

**NATIONAL SCIENCE FOUNDATION
INDUSTRY/UNIVERSITY
COOPERATIVE RESEARCH CENTERS**

**FINAL
1992-1993 STRUCTURAL INFORMATION¹**

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NOTE: 1992-1993 Table data collected from 50/50 Center Director Surveys (100% response rate). Five new Centers started during FY 92-93: University of Illinois (Machine Tool), University of Mass (Polymer Biodegradation), NJIT (Emission Reduction), University of Rhode Island (Ocean Technology), Stanford University (Composite Design). These Centers were not included in this survey because they did not have a complete fiscal year of funding data.²

PLEASE DIRECT QUESTIONS AND COMMENTS TO THE AUTHORS³

TABLE 1
1992-1993 GENERAL INFORMATION

STATUS	YEAR FUNDED	UNIVERSITY (CENTER)	DIRECTOR	# OF DEPTS. INVOLVED	
SELF-SUSTAINING	1980	1. University of Massachusetts (Center on Research on Polymers)	Kantor, Simon W.	4	
	1981	2. Case Western Reserve (Center for Applied Polymer Research)	Hiltner, Anne	5	
	1982	3. North Carolina State University (Center for Communications & Signal Processing)	Rajala, Sarah A.	2	
		4. Rutgers University (Center for Ceramics Research)	Niecz, Dale E.	1	
	1984	5. Ga.Tech., Uni. of Ark., Uni. of Cin., Fl. Atlntc. Uni. (Material Handling Research Center)	Pence, I.W. Jr.	5	
		6. Pennsylvania State University (Center for Dielectric Studies)	Dougherty, Joseph P.	5	
		7. Colorado School of Mines (Advanced Steel Processing and Products Research)	Matlock, David	2	
		8. University of Washington (Center for Process Analytical Chemistry)	Kowalaki, Bruce & Weissman, Gene	3	
		9. New Jersey Institute of Technology (Hazardous Substance Management Research Center)	Magee, Richard S.	13	
		10. University of Arizona (Center for Optical Circuitry)	Peyghambarian, Nasser	4	
		11. Northwestern University (Center for Engineering Tribology)	Chung, Yip-Wah	4	
		12. University of Arizona (Center for Microcontamination Control)	O'Hanlon, John F.	4	
		13. Northeastern University (Center for Electromagnetics Research)	Silevitch, Michael B.	4	
		14. Lehigh University (Chemical Process Modeling & Control Research Center)	Georgakis, Christos	4	
	1985	15. Rutgers University (Centers for Plastics Recycling Research)	Saba, Raymond	9	
		16. Carnegie Mellon University (Center for Iron & Steelmaking Research)	Fruehan, R.J. & Cramb, A.W.	3	
		17. Lehigh University (Center for Innovation Management Studies)	Bean, Alden S.	2	
		18. University of Texas - Arlington (Center for Advanced Electron Devices)	Mitchell, Robert	1	
	1986	19. University of Tennessee (Measurement & Control Engineering)	Garrison, Arlene A.	6	
		20. Oklahoma State University (Web Handling Research Center)	Reid, Kat N.	1	
		21. Alfred University (Center for Glass Research)	Pye, L. David	2	
		22. New Mexico Institute of Mining & Technology (Research Center for Energetic Materials)	Persson, Per-Anders	1	
		23. University of Florida/Purdue (Software Engineering Research Center)	Ohaniam, M.J. & DeMillo, R.A.	6	
		24. University of California - Berkeley (Sensors & Actuators Centers)	Muller, Richard	6	
		1987	25. University of Iowa (Center for Simulation & Design Optimization of Mechanical Systems)	Hang, Edward J.	4
			26. USC/UCLA (Center for Manufacturing Automation)	Bekzy, G.A. & Molkanoff, M.A.	2
			27. North Carolina State University (Center for Aseptic Processing & Packing Studies)	Swartzel, K.R.	1
			MEAN "SELF-SUSTAINING"	4.3	
3 to 5 YEAR OLDS	1988	28. University of Colorado (Microwave & Millimeter Computer-Aided Design)	Booton, Richard	2	
	1989	29. State University of New York at Buffalo (Center for Biosurfaces)	Baier, R.	5	
		30. Iowa State University (Center for Nondestructive Evaluation)	Thompson, Donald O.	1	
	1990	31. University of Pittsburgh (Parallel & Distributive Intelligence Systems Research Center)	Chang, Shi-kuo	2	
		32. University of New Mexico (Center for Micro-Engineered Ceramics)	Smith, Douglas M.	5	
		33. Brown University/University of Rhode Island (Center for Thin Film & Interface Research)	Loforski, Joseph & Mitra, Shashanka	3	
		34. University of California at San Diego (Center for Integrated Circuits & Systems)	Ku, Walter	4	
		35. Georgia Institute of Technology/University of Arizona (Information Management Research)	McCracken, W.M. & Nunamaker, J.	2	
	1990	36. Washington State University (Center for Analog/Digital Integrated Circuits)	Ringo, John	3	
		37. University of Illinois, Urbana (Air Conditioning & Research Center)	Bullard, Clark W.	1	
		38. University of Connecticut (Center for Grinding Research & Development)	Howes, Trevor D.	6	
39. University of Michigan (Mechanical & Optical Coordinate Measuring Machines)		Ulsay, Galip A.	3		
		MEAN "3 to 5 YEAR OLDS"	4.6		
2 YEARS & LESS	1991	40. Eastern Michigan University (Center for Coatings Research)	Jones, Frank	2	
	1992	41. University of North Texas (Center for Nanostructural Materials Research)	McDaniel, Floyd	4	
		42. University of California at Irvine (Center for High-Speed Image Processing)	Stubberud, A.	2	
	1993	43. University of Colorado at Boulder (Center for Separations using Thin Films)	Krantz, William & Noble, Richard	5	
		44. Lehigh University (Center for Polymer Interfaces)	El-Aasser, Mohamed S.	5	
		45. North Carolina State University (Center for Integrated Pest Management)	Stimmer, Ronald E.	7	
		46. Rutgers University (Center for Wireless Information Networks)	Goodman, David J.	3	
		47. Villanova University (Center for Advanced Communications)	Di Giacomo, Joseph	2	
		48. Carnegie-Mellon University (Center for Building Performance)	Hartkopf, Volker	1	
		49. Arizona State Uni. & Western Network for Educ. in Health Admin. (Center for Health Management)	Zuckerman, H. & Robinson, C.	9	
50. Ohio University (Center for Corrosion in Multiphase Systems)	Jepson, W. Paul	3			
		MEAN "2 YEARS & LESS"	3.9		
		GRAND MEAN:	4.2		
		GRAND SUM:	208		

