			
Centre C	20	0	—	—			
Charleston, C of	28	26	—	—			
Chatham C	7	1	—	—			
Chicago State U	5	0	—	—			
Chicago, U of	27	22	22	27			
Christian Brothers C ^b					3	—	—
Cincinnati, U of	22	22	6	14	47	5	1
Citadel, The	3	0	—	—			
City U of New York Graduate Center	—	—	17	10			
Brooklyn C	8	0	3	—			
City C	14	0	5	—	a		
Herbert H. Lehman C	5	4	—	—			
Hunter C	43	0	—	—			
Queens C	24	1	4	—			
Clarion U	2	1	—	—			
Clark U	15	2	1	2			
Clarkson U	13	9	3	2	30	8	5
Clemson U	18	12	5	6	26	6	9
Cleveland State U	7	7	3	4	9	26	6
Coe C	5	1	—	—			
Colby C	24	6	—	—			
Colgate U	12	5	—	—			
Colorado C	14	6	—	—			
Colorado School of Mines	17	17	4	2	50	9	7
Colorado State U	15	11	2	8	30	7	3
Colorado State U, Pueblo	5	0	3	—			
Colorado, U of Boulder	67	5	7	23	50	11	15
Colorado Springs Denver	24	6	—	—			
	12	5	3	—			
Columbia U	19	19	26	26	21	5	5
Concordia C	19	1	—	—			
Connecticut C	12	8	0	—			
Connecticut, U of	22	16	6	11	22	20	16
Cooper Union ^b					20	0	—
Cornell C	2	1	—	—			
Cornell U	24	7	33	23	42	21	11
Creighton U	20	16	—	—			
D							
Dartmouth C	33	0	1	3			
Davidson C	9	1	—	—			
Dayton, U of	9	2	0	—	29	9	—
Delaware State U	1	1	0	—			
Delaware Valley C	5	5	—	—			
Delaware, U of	47	39	11	14	38	8	12

	CHEMISTRY				CHEMICAL ENGINEERING		
	BACHELOR'S				B.S.	M.S.	PH.D.
	TOTAL	CERTIFIED	M.S.	PH.D.			
Delta State U	7	0	—	—			
Denison U	13	0	—	—			
Denver, U of	13	3	6	2			
DePaul U	9	0	4	—			
DePauw U	17	0	—	—			
Detroit Mercy, U of	2	1	3	—	9	—	—
Dickinson C	24	1	—	—			
District of Columbia, U of the	0	0	—	—			
Drake U	2	2	—	—			
Drew U	2	1	—	—			
Drexel U	12	12	9	2	49	10	4
Drury U	13	1	—	—			
Duke U	21	9	1	15			
Duquesne U	8	3	2	7			
E							
Earlham C	10	0	—	—			
East Carolina U	25	12	3	—			
East Stroudsburg U	7	1	—	—			
East Tennessee State U	23	4	3	—			
Eastern Illinois U	7	4	5	—			
Eastern Kentucky U	40	0	1	—			
Eastern Michigan U	30	2	6	—			
Eastern New Mexico U	5	3	1	—			
Eastern Washington U	30	2	—	—			
Eckerd C	7	0	—	—			
Elizabethtown C	2	1	—	—			
Elmhurst C	5	2	—	—			
Elon U	3	2	—	—			
Emory U	49	1	7	15			
Emporia State U	10	4	1	—			
Evansville, U of	7	2	—	—			
F							
Fairfield U	6	5	—	—			
Fairleigh Dickinson U, Madison	0	0	5	—			
Fisk U	5	5	0	—			
Florida A&M U/ Florida State U ^b					30	4	2
Florida A&M U	14	2	5	—			
Florida Atlantic U	32	14	8	2			
Florida Inst. of Tech.	6	2	4	1	18	2	0
Florida International U	31	11	10	1			
Florida State U	66	1	3	17			
Florida, U of	64	0	8	42	77	8	18
Fordham U	11	5	—	—			
Fort Lewis C	10	2	—	—			
Framingham State C	6	1	—	—			
Francis Marion U	10	1	—	—			
Franklin & Marshall C	8	3	—	—			
Furman U	17	14	5	—			

	CHEMISTRY				CHEMICAL ENGINEERING		
	BACHELOR'S				B.S.	M.S.	PH.D.
