

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

**FINAL
1995-1996 STRUCTURAL INFORMATION^{1,2}**

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NOTE: 1995-1996 data collected from 53/54 Center Director Surveys (98% response rate).

PLEASE DIRECT QUESTIONS AND COMMENTS TO THE AUTHORS³

TABLE 1
1995-1996 GENERAL INFORMATION

STATUS	YEAR FUNDED	UNIVERSITY (CENTER)	DIRECTOR	# OF DEPT. INVOLVED
6 YEARS OR OLDER	1980	1. University of Massachusetts (Center on Research on Polymers)	Moynahan, E. Bradley	6
	1981	2. Case Western Reserve University (Center for Applied Polymer Research)	Hiltner, Anne	•
	1982	3. North Carolina State University/Duke University (Center for Computing & Communication)	Rajala, Sarah A. & Trevidi, K.	3
		4. Rutgers University (Center for Ceramic Research)	Niesz, Dale E.	2
		5. Georgia Institute of Technology/University of Arkansas (Center for Materials Handling/Logistics)	Nemhauser, G. & Landers, T.	7
		6. The Pennsylvania State University (Center for Dielectric Studies)	Dougherty, Joseph P.	5
		7. Colorado School of Mines (Center for Advanced Steel Processing and Products Research)	Matlock, David	3
	1984	8. University of Washington (Center for Process Analytical Chemistry)	Baughman, Ernest	6
		9. New Jersey Inst. of Tech./Princeton U./Rutgers U./Stevens Inst. of Tech./U. of Med. & Dent. of NJ (Hazardous Subst. Mngt)	Magee, Richard S.	6
		10. University of Arizona/University of Maryland (Center for Optoelectronic Devices, Interconnects, and Packaging)	Peyghambarian, N. & Dagensis, M.	6
		11. Northwestern University/Georgia Institute of Technology (Surface Engineering & Tribology)	Wilson, W.R.D., & Danyluck, S.	5
		12. University of Arizona (Center for Microcontamination Control)	O'Hanlon, John	4
		13. Northeastern University (Center for Electromagnetics Research)	Silevitch, Michael B.	3
		14. Lehigh University (Center for Chemical Process Modeling & Control)	Georgakis, Christos	4
	1985	15. Carnegie Mellon University (Center for Iron & Steelmaking Research)	Fruehan, R.J.	3
		16. Lehigh University (Center for Innovation Management Studies)	Bean, Alden S.	2
		17. University of Texas at Arlington/Texas A&M University (Center for Advanced Electronic Materials, Devices, and Systems)	Alavi, Kambiz & Pandey, R.K.	3
		18. University of Tennessee (Center for Measurement & Control Engineering)	Garrison, Arlene A.	4
		19. Iowa State University (Center for Nondestructive Evaluation)	Thompson, Donald O.	8
	1986	20. Oklahoma State University (Center for Web Handling)	Reid, Karl N.	3
		21. Alfred University/University of Missouri Rolla (Center for Glass Research)	LaCourse, W. & Moore, R.	2
		22. New Mexico Institute of Mining & Technology (Center for Energetic Materials)	Persson, Per-Anders	1
		23. University of Florida/Purdue University/University of Oregon (Center for Software Engineering)	Thebaut, S., Mathur, A., Segall, Z. & Fickas, S.	3
		24. University of California - Berkeley (Center for Sensors & Actuators)	Muller, R. & White, R.	5
	1987	25. University of Iowa (Center for Simulation & Design Optimization of Mechanical Systems)	Haug, E.	4
		26. North Carolina State Univ./ Univ. of Calif. at Davis (Center for Aseptic Processing & Packing Studies)	Shoemaker, S., & Swartzel, K.	10