TABLE 2
1992-1993 OPERATING BUDGET: BREAKDOWN OF DIRECT FUNDING

STATUS	YEAR	ABBREVIATED NAME	TOTAL DIRECT	NSF FUNDING	INDUSTRY MEMBER FEES	OTHER INDUSTRY FUNDING	STATE FUNDING	OTHER FUNDING	UNIVERSITY DIRECT FUNDS
SELF-SUSTAINING	1980	1. Mass. (Polymers)	\$459,997	\$88,158	\$300,329	\$0	\$0	\$0	\$51,510
	1981	2. Case Western (Polymers)
	1982	3. NCSU (Communication/Signal Proc.)	\$774,024	\$52,968	\$340,954	\$311,339	\$0	\$0	\$68,765
		4. Rutgers (Ceramics)	\$2,480,523	\$28,149	\$380,788	\$260,970	\$1,237,000	\$485,725	\$87,891
		5. G Tech, U. AK, U. Cin, FL. Atlntc. U (Material)	\$1,125,700	\$138,700	\$387,000	\$0	\$0	\$0	\$600,000
		6. Penn. State (Dielectrics Studies)	\$538,910	\$26,400	\$144,828	\$205,682	\$58,000	\$10,000	\$94,000
	1984	7. Colorado School of Mines (Steel)	\$834,460	\$34,960	\$721,600	\$77,900	\$0	\$0	\$0
		8. Washington (Process Analytical Chem.)	\$2,140,099	\$26,667	\$1,013,600	\$595,311	\$0	\$116,667	\$427,855
		9. NJIT (Hazardous Substance Mgmt.)	\$11,040,480	\$539,974	\$612,740	\$754,142	\$2,949,732	\$5,776,791	\$407,501
		10. Arizona (Optical)	\$390,485	\$71,000	\$88,250	\$9,000	\$219,735	\$0	\$2,500
		11. Northwestern (Engineering Tribology)	\$428,243	\$24,307	\$199,375	\$142,051	\$0	\$62,509	\$0
		12. Arizona (Microcontamination)	\$342,000	\$31,800	\$258,000	\$3,200	\$0	\$31,500	\$17,500
		13. Northeastern (Electromagnetics)	\$448,000	\$58,000	\$350,000	\$150,000	\$0	\$200,000	\$90,000
		14. Lehigh (Chemical Process)	\$313,634	\$36,226	\$261,000	\$10,000	\$0	\$0	\$6,450
		15. Rutgers (Plastics)	\$910,871	\$46,515	\$318,767	\$33,000	\$84,000	\$183,511	\$265,028
	1985	16. Carnegie Mellon (Iron & Steel)	\$658,642	\$25,900	\$385,800	\$77,160	\$0	\$169,750	\$0
		17. Lehigh (Innovation)	\$263,531	\$45,905	\$198,000	\$4,126	\$0	\$7,500	\$8,000
		18. Texas - Arlington (Adv. Electron Devices)	\$1,485,904	\$83,000	\$200,000	\$0	\$0	\$1,177,904	\$25,000
		19. Tennessee (Measurement & Control)	\$591,000	\$48,000	\$427,000	\$0	\$0	\$116,000	\$0
	1986	20. Oklahoma State (Web Handling)	\$807,000	\$43,000	\$400,000	\$45,000	\$242,000	\$40,000	\$37,000
		21. Alfred (Glass)	\$723,750	\$75,500	\$368,250	\$50,000	\$100,000	\$10,000	\$120,000
		22. New Mexico Inst. (Energetic)	\$366,540	\$35,040	\$255,500	\$0	\$0	\$0	\$76,000
		23. Florida/Purdue (Software Eng.)	\$337,090	\$58,330	\$200,250	\$15,000	\$0	\$0	\$63,510
		24. UC Berkeley (Sensors & Actuators)	\$1,271,330	\$151,293	\$494,487	\$201,856	\$214,483	\$209,711	\$0
	1987	25. Iowa (Simulation & Design)	\$4,100,000	\$60,000	\$480,000	\$60,000	\$0	\$3,400,000	\$100,000
		26. S. California (Manufacturing)	\$744,083	\$0	\$173,931	\$0	\$0	\$570,152	\$0
		27. NCSU (Aseptic Processing)	\$350,364	\$32,654	\$247,500	\$38,696	\$0	\$37,514	\$0