	TOTAL	CERTIFIED	M.S.	PH.D.			
G							
Geneva C	6	0	—	—			
George Mason U	17	5	3	—			
George Washington U	19	9	3	5			
Georgetown U	7	5	5	11			
Georgia Inst. of Tech.	32	32	12	31	106	22	28
Georgia Southern U	25	24	—	—			
Georgia State U	10	1	15	3			
Georgia, U of	22	17	2	19			
Gettysburg C	14	3	—	—			
Gonzaga U	13	9	—	—			
Goucher C	8	2	—	—			
Governors State U	0	0	3	—			
Grambling State U	4	0	—	—			
Grand Valley State U	20	3	—	—			
Grinnell C	24	8	—	—			
Gustavus Adolphus C	19	2	—	—			
H							
Hamilton C	20	17	—	—			
Hamline U	4	3	—	—			
Hampden Sydney C	11	9	—	—			
Hampton U	6	6	0	—	2	—	—
Hartford, U of	9	3	—	—			
Hartwick C	5	1	—	—			
Harvard U	24	17	21	26			
Harvey Mudd C	12	12	—	—			
Haverford C	12	3	—	—			
Hawaii at Manoa, U of	17	10	1	2			
Hendrix C	9	4	—	—			
Hillsdale C	6	6	—	—			
Hiram C	4	2	—	—			
Hobart & William Smith C	20	16	—	—			
Hofstra U	1	1	—	—			
Holy Cross, C of the	14	12	—	—			
Hope C	30	9	—	—			
Houston, U of	12	6	5	8	38	15	12
Houston-Clear Lake, U of	5	3	3	—			
Howard U	20	0	3	2	18	7	—
Humboldt State U	6	3	—	—			
I							
Idaho State U	9	8	2	—			
Idaho, U of	15	9	6	4	13	9	0
Illinois Inst. of Tech.	2	2	8	1	17	45	11
Illinois State U	34	31	13	—			
Illinois Wesleyan U	14	9	—	—			
Illinois, U of							
Chicago	102	45	7	18	10	10	9
Springfield	4	3	—	—			
Urbana-Champaign	94	22	15	33	57	19	11
Indiana State U	17	6	—	—			
Indiana U							
Bloomington	65	9	4	9			
Northwest	10	4	—	—			
J							
Jackson State U	11	0	5	2			
James Madison U	23	7	—	—			
John Carroll U	20	1	0	—			
Johns Hopkins U	16	16	9	9	a		
Juniata C	12	3	—	—			
K							
Kalamazoo C	18	0	—	—			
Kansas State U	12	4	3	5	17	3	0
Kansas, U of	19	5	2	19	36	4	1
Kean U	9	4	—	—			
Kennesaw State U	29	8	—	—			
Kent State U	17	4	2	4			
Kentucky, U of	24	7	3	9	24	4	2
Kenyon C	11	7	—	—			
King's C	7	6	—	—			
Knox C	7	0	—	—			
L							
La Salle U	9	1	—	—			
Lafayette C	16	4	—	—	17	—	—
Lake Forest C	12	6	—	—			
Lamar U	5	3	2	—	24	55	1
Lawrence Technological U	9	7	—	—			
Lawrence U	9	2	—	—			
Lebanon Valley C	11	5	—	—			
Lehigh U	24	4	15	3	34	12	16
LeMoyne C	3	2	—	—			
Lewis & Clark C	6	4	—	—			
Lincoln U	5	3	—	—			
Lipscomb U	10	0	—	—			
Long Island U							
Brooklyn Campus	4	1	3	—			
C. W. Post Campus	2	1	—	—			
Louisiana State U							
Baton Rouge	25	13	2	14	49	12	4
Shreveport	19	4	—	—			
Louisiana Tech. U	2	1	4	—	28	6	0
Louisiana at Lafayette, U of	10	5	—	—	15	10	—
Louisiana at Monroe, U of	3	1	—	—			
Louisville, U of	35	6	0	4	19	9	2
Loyola C in Maryland	12	7	—	—			
Loyola Marymount U	14	10	—	—			

	CHEMISTRY				CHEMICAL ENGINEERING		
	BACHELOR'S		M.S.	PH.D.	B.S.	M.S.	PH.D.