	1988	27. SUNY at Buffalo / Univ. of Memphis / New York State College of Ceramics (Center for Biological Surface Science)	Baier, R., Turitto, V., & Clare, A.	7
	1989	28. University of New Mexico (Center for Micro-Engineered Materials)	Datye, Abhaya K.	4
		29. University of California at San Diego (Center for Ultra-High Speed Integrated Circuits & Systems)	Ku, Walter	•
		30. Georgia Institute of Technology/University of Arizona (Center for Information Management Research)	McCracken, W.M. & Nunamaker, J.	2
		31. Washington State Univ./Univ. of Washington/Oregon State Univ./SUNY at Stony Brook (Analog/Digital Integrated Circuits)	Ringo, J., Lauritzen, P., Kiaei, S., Carlson, B.	4
	1990	32. University of Illinois, Urbana (Air Conditioning & Refrigeration Center)	Bullard, C.	2
		33. University of Connecticut (Center for Grinding Research)	Hower, Trevor D.	4
		34. University of Michigan, Ann Arbor (Center for Dimensional Measurement and Control in Manufacturing)	Ni, Jun	4
		MEAN "6 YEARS OR OLDER"	4.2	
3 to 5 YEAR OLDS	1991	35. Eastern Michigan/North Dakota State University (Center for Coatings Research)	Jones, Frank & Urban, Marek	3
		36. University of North Texas (Center for Nanostructural Materials Research)	McDaniel, Floyd	3
	1992	37. University of Colorado at Boulder (Center for Separations using Thin Films)	Krantz, W. & Greenberg, A.R.	5
		38. Lehigh University (Center for Polymer Interfaces)	El-Aasser, Mohamed S.	5
		39. North Carolina State University (Center for Integrated Pest Management)	Stinner, Ronald E.	5
		40. Rutgers University (Center for Wireless Information Networks)	Goodman, David J.	3
		41. Villanova University (Center for Advanced Communications)	Di Giacomo, Joseph	5
		42. Carnegie-Mellon University (Center for Building Performance and Diagnostics)	Hartkopf, Volker	1
		43. Arizona State University (Center for Health Management)	Zuckerman, H. & Robinson, C.	14
	1993	44. Ohio University (Center for Corrosion in Multiphase Systems)	Jepson, W. Paul	1
		MEAN "3 to 5 YEAR OLDS"	4.5	
2 YEARS & LESS	1994	45. University of Illinois (Center for Machine-Tool Systems)	Kapoor, Shiv	6
		46. University of Massachusetts (Center for Polymer Biodegradation)	McCarthy, Steve	4
		47. New Jersey Inst. of Tech./Penn State Univ./Mass. Inst. of Tech./Ohio St. Univ. (Center for Emission Reduction Research)	Watts, McDonnell, Stephanopoulos, & Zakin	4
		48. University of Rhode Island (Center for Ocean Technology)	Callahan, Jeffery	4
		49. Stanford University (Center for Composite Design)	Tsai, Stephen	1
		50. Arizona State Univ./Colorado School of Mines/Wichita State Univ. (Advanced Control of Energy and Power Systems)	Shoureshi, R., Heydt, G., & Jewell, W.	3
	1995	51. University of Colorado (Center for Advanced Manufacturing and Packaging of Microwave, Optical and Digital Electronics)	Mahajan, Roop	2
		52. Texas A&M (Center in Ergonomics)	Congleton, Jerome	3
	53. Purdue University (Center for Pharmaceutical Processing Research)	Nail, Stephen	3	
	54. The Pennsylvania State University (Center for Particulate Materials)	Messing, Gary	3	
		MEAN "2 YEARS & LESS"	3.3	
		GRAND MEAN:	4.1	
		GRAND SUM:	213	
NEW CENTER	1996	55. Cornell (Center for Power Systems Engineering)	Thomas, Robert J.	