		MEAN "SELF-SUSTAINING"	\$1,322,060	\$71,835	\$324,153	\$117,094	\$196,544	\$484,317	\$98,020
3 to 5 YEAR OLDS	1988	28. Colorado (Microwave)	\$297,018	\$36,083	\$255,000	\$0	\$0	\$0	\$5,935
		29. SUNY at Buffalo (Biosurfaces)	\$452,000	\$38,000	\$200,000	\$150,000	\$4,000	\$0	\$60,000
	1989	30. Iowa State (Nondestructive Evaluation)	\$1,238,119	\$38,300	\$787,500	\$0	\$373,308	\$0	\$43,708
		31. Pittsburgh (Intelligence Systems)	\$181,334	\$41,854	\$139,500	\$0	\$0	\$0	\$0
		32. New Mexico (Micro-Engineered Ceramics)	\$2,415,420	\$110,420	\$330,000	\$200,000	\$0	\$1,400,000	\$375,000
		33. Brown/Rhode Island (Film)	\$450,000	\$0	\$110,000	\$280,000	\$200,000	\$0	\$60,000
		34. Calif. - San Diego (Integrated Circuits)	\$623,000	\$225,000	\$250,000	\$0	\$0	\$150,000	\$0
		35. Ga. Tech./Arizona (Information Mgmt.)	\$295,000	\$70,000	\$40,000	\$75,000	\$0	\$100,000	\$10,000
		36. Washington State (Integrated Circuits)	\$1,246,722	\$110,250	\$280,000	\$106,900	\$190,000	\$409,622	\$150,000
	1990	37. Univ. of Illinois (Air Conditioning)	\$827,000	\$40,000	\$630,000	\$150,000	\$0	\$0	\$7,000
		38. Univ. of Connecticut (Grinding)	\$1,866,300	\$80,000	\$350,000	\$599,000	\$707,200	\$0	\$130,000
		39. Univ. of Michigan (Mech. & Opt. Measure)	\$605,000	\$55,000	\$475,000	\$25,000	\$50,000	\$0	\$0
			MEAN "3 to 5 YEAR OLDS"	\$891,586	\$79,409	\$320,583	\$132,158	\$127,042	\$171,435
2 YEARS & LESS	1991	40. Eastern Michigan University (Coatings)	\$358,667	\$43,667	\$210,000	\$0	\$80,000	\$10,000	\$15,000
		41. Univ. of North Texas (Nanostructure)	\$553,660	\$45,000	\$162,400	\$180,000	\$90,000	\$25,000	\$31,260
	1992	42. UC Irvine (Image Processing)	\$310,000	\$75,000	\$225,000	\$0	\$0	\$0	\$10,000
		43. Univ. of Colorado (Thin Film)	\$441,600	\$36,725	\$287,375	\$0	\$50,000	\$0	\$37,500
		44. Lehigh (Polymer Interfaces)	\$573,565	\$50,000	\$350,000	\$107,465	\$0	\$0	\$68,100
		45. NCSU (Pest Management)	\$433,690	\$83,690	\$350,000	\$0	\$0	\$0	\$0
		46. Rutgers (Wireless Information)	\$1,708,965	\$17,183	\$690,000	\$345,637	\$0	\$412,882	\$243,263
		47. Villanova (Advanced Communication)	\$420,000	\$50,000	\$195,000	\$0	\$175,000	\$0	\$0
		48. Carnegie-Mellon (Building Performance)	\$735,873	\$80,812	\$606,787	\$38,274	\$0	\$10,000	\$0
		49. Arizona St./West. Network (Health Mgmt.)	\$410,000	\$50,000	\$350,000	\$10,000	\$0	\$0	\$0
	1993	50. Ohio University (Corrosion)	\$474,004	\$84,000	\$280,000	\$80,000	\$0	\$0	\$30,000
		MEAN "2 YEARS & LESS"	\$582,002	\$56,007	\$336,960	\$69,316	\$135,009	\$41,626	\$39,557
		GRAND MEANS	\$1,050,502	\$67,825	\$342,072	\$116,035	\$143,356	\$308,617	\$78,067
		GRAND SUMS	\$51,474,406	\$3,323,430	\$16,761,511	\$5,391,209	\$7,024,458	\$13,122,738	\$3,825,276