	TOTAL	CERTIFIED					
Loyola U of New Orleans	12	1	—	—			
Loyola U of Chicago	15	14	4	2			
Luther C	13	0	—	—			
Lycoming C	8	6	—	—			
M							
Macalester C	21	13	—	—			
Maine, U of	2	2	3	2	19	3	0
Manhattan C ^c	3	1	—	—	11	12	—
Marietta C	12	2	—	—			
Marist C	4	1	—	—			
Marquette U	12	9	7	8			
Marshall U	22	4	2	—			
Maryland, U of							
Baltimore County	12	12	9	5	21	6	2
College Park	58	0	8	17	19	8	4
Eastern Shore	4	4	—	—			
Massachusetts Inst. of Tech.	29	29	9	48	52	29	41
Massachusetts, U of							
Amherst	18	1	8	14	19	4	7
Boston	7	0	8	1			
Dartmouth	5	3	3	—			
Lowell	4	4	8	7	12	13	—
McDaniel C	5	0	—	—			
McNeese State U	5	5	2	—			
Memphis, U of	13	0	8	5			
Mercer U	8	5	—	—			
Merrimack C	3	2	—	—			
Metropolitan State C of Denver	34	0	—	—			
Miami U	53	3	6	10			
Miami, U of	23	2	2	7			
Michigan State U	62	19	13	32	42	6	7
Michigan Technological U	13	13	2	2	55	5	4
Michigan, U of							
Ann Arbor	75	75	20	32	68	24	12
Dearborn	25	12	—	—			
Flint	6	5	—	—			
Middle Tennessee State U	12	3	3	1			
Middlebury C	14	6	—	—			
Midwestern State U	6	3	—	—			
Millersville U	18	10	—	—			
Millikin U	11	2	—	—			
Millsaps C	16	1	—	—			
Minnesota State U							
Mankato	16	4	—	—			
Moorhead	16	2	—	—			
Minnesota, U of							
Duluth	36	16	8	—	27	—	—
Twin Cities	81	23	6	33	96	4	28
Mississippi C	13	0	2	—			
Mississippi State U	4	0	5	4	40	10	4
Mississippi, U of	48	3	0	0	8	1	2
Missouri State U (formerly Southwest Missouri State U)	19	5	9	—			
Missouri Western State U (formerly Missouri Western State C)	16	3	—	—			
Missouri, U of							
Columbia	19	1	10	10	51	7	2
Kansas City	33	1	0	5			
Rolla	9	7	4	6	32	6	1
St. Louis	12	5	14	4			
Monmouth U	6	3	—	—			
Montana State U	15	15	2	2	19	5	1
Montana Tech., U of							
Montana	2	1	1	—			
Montana, U of	7	5	0	3			
Montclair State U	17	5	7	—			
Moravian C	6	5	—	—			
Morehouse C	7	7	—	—			
Morgan State U	10	7	3	—			
Mount Holyoke C	11	0	—	—			
Mount Saint Vincent, C of ^c	4	4	—	—			
Mount Saint Joseph, C of	4	4	—	—			
Muhlenberg C	11	9	—	—			
Murray State U	12	2	6	—			
Muskingum C	4	3	—	—			
N							
Nazareth C of Rochester	7	5	—	—			
Nebraska Wesleyan U	12	1	—	—			
Nebraska, U of							
Kearney	9	0	—	—			
Lincoln	14	0	8	8	14	15	3
Omaha	8	5	—	—			
Nevada, U of							
Las Vegas	20	4	4	—			