TABLE 3

1992-1993 BUDGET FIGURES & CAPITAL FUNDING

STATUS	YEAR	ABBREVIATED NAME	DIRECT FUNDING	OVERHEAD CHARGES	TOTAL BUDGET COLS (A + B)	UNIVERSITY WAIVED OVERHEAD	EFFECTIVE BUDGET COLS (C + D)	TOTAL CAPITAL FUNDING	NSF OVERHEAD (%)	INDUSTRY OVERHEAD (%)
STAFF	1988	1. Mass. (Polymers)	\$439,997	\$202,013	\$642,010	\$0	\$642,010	\$0	52%	52%
	1988	2. Case Western (Polymers)	\$774,026	\$67,000	\$1,500,000	\$0	\$1,500,000	\$0	51%	20%
	1988	3. NCSU (Communication/Signal Proc.)	\$2,480,523	\$224,453	\$841,026	\$395,282	\$1,160,908	\$105,000	47%	20%
	1988	4. Rutgers (Ceramics)	\$1,125,700	\$264,300	\$2,704,974	\$0	\$3,704,974	\$0	62%	10%
	1988	5. G Tech. U. AK. U. Cin. Fl. Austr. U. (Material)	\$538,910	\$172,358	\$1,390,004	\$0	\$2,480,988	\$0	37%	55%
	1988	6. Penn. State (Dielectrics Studies)	\$834,460	\$186,540	\$721,268	\$13,500	\$724,768	\$0	52%	45%
	1988	7. Colorado State (Mines Steel)	\$2,180,099	\$622,722	\$1,021,004	\$188,175	\$1,209,179	\$0	50%	18%
	1988	8. Washington (Process Analytical Chem.)	\$11,040,880	\$1,719,448	\$2,802,821	\$320,000	\$3,122,821	\$0	50%	50%
	1988	9. NIT (Hazardous Substance Mgmt.)	\$390,485	\$70,750	\$2,764,128	\$1,400,555	\$14,185,883	\$45,995	64%	5%
	1988	10. Arizona (Optical)	\$428,242	\$284,821	\$461,225	\$0	\$461,225	\$100,000	52%	52%
SUSTAINING	1988	11. Northwestern (Engineering Tribology)	\$342,000	\$163,500	\$713,063	\$98,114	\$811,177	\$0	54%	10%
	1988	12. Arizona (Microcontamination)	\$848,000	\$0	\$505,500	\$21,700	\$537,200	\$0	51%	51%
	1988	13. Northeastern (Electromagnetics)	\$313,676	\$0	\$348,000	\$500,000	\$1,488,000	\$0	5%	0%
	1988	14. Lehigh (Chemical Process)	\$930,821	\$168,581	\$1,009,402	\$0	\$1,009,402	\$0	59%	10%
	1988	15. Rutgers (Plastics)	\$658,642	\$408,390	\$658,642	\$0	\$1,067,000	\$0	62%	62%
	1988	16. Carnegie Mellon (Iron & Steel)	\$263,531	\$33,598	\$297,129	\$0	\$397,129	\$0	55%	10%
	1988	17. Lehigh (Innovation)	\$1,485,904	\$48,269	\$1,354,173	\$144,760	\$1,678,933	\$77,818	47%	0%
	1988	18. Texas - Arlington (Adv. Electron Devices)	\$591,000	\$16,000	\$807,000	\$214,750	\$1,021,750	\$0	41%	0%
	1988	19. Tennessee (Measurement & Control)	\$807,000	\$0	\$807,000	\$192,000	\$999,000	\$250,000	0%	75%
	1988	20. Oklahoma State (Web Handling)	\$723,750	\$40,250	\$874,000	\$35,000	\$799,000	\$0	7%	75%
3 to 5 YEAR GRANTS	1987	21. Alfred (Glass)	\$366,540	\$107,460	\$474,000	\$0	\$474,000	\$0	27%	27%
	1987	22. New Mexico Inst. (Energetic)	\$337,090	\$113,920	\$450,010	\$67,658	\$517,668	\$0	47%	25%
	1987	23. Florida/Purdue (Software Eng.)	\$1,271,830	\$265,617	\$1,537,447	\$244,771	\$1,782,218	\$0	50%	0%
	1987	24. UC Berkeley (Sensors & Actuators)	\$4,100,000	\$0	\$4,100,000	\$0	\$4,100,000	\$0	45%	0%
	1987	25. Iowa (Simulation & Design)	\$744,033	\$168,217	\$912,500	\$125,359	\$1,037,859	\$0	60%	15%
	1987	26. S. California (Manufacturing)	\$356,364	\$51,165	\$407,529	\$116,325	\$523,854	\$0	47%	10%
	1988	27. NCSU (Aspetic Processing)	\$297,018	\$58,917	\$355,935	\$85,500	\$441,435	\$50,000	44%	15%
	1988	28. Colorado (Microwave)	\$452,000	\$0	\$452,000	\$120,000	\$572,000	\$0	52%	12%
	1988	29. SUNY at Buffalo (Blomfrices)	\$1,238,319	\$37,329	\$1,275,648	\$480,272	\$1,755,920	\$0	44%	10%
	1988	30. Iowa State (Nondestructive Evaluation)	\$181,354	\$18,646	\$200,000	\$57,350	\$257,350	\$0	47%	0%
2 YEARS & LESS	1987	31. Pittsburgh (Intelligence Systems)	\$2,415,420	\$678,180	\$3,093,600	\$202,492	\$3,093,600	\$200,000	45%	0%
	1987	32. New Mexico (Micro-Engineered Ceramics)	\$650,000	\$55,000	\$625,000	\$140,000	\$485,000	\$250,000	15%	15%
	1987	33. Brown/Rhode Island (Film)	\$625,000	\$0	\$625,000	\$307,312	\$932,312	\$0	0%	0%
	1987	34. Calif. - San Diego (Integrated Circuits)	\$295,000	\$135,000	\$430,000	\$0	\$430,000	\$0	35%	50%
	1987	35. Ga. Tech./Arizona (Information Mgmt.)	\$1,246,722	\$130,716	\$1,377,438	\$235,000	\$1,612,438	\$0	45%	0%
	1987	36. Washington State (Integrated Circuits)	\$827,000	\$15,000	\$842,000	\$220,000	\$1,062,000	\$35,000	53%	0%
	1987	37. Univ. of Illinois (Air Conditioning)	\$1,866,200	\$82,300	\$1,948,500	\$204,000	\$2,152,500	\$270,000	47%	28%
	1987	38. Univ. of Connecticut (Grinding)	\$605,000	\$0	\$605,000	\$314,000	\$919,000	\$25,000	0%	0%
	1987	39. Univ. of Michigan (Mech. & Opt. Measure)	\$358,667	\$61,333	\$420,000	\$60,000	\$480,000	\$0	39%	0%
	1987	40. Eastern Michigan University (Coatings)	\$533,660	\$5,000	\$538,660	\$73,080	\$611,740	\$90,000	45%	0%
1987	41. Univ. of North Texas (Nanotechnology)	\$310,000	\$0	\$310,000	\$100,000	\$410,000	\$0	48%	0%	
1987	42. UC Irvine (Image Processing)	\$441,600	\$43,400	\$485,000	\$116,463	\$601,463	\$0	44%	5%	
1987	43. Univ. of Colorado (Thin Film)	\$575,565	\$10,347	\$585,912	\$64,500	\$650,412	\$340,000	59%	10%	
1987	44. Lehigh (Polymer Interfaces)	\$433,690	\$39,334	\$473,024	\$164,500	\$637,524	\$0	47%	95%	
1987	45. NCSU (Post Management)	\$1,708,965	\$7,817	\$1,716,782	\$427,800	\$2,144,582	\$0	59%	0%	
1987	46. Rutgers (Wireless Information)	\$420,000	\$0	\$420,000	\$296,000	\$716,000	\$0	0%	0%	
1987	47. Villanova (Advanced Communication)	\$735,873	\$94,088	\$829,961	\$0	\$829,961	\$0	69%	0%	
1987	48. Carnegie-Mellon (Building Performance)	\$410,000	\$0	\$410,000	\$0	\$410,000	\$0	51%	69%	
1987	49. Arizona St./West. Network (Health Mgmt.)	\$410,000	\$16,000	\$426,000	\$0	\$426,000	\$0	44%	0%	
1987	50. Ohio University (Corrosion)	\$281,000	\$16,000	\$297,000	\$110,000	\$407,000	\$0	44%	0%	
MEAN 3 YEARS & LESS			\$381,472	\$25,211	\$406,683	\$323,395	\$730,078	\$39,041	46%	14%
GRAND TOTALS			\$1,075,502	\$413,195	\$1,488,697	\$653,775	\$2,142,472	\$38,057	43%	21%
GRAND TOTALS			\$1,473,408	\$6,916,533	\$18,109,480	\$7,881,218	\$25,991,696	\$1,643,813	N/A	N/A