Reno	9	5	3	5	a		
New Hampshire, U of	9	4	8	3	10	3	1
New Haven, U of ^b					4	—	—
New Jersey Inst. of Tech. ^b					16	14	4
New Jersey, C of	19	19	—	—			
New Mexico High-lands U	0	0	0	—			
New Mexico Inst. of Mining & Tech.	7	7	1	1	15	—	—
New Mexico State U	11	0	7	4	20	2	3
New Mexico, U of	12	0	3	4	15	6	3
New Orleans, U of	13	5	1	4			
New York U	55	0	6	12			
Niagara U	6	1	—	—			
Nicholls State U	7	5	—	—			
Norfolk State U	8	3	—	—			
North Alabama, U of	12	0	—	—			
North Carolina A&T State U	8	6	4	—	16	8	—
North Carolina Central U	6	1	1	—			

	CHEMISTRY				CHEMICAL ENGINEERING		
	BACHELOR'S		M.S.	PH.D.	B.S.	M.S.	PH.D.
	TOTAL	CERTIFIED					
North Carolina State U	101	46	12	17	94	21	12
North Carolina, U of							
Asheville	5	1	—	—			
Chapel Hill	116	116	14	27			
Charlotte	23	9	8	—			
Greensboro	23	5	4	—			
Pembroke	22	0	—	—			
Wilmington	42	30	6	—			
North Central C	8	2	—	—			
North Dakota State U	13	13	3	1			
North Dakota, U of	13	2	3	0	12	12	1
North Florida, U of	5	5	—	—			
North Texas, U of	16	3	11	6			
Northeastern Illinois U	12	0	4	—			
Northeastern U	6	6	13	3	30	6	0
Northern Arizona U	39	6	8	—			
Northern Colorado, U of	24	11	4	2			
Northern Illinois U	20	15	0	2			
Northern Iowa, U of	21	7	1	—			
Northern Kentucky U	18	5	—	—			
Northern Michigan U	12	4	1	—			
Northwest Missouri State U	3	3	—	—			
Northwestern State U	6	1	—	—			
Northwestern U	26	7	6	37	20	4	11
Notre Dame, U of	27	9	5	11	35	1	8
O							
Oakland U	24	4	11	0			
Oberlin C	10	8	—	—			
Occidental C	9	0	—	—			
Ohio Northern U	4	4	—	—			
Ohio State U	41	2	18	27	52	3	19
Ohio U	23	1	7	10	15	8	1
Ohio Wesleyan U	10	1	—	—			
Oklahoma State U	11	7	4	4	26	8	5
Oklahoma, U of	47	5	10	4	39	14	2
Old Dominion U	15	10	1	—			
Oregon State U	27	8	4	10	39	12	3
Oregon, U of	40	0	23	7			
Otterbein C	5	2	—	—			
P							
Pace U, New York Campus	8	5	2	—			
Pleasantville Campus	1	0	—	—			
Pacific Lutheran U	7	0	—	—			
Pacific, U of the	10	2	1	4			
Pennsylvania State U, Erie, Behrend C	10	8	—	—			
Pennsylvania State U	39	18	5	35	111	4	8
Pennsylvania, U of	16	3	8	23	19	13	10
Philadelphia U	10	10	—	—			
Pittsburg State U	10	1	2	—			
Pittsburgh, U of	42	17	11	23	35	9	7
Polytechnic U	a				9	3	7
Pomona C	28	1	—	—			
Portland State U	18	2	3	2			
Portland, U of	9	6	—	—			