TABLE 4

1992-1993 INDUSTRY MEMBERSHIP DESCRIPTORS

STATUS	YEAR	ABBREVIATED NAME	CURRENT MEMBERS	1992 - 1993 MEMBERS			LIFETIME MEMBERS			FEES		
				STARTING	NEW	LEFT	STARTING	NEW	LEFT	ANNUAL MEMBERSHIP PRIMARY	MEMBER FEE SECONDARY	MEMBER FEE TERTIARY
SHELF-SUSTAINING	1980	1. Mass. (Polymers)	11	12	0	1	13	17	19	\$40,000	\$0	\$0
	1981	2. Case Western (Polymers)	12	9	3	8	13	18	\$50,000	\$20,000	\$0	
	1982	3. NCSU (Communication/Signal Proc.)	6	15	2	4	10	30	\$35,000	\$0	\$0	
	1984	4. Rutgers (Ceramics)	13	29	1	19	18	19	\$40,000	\$5,000	\$0	
		5. G Tech, U. AK, U. Cin, FL, Atlntc. U (Material)	11	16	1	2	7	24	\$40,000	\$0	\$0	
		6. Penn. State (Dielectrics Studies)	15	22	2	3	7	24	\$40,000	\$0	\$0	
		7. Colorado School of Mines (Steel)	21	41	5	7	21	59	\$35,000	\$0	\$0	
		8. Washington (Process Analytical Chem.)	39	33	1	7	8	35	\$30,000	\$15,000	\$0	
		9. NJIT (Hazardous Substance Mgmt.)	27	5	0	1	9	3	\$50,000	\$0	\$0	
		10. Arizona (Optical)	4	9	2	2	14	7	\$27,500	\$0	\$0	
		11. Northwestern (Engineering Tribology)	9	12	5	0	26	20	\$40,000	\$10,000	\$0	
		12. Arizona (Microcontamination)	17	14	2	3	9	8	\$50,000	\$12,500	\$0	
		13. Northeastern (Electromagnetics)	13	11	1	1	0	1	\$30,000	\$0	\$0	
	1985	14. Lehigh (Chemical Process)	11	35	2	17	15	54	\$60,000	30K-60K	6K-30k	
		15. Rutgers (Plastics)	28	23	0	1	11	17	\$43,000	\$27,000	\$0	
		16. Carnegie Mellon (Iron & Steel)	22	11	0	1	12	5	\$20,000	\$0	\$0	
		17. Lehigh (Innovation)	16	4	0	0	6	5	\$50,000	\$25,000	\$0	
		18. Texas - Arlington (Adv. Electron Devices)	14	16	1	3	0	1	\$35,000	\$25,000	\$0	
		19. Tennessee (Measurement & Control)	17	17	2	2	5	19	\$25,000	\$0	\$0	
		20. Oklahoma State (Web Handling)	21	21	0	0	8	16	\$25,000	\$0	\$0	
	1986	21. Alfred (Glass)	11	14	0	3	9	20	\$40,000	\$0	\$0	
		22. New Mexico Inst. (Energetic)	11	13	1	3	10	13	\$30,000	\$0	\$0	
		23. Florida/Purdue (Software Eng.)	13	18	1	1	6	20	\$50,000	\$0	\$0	
		24. UC Berkeley (Sensors & Actuators)	18	12	0	0	24	4	\$40,000	\$0	\$0	
		25. Iowa (Simulation & Design)	13	3	11	0	4	14	\$39,000	\$0	\$0	
	1987	26. S. California (Manufacturing)	14	7	1	1	8	7	\$35,000	\$0	\$0	
		27. NCSU (Aseptic Processing)	7	16	3	3	16	16	\$37,873	N/A	N/A	
28. Colorado (Microwave)		8	9	2	3	10	6	\$50,000	\$25,000	\$0		
29. SUNY at Buffalo (Biosurfaces)		4	5	0	1	6	1	\$40,000	\$0	\$0		
30. Iowa State (Nondestructive Evaluation)		22	24	2	4	14	14	\$35,000	\$0	\$0		
31. Pittsburgh (Intelligence Systems)		8	10	0	4	2	12	\$25,000	\$0	\$0		
32. New Mexico (Micro-Engineered Ceramics)		11	11	2	2	8	11	\$30,000	\$10,000	\$0		
33. Brown/Rhode Island (Film)		5	6	0	1	14	3	\$25,000	\$10,000	\$0		
34. Calif. - San Diego (Integrated Circuits)		7	6	1	0	6	3	\$50,000	\$25,000	\$0		
35. Ga. Tech./Arizona (Information Mgmt.)		4	4	2	2	6	6	\$40,000	\$0	\$0		
1990	36. Washington State (Integrated Circuits)	16	14	0	4	11	6	\$30,000	\$0	\$0		
	37. Univ. of Illinois (Air Conditioning)	17	17	1	1	13	8	\$40,000	\$0	\$0		
	38. Univ. of Connecticut (Grinding)	7	7	0	0	7	2	\$50,000	\$0	\$0		
	39. Univ. of Michigan (Mech. & Opt. Measure)	14	10	1	1	8	4	\$50,000	\$0	\$0		
	MEAN 72 YEAR OPERS	9.1	10.3	0.9	1.9	8.8	6.3	33.90	N/A	N/A	N/A	
1991	40. Eastern Michigan University (Coatings)	9	9	1	1	11	5	\$30,000	\$0	\$0		
	41. Univ. of North Texas (Nanostructure)	7	4	3	0	4	6	\$50,000	\$20,000	\$0		
	42. UC Irvine (Image Processing)	7	7	0	0	9	1	\$35,000	\$25,000	\$0		
	43. Univ. of Colorado (Thin Film)	11	8	3	0	8	6	\$40,000	\$0	\$0		
	44. Lehigh (Polymer Interfaces)	11	10	2	1	10	5	\$35,000	\$0	\$0		
	45. NCSU (Pest Management)	8	8	0	0	7	1	\$50,000	\$0	\$0		
	46. Rutgers (Wireless Information)	23	19	4	0	21	5	\$30,000	\$0	\$0		
	47. Villanova (Advanced Communication)	9	6	3	0	4	6	\$30,000	\$0	\$0		
	48. Carnegie-Mellon (Building Performance)	11	10	2	0	3	9	\$50,000	\$0	\$0		
	49. Arizona St./West. Network (Health Mgmt.)	18	10	1	1	6	5	\$35,000	\$0	\$0		
1993	50. Ohio University (Corrosion)	13	9	4	1	4	8	\$23,000	\$15,000	\$0		
	MEAN 72 YEARS & LESS**	10.7	9.0	2.1	0.4	1.9	5.3	33.90	N/A	N/A		
	GRAND MEANS:	12.4	13.1	1.5	2.5	9.4	6.3	38.06	N/A	N/A		
GRAND SUMS:			619.0	644.0	75.0	112.0	433.0	571.0	484.0	1833.0	N/A	N/A

TABLE 5
1992-1993 HUMAN RESOURCES

STATUS	YEAR	ABBREVIATED NAME	RESEARCHER BREAKDOWN				STUDENTS		ADMINISTRATIVE			
			TOTAL # RESEARCHERS	# FACULTY SCIENTISTS	NON-FACULTY FT PT		# OF GRADS	# OF UNDERGRAD	PROFESSIONALS FT PT		CLERICALS FT PT	
SELF-SUSTAINING	1980	1. Mass. (Polymers)	19	17	0	2	16	4	0	1	0	1
	1981	2. Case Western (Polymers)	15	9	6	0	15	5	0	2	2	0
	1982	3. NCSU (Communication/Signal Proc.)	12	12	0	0	41	0	2	0	2	0
		4. Rutgers (Ceramics)	15	15	0	0	30	15	9	1	5	0
		5. G Tech, U. AK, U. Cin, FL. Atlntc. U (Material)	44	42	0	2	75	7	1	0	2	1
		6. Penn. State (Dielectrics Studies)	15	7	8	0	8	1	0	2	0	1
	1984	7. Colorado School of Mines (Steel)	7	5	2	0	21	2	1	0	0	1
		8. Washington (Process Analytical Chem.)	18	12	5	1	26	1	4	1	2	2
		9. NJIT (Hazardous Substance Mgmt.)	54	49	1	0	52	12	3	0	2	0
		10. Arizona (Optical)	11	7	0	4	8	1	0	1	0	1
		11. Northwestern (Engineering Tribology)	14	6	7	1	10	0	1	0	1	0
		12. Arizona (Microcontamination)	12	10	0	3	8	1	0	1	1	1
		13. Northeastern (Electromagnetics)	25	20	5	0	20	10	2	0	1	1
		14. Lehigh (Chemical Process)	14	12	4	0	15	1	1	1	1	0
		15. Rutgers (Plastics)	14	9	3	2	2	3	4	1	2	0
	1985	16. Carnegie Mellon (Iron & Steel)	7	5	2	0	8	10	0	0	0	1
		17. Lehigh (Innovation)	19	12	0	7	8	2	1	3	1	2
		18. Texas - Arlington (Adv. Electron Devices)	5	4	0	1	15	1	1	1	1	4
		19. Tennessee (Measurement & Control)	14	11	2	1	16	8	1	1	1	2
	1986	20. Oklahoma State (Web Handling)	14	13	1	0	42	6	0	2	0	4
		21. Alfred (Glass)	18	17	0	1	17	2	3	0	1	1
		22. New Mexico Inst. (Energetic)	10	5	0	5	11	16	0	2	1	1
		23. Florida/Purdue (Software Eng.)	24	23	0	1	20	4	0	3	2	0
		24. UC Berkeley (Sensors & Actuators)	11	7	4	0	30	2	1	0	2	0
	1987	25. Iowa (Simulation & Design)	28	10	15	3	55	15	2	0	3	1
		26. S. California (Manufacturing)	4	4	0	0	8	0	0	1	1	0
		27. NCSU (Aseptic Processing)	21	17	4	0	15	4	0	3	0	1
	MEAN "SELF-SUSTAINING"		17	13.3	2.6	1.3	21.9	4.9	1.4	1.0	1.3	0.9
3 to 5 YEAR OLDS	1988	28. Colorado (Microwave)	6	4	0	2	3	0	1	0	0	1
		29. SUNY at Buffalo (Biosurfaces)	21	14	4	3	4	3	1	0	0	1
	1989	30. Iowa State (Nondestructive Evaluation)	19	11	0	8	16	2	0	1	0	3
		31. Pittsburgh (Intelligence Systems)	3	3	0	0	3	0	0	2	1	0
		32. New Mexico (Micro-Engineered Ceramics)	19	9	10	10	40	10	1	1	3	1
		33. Brown/Rhode Island (Film)	9	8	0	1	3	0	0	2	0	1
		34. Calif. - San Diego (Integrated Circuits)	5	3	2	0	16	3	0	1	0	2
		35. Ga. Tech./Arizona (Information Mgmt.)	8	6	2	0	5	0	1	0	0	1
		36. Washington State (Integrated Circuits)	14	14	0	0	53	5	0	5	1	3
	1990	37. Univ. of Illinois (Air Conditioning)	17	14	1	2	43	33	0	1	1	0
		38. Univ. of Connecticut (Grinding)	18	13	4	1	15	2	4	2	1	1
	39. Univ. of Michigan (Mech. & Opt. Measure)	19	4	1	14	13	2	0	2	1	1	
	MEAN "3 to 5 YEAR OLDS"		14	8.6	2.9	3.4	17.4	5.0	0.7	1.4	0.7	1.3
2 YEARS & LESS	1991	40. Eastern Michigan University (Coatings)	12	8	4	0	7	4	0	2	0	2
		41. Univ. of North Texas (Nanostructure)	12	7	3	5	10	0	5	1	0	0
	1992	42. UC Irvine (Image Processing)	10	8	1	1	8	0	2	0	0	1
		43. Univ. of Colorado (Thin Film)	13	12	0	1	14	14	2	0	1	1
		44. Lehigh (Polymer Interfaces)	20	13	2	5	11	1	0	3	1	2
		45. NCSU (Pest Management)	35	32	3	0	7	9	0	1	0	1
		46. Rutgers (Wireless Information)	7	7	0	0	17	8	3	1	2	1
		47. Villanova (Advanced Communication)	10	9	0	1	9	4	1	0	0	0
		48. Carnegie-Mellon (Building Performance)	7	5	1	1	8	7	3	1	2	0
		49. Arizona St./West. Network (Health Mgmt.)	12	15	1	6	3	0	2	0	2	2
1993	50. Ohio University (Corrosion)	7	5	2	0	8	2	1	0	0	1	
	MEAN "2 YEARS & LESS"		14.4	11.0	1.5	1.8	9.3	4.5	1.1	1.4	0.6	1.0
	GRAND MEANS		15.8	11.7	2.2	1.9	18.2	4.8	1.1	1.2	1.0	1.0
	GRAND SUMS		789	584.0	110.0	95.0	908.0	242.0	57.4	59.0	49.0	51.3