Prairie View A&M U ^b					a		
Princeton U	29	9	1	25	19	3	10
Providence C	8	1	—	—			
Puerto Rico, U of							
Mayagüez	39	3	8	0	80	6	1
Rio Piedras	61	22	4	6			
Puget Sound, U of	11	6	—	—			
Purdue U	39	29	9	36	81	11	18
Purdue U Calumet	4	4	—	—			
R							
Ramapo C of New Jersey	4	4	—	—			
Randolph-Macon C	7	6	—	—			
Randolph-Macon Woman's C	3	2	—	—			
Redlands, U of	9	1	—	—			
Reed C	12	5	—	—			
Regis U	13	4	—	—			
Rensselaer Polytech. Inst.	8	8	1	10	28	5	12
Rhode Island C	7	3	—	—			
Rhode Island, U of	6	5	4	4	14	1	3
Rhodes C	4	0	—	—			
Rice U	14	7	18	14	15	3	9
Richard Stockton C of New Jersey	29	8	—	—			
Richmond, U of	15	6	—	—			
Rider U	2	2	—	—			
Roanoke C	8	5	—	—			
Rochester Inst. of Tech.	23	10	8	—			
Rochester, U of	24	8	20	4	13	18	0
Rockford C	3	0	—	—			
Roger Williams U	13	4	—	—			
Rollins C	3	1	—	—			
Roosevelt U	6	5	—	—			
Rose-Hulman Inst. of Tech.	7	7	—	—	52	0	—
Rowan U	16	6	—	—	a		
Russell Sage C	1	1	—	—			
Rutgers U							
Camden Campus	6	0	6	—			
Newark Campus	11	1	6	9			
New Brunswick Campus	43	11	11	3	33	10	8
S							
Saginaw Valley State U	9	1	—	—			
St. Anselm C	4	4	—	—			
St. Benedict, C of/ St. John's U	19	3	—	—			
St. Catherine, C of	6	0	—	—			
St. Cloud State U	18	7	—	—			
St. John Fisher C	2	2	—	—			
St. John's U	11	11	7	—			
Saint Joseph C	3	1	3	—			

	CHEMISTRY				CHEMICAL ENGINEERING		
	BACHELOR'S				B.S.	M.S.	PH.D.
	TOTAL	CERTIFIED	M.S.	PH.D.			
St. Joseph's U	7	6	—	—			
St. Lawrence U	7	2	—	—			
St. Louis U	37	7	9	—			
Saint Mary's C	7	6	—	—			
St. Michael's C	8	2	—	—			
St. Olaf C	47	2	—	—			
St. Thomas, U of	32	7	—	—			
Saint Vincent C ^d	6	3	—	—			
Salem State C	4	2	—	—			
Salisbury U	13	2	—	—			
Sam Houston State U	10	3	2	—			
San Diego State U	29	24	8	4			
San Diego, U of	18	0	—	—			
San Francisco State U	30	5	6	—			
San Francisco, U of	12	2	5	—			
San Jose State U	11	6	6	—	12	12	—
Santa Clara U	10	1	—	—			
Sciences in Philadelphia, U of	11	2	3	4			
Scranton, U of	16	0	11	—			
Seattle U	18	3	—	—			
Seton Hall U	5	2	11	7			
Seton Hill U ^d	5	3	—	—			
Shippensburg U	11	6	—	—			
Siena C	2	0	—	—			
Simmons C	21	2	—	—			
Skidmore C	14	0	—	—			
Smith C	15	0	—	—			
Sonoma State U	7	5	—	—			
South Alabama, U of	4	3	—	—	14	0	—
South Carolina, U of	27	5	6	13	33	5	8
South Dakota School of Mines & Tech.	11	11	—	—	16	6	—
South Dakota State U	8	2	0	3			
South Dakota, U of	9	0	1	—			
South Florida, U of	41	9	3	8	38	24	3
Southeast Missouri State U	10	0	2	—			
Southeastern Louisiana U	8	7	—	—			
Southern California, U of	17	17	5	13	6	20	2
Southern Connecticut State U	5	4	5	—			
Southern Illinois U							
Carbondale	15	0	2	3			
Edwardsville	16	6	5	—			
Southern Indiana, U of	12	9	—	—			
Southern Methodist U	16	7	2	0			
Southern Mississippi, U of	16	3	1	1			
Southern Oregon U	13	3	—	—			
Southern U and A&M C	6	6	1	—			
Southwest Minnesota State U	10	4	—	—			
Southwestern Oklahoma State U	12	1	—	—			
Southwestern U	10	1	—	—			
Spelman C	20	1	—	—			
Stanford U	15	2	2	42	21	29	15
State U of New York							
Albany	7	5	3	1			
Binghamton	60	2	2	11			
Buffalo	43	15	9	16	47	13	6
New Paltz	4	0	—	—			
Stony Brook	28	6	19	14			
C at Brockport	11	6	—	—			
C at Buffalo	27	2	2	—			
C at Cortland	5	2	—	—			
C at Fredonia	7	2	1	—			
C at Geneseo	19	7	—	—			
C at Old Westbury	6	1	—	—			
C at Oneonta	7	0	—	—			
C at Oswego	13	7	0	—			
C at Plattsburgh	22	6	—	—			
C at Potsdam	3	1	—	—			
C at Purchase	3	1	—	—			
Stephen F. Austin State U	5	0	0	—			
Stetson U	4	0	—	—			
Stevens Inst. of Tech.	16	16	11	1	20	15	0
Stonehill C	13	3	—	—			
Suffolk U	2	0	—	—			
Susquehanna U	7	5	—	—			
Swarthmore C	12	6	—	—			
Syracuse U	21	2	3	5	6	5	3
T							
Temple U	19	4	9	7			
Tennessee Technological U	25	8	5	—	20	11	0
Tennessee, U of							
Chattanooga	25	14	—	—			
Knoxville	11	0	1	9	18	5	1
Martin	7	0	—	—			
Texas A&M U							
College Station	44	21	11	33	89	16	13
Commerce	8	2	2	—			
Kingsville	3	3	8	—	25	19	—
Texas Christian U	9	2	3	3			
Texas Southern U	10	6	2	—			
Texas State U, San Marcos	7	7	3	—			
Texas Tech U	39	4	4	8	20	4	4
Texas Woman's U	8	0	3	—			
Texas, U of							
Arlington	21	15	5	3			
Austin	142	142	10	35	103	16	22
Dallas	12	7	12	5			
El Paso	9	9	4	—			
Pan American	13	8	—	—			
San Antonio	9	8	2	—			
Thiel C	6	2	—	—			
Toledo, U of	13	2	6	6	36	8	4
Towson U	15	1	—	—			
Tri-State U ^b					6	—	—
Trinity C	13	6	—	—			

	CHEMISTRY				CHEMICAL ENGINEERING				CHEMISTRY				CHEMICAL ENGINEERING			
	BACHELOR'S				B.S.	M.S.	PH.D.		BACHELOR'S				B.S.	M.S.	PH.D.	
	TOTAL	CERTIFIED	M.S.	PH.D.					TOTAL	CERTIFIED	M.S.	PH.D.				