APPENDIX

FOOTNOTES: SPECIAL CONSIDERATIONS

Footnotes appear on top of columns and/or at end of rows for each Table and are described in this Appendix.

- 1) All averages and sums exclude missing data. With the exception of percentages, data from multi-university centers has been aggregated across universities; percentages represent averages for the reporting universities.
- 2) Four additional Centers not included in this years tables are: University of Maryland (Reliable Electronic Packaging), U of Texas (Center for Cell Regulation), Ohio State University (Center for Welding Research) and Rensselaer Polytechnic Institute (Computer Design). Although these four Centers remain active, they are no longer formally considered to be "IUCRC Centers."
- 3) Authors' address: IUCRC Evaluation Project, Psychology Department, NCSU Box 7801, Raleigh, NC 27695.
By telephone: Voice (919) 515 - 3237; FAX (919) 515 - 1716.
- 4) On Tables 2 and 3, "TOTAL DIRECT" refers to the sum of all direct funding, including: NSF, Industry Member Fees, Other Industry, State, Other, and University Direct funding.
- 5) On Table 2, "NSF FUNDING" refers to support provided by the IUCRC Program. This includes operating grants, self-sustaining center funding, evaluator supplements, TIE awards, RUI/PUI awards, etc. This Does NOT include support provided by other NSF groups or divisions.
- 6) On Table 2, "INDUSTRIAL MEMBERSHIP FEES" refers to support from industry derived from annual membership fees.
- 7) On Table 2, "OTHER INDUSTRY" refers to any additional support for operations provided by industrial members (e.g., enhancements, contracts, donations, etc.).
- 8) On Table 2, "STATE" refers to the support provided by state government and/or an agency or program funded by state government.
- 9) On Table 2, "OTHER" refers to support for Center operations provided by other funding sources, including other divisions in NSF, federal agencies, foundations, national labs, military agencies, etc.
- 10) On Table 2, "UNIVERSITY DIRECT" refers to actual support for Center operating costs, including: salary, travel, etc. This figure does NOT include cost of items like utilities or space, which universities are obligated to provide for all grants.
- 11) On Table 3, "OVERHEAD CHARGES" refers to the sum of all overhead or indirect charges from various sources, including: NSF, Industry Member Fees, Other Industry, State, and Other.
- 12) On Table 3, "TOTAL BUDGET" refers to the sum of DIRECT FUNDING and OVERHEAD CHARGES.
- 13) On Table 3, "UNIVERSITY-WAIVED OVERHEAD" refers to the amount of overhead the university has waived by reducing its normal overhead rate.
- 14) On Table 3, "EFFECTIVE BUDGET" refers to the value of the center's budget if full overhead were collected.
- 15) On Table 3, "CAPITAL TOTAL FUNDING" includes support for major capital investments/expenses (e.g., equipment, buildings, building renovations, etc.) over \$25,000. Funding for a building should have been reported when the building was occupied.
- 16) On Table 4, "FEES" are broken down into primary, secondary, and tertiary (the latter two represent variable membership fees).
- 17) On Table 5, "FT" means "Full-time" and "PT" means "Part-time."
- 18) On Table 6, "TIME ALLOCATION" refers to allocation of director's full-time equivalent for budgetary purposes.
- 19) On Table 6, "ADMIN. BUDGET (%)" refers to the estimated percentage of direct operating budget allocated to administrative salaries, center supplies, telephone, travel and related costs.
- 20) On Table 6, "IN KIND (%)" refers to the estimated percentage of direct operating budget derived from "in-kind" donations (e.g. equipment donations).