Trinity U	20	15	—	—												
Truman State U	22	22	—	—												
Tufts U	19	1	2	4	28	15	4									
Tulane U	5	0	3	4	18	4	7									
Tulsa, U of	9	2	2	—	12	10	3									
Tuskegee U	6	0	0	—	10	—	—									
U																
Union C	11	2	—	—												
Union U	6	6	—	—												
U.S. Air Force Academy	18	18	—	—												
U.S. Naval Academy	26	26	—	—												
Ursinus C	13	5	—	—												
Utah State U	14	11	3	4												
Utah, U of	52	37	14	22	31	6	6									
V																
Valdosta State U	5	0	—	—												
Valparaiso U	31	4	—	—												
Vanderbilt U	28	11	4	18	19	2	4									
Vassar C	8	0	0	—												
Vermont, U of	7	2	3	3												
Villanova U	21	21	12	—	19	8	—									
Virginia Commonwealth U	40	2	1	8	7	1	3									
Virginia Military Inst.	12	9	—	—												
Virginia Polytech. Inst. & State U	42	17	9	14	51	5	11									
Virginia, U of	113	42	7	18	34	12	9									
Viterbo U	5	1	—	—												
W																
Wabash C	10	3	—	—												
Wagner C	4	1	—	—												
Wake Forest U	11	4	0	5												
Washburn U (formerly Washburn U of Topeka)	3	1	—	—												
Washington & Jefferson C	16	3	—	—												
Washington & Lee U	16	2	—	—												
Washington C	10	6	—	—												
Washington State U	7	6	7	7	14	5	3									
Washington U	34	1	4	6	15	7	5									
Washington, U of	188	11	0	22	29	11	8									
Wayne State U	22	14	9	16	14	10	1									
Waynesburg C	3	1	—	—												
Weber State U	10	2	—	—												
Wellesley C	31	6	—	—												
Wesleyan U	10	2	0	2												
West Chester U	20	0	5	—												
West Florida, U of	8	7	—	—												
West Georgia, U of (formerly State U of West Georgia)	14	5	—	—												
West Virginia State U (formerly West Virginia State C)	3	0	—	—												
West Virginia U	23	6	2	5	26	9	1									
West Virginia Inst. of Tech.^b																
														8	—	—
Western Carolina U	12	2	3	—												
Western Connecticut State U	1	1	—	—												
Western Illinois U	4	0	3	—												
Western Kentucky U	39	3	4	—												
Western Michigan U	16	0	5	3	12	—	—									
Western Washington U	38	19	2	—												
Westminster C	5	0	—	—												
Wheaton C																
Illinois	7	0	—	—												
Massachusetts	5	2	—	—												
Whitman C	8	1	—	—												
Whittier C	9	4	—	—												
Wichita State U	21	4	2	5												
Widener U	3	0	—	—	11	7	—									
Wilkes U	4	1	—	—												
Willamette U	25	0	—	—												
William & Mary, C of	57	49	3	—												
Williams C	24	1	—	—												
Winona State U	16	12	—	—												
Winthrop U	7	0	—	—												
Wisconsin, U of																
Eau Claire	29	4	—	—												
Green Bay	8	2	—	—												
La Crosse	18	6	—	—												
Madison	23	3	14	22	80	3	16									
Milwaukee	17	2	1	7												
Oshkosh	3	2	—	—												
Parkside	5	2	—	—												
Platteville	13	1	—	—												
River Falls	24	14	—	—												
Stevens Point	7	4	—	—												
Superior	2	1	—	—												
Whitewater	9	6	—	—												
Wittenberg U	7	4	—	—												
Wooster, C of	32	7	—	—												
Worcester Polytech. Inst.	28	3	2	2	21	5	2									
Wright State U	13	5	9	—												
Wyoming, U of	9	3	1	6	17	4	1									
X																
Xavier U	8	5	—	—												
Xavier U of Louisiana	38	2	—	—												
Y																
Yale U	9	9	39	20	5	27	5									
Youngstown State U	53	11	12	—	10	1	—									
TOTAL	10,947	3,925	1,745	2,051	4,418	1,242	798									

NOTE: For brevity, "B.S." and "M.S." are used to denote all bachelor's and master's degrees, respectively, in each column. **a** Chemical engineering data were not submitted. **b** Listed on basis of accreditation by the American Institute of Chemical Engineers Accreditation Board for Engineering & Technology. **c** The chemistry program at Mount Saint Vincent and Manhattan C are integrated into a combined department with instruction in chemistry located at Manhattan C. **d** Saint Vincent C and Seton Hill U are integrated into a combined department.