TABLE 2

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1995-1996 OPERATING BUDGET: BREAKDOWN OF DIRECT FUNDING

STATUS	YEAR FUNDED	ABBREVIATED NAME								
			TOTAL DIRECT	NSF DIRECT	INDUSTRY MEMBERS DIRECT	OTHER INDUSTRY DIRECT	STATE DIRECT	OTHER DIRECT	UNIVERSITY DIRECT	
	1980	1. Mass. (Polymers)	\$1,242,196	\$16,448	\$477,825	\$747,923	\$0	\$0	\$0	
	1981	2. Case Western (Polymers)	.	.	.	.	.	.	.
	1982	3. NCSU/Duke (Communication/Signal Proc.)	\$1,036,748	\$154,665	\$335,453	\$271,816	\$0	\$182,875	\$91,939	
		4. Rutgers (Ceramic)	\$3,263,843	\$61,853	\$227,987	\$1,286,636	\$1,237,255	\$305,540	\$144,572	
		5. Georgia Tech/Arkansas (Mater.Handling/Logistics)	\$1,421,107	\$110,567	\$997,400	\$59,351	\$84,016	\$0	\$169,773	
		6. Penn. State (Dielectrics Studies)	\$413,190	\$42,742	\$125,744	\$150,704	\$0	\$0	\$94,000	
		7. Colorado School of Mines (Steel)	\$936,956	\$26,613	\$830,483	\$79,860	\$0	\$0	\$0	
	1984	8. Washington (Process Analytical Chem.)	\$1,103,028	\$51,500	\$558,775	\$0	\$0	\$346,471	\$146,282	
		9. NJIT/Princeton/Rutgers/SIT/UNJ (Hazardous Subst. Mg)	\$9,529,394	\$427,241	\$514,285	\$596,289	\$3,014,984	\$4,425,038	\$551,557	
		10. Arizona/Maryland (Optical Circuitry)	\$872,539	\$99,249	\$145,100	\$25,000	\$286,759	\$315,273	\$1,158	
		11. Northwestern/Georgia Tech. (Eng. Tribology)	\$689,254	\$97,950	\$272,250	\$151,568	\$0	\$152,486	\$15,000	
		12. Arizona (Microcontamination)	\$384,308	\$21,797	\$336,856	\$0	\$20,655	\$5,000	\$0	
		13. Northeastern (Electromagnetics)	\$969,859	\$71,000	\$75,000	\$180,000	\$0	\$573,000	\$70,859	
		14. Lehigh (Chemical Process)	\$281,380	\$43,000	\$180,000	\$0	\$0	\$0	\$58,380	
	1985	15. Carnegie Mellon (Iron & Steelmaking)	\$750,000	\$15,000	\$700,000	\$0	\$0	\$35,000	\$0	
		16. Lehigh (Innovation)	\$333,105	\$17,600	\$210,000	\$0	\$0	\$101,505	\$4,000	
		17. Texas/Texas A&M (Adv. Electron Devices)	\$310,000	\$60,000	\$210,000	\$0	\$0	\$0	\$40,000	
		18. Tennessee (Measurement & Control)	\$731,985	\$85,242	\$370,000	\$144,000	\$0	\$65,000	\$67,743	
		19. Iowa State (Nondestructive Evaluation)	\$1,075,481	\$29,861	\$630,000	\$0	\$358,950	\$0	\$56,670	
	1986	20. Oklahoma State (Web Handling)	\$559,000	\$33,000	\$425,000	\$25,000	\$30,000	\$0	\$46,000	
		21. Alfred/Missouri (Glass)	\$737,360	\$38,000	\$634,580	\$0	\$65,000	\$0	\$0	
		22. New Mexico Inst. (Energetic)	\$244,175	\$32,428	\$135,747	\$0	\$0	\$0	\$76,000	
		23. Florida/Purdue/Oregon (Software Eng.)	\$766,858	\$121,418	\$263,273	\$147,737	\$200,000	\$34,430	\$0	
		24. UC Berkeley (Sensors & Actuators)	\$3,584,760	\$165,495	\$920,319	\$183,676	\$200,598	\$2,107,234	\$7,438	
	1987	25. Iowa (Simulation & Design)	\$3,765,291	\$40,000	\$480,000	\$471,180	\$0	\$2,774,111	\$0	
		26. NCSU/UC Davis (Aseptic Processing)	\$350,551	\$75,301	\$210,046	\$0	\$0	\$40,000	\$25,204	
	1988	27. SUNY-Buffalo/Memphis/NY St. College (Biosurfaces)	\$1,029,000	\$93,000	\$360,000	\$48,000	\$0	\$468,000	\$60,000	
	1989	28. New Mexico (Micro-Engineered Materials)	\$1,677,946	\$27,535	\$300,000	\$282,365	\$75,000	\$742,969	\$250,077	
		29. UC San Diego (Integrated Circuits)	\$232,816	\$72,816	\$150,000	\$10,000	\$0	\$0	\$0	
		30. Ga. Tech./Arizona (Information Mgmt.)	\$90,848	\$37,971	\$0	\$0	\$0	\$51,410	\$1,467	
		31. Wash.Su/U.Wash.Oreg.Su/SUNY-SB (Integr. Circuits)	\$752,030	\$124,530	\$527,500	\$30,000	\$30,000	\$0	\$40,000	
	1990	32. Illinois (Air Conditioning & Refrigeration)	\$873,000	\$50,000	\$666,000	\$150,000	\$0	\$0	\$7,000	
		33. Connecticut (Grinding)	\$2,278,439	\$75,000	\$301,000	\$397,648	\$351,082	\$1,083,771	\$69,938	
		34. Michigan (Dimensional Measurement)	\$747,938	\$75,000	\$350,000	\$322,938	\$0	\$0	\$0	
		MEAN "6 YEARS OR OLDER"	\$1,304,979	\$75,570	\$391,534	\$174,597	\$180,433	\$418,458	\$63,487	
	1991	35. Eastern Michigan/North Dakota State (Coatings)	\$560,000	\$35,000	\$390,000	\$8,000	\$30,000	\$90,000	\$7,000	
		36. North Texas (Nanostructure)	\$1,804,700	\$45,000	\$90,000	\$1,500,000	\$25,000	\$100,000	\$44,700	
	1992	37. Colorado (Thin Film)	\$598,886	\$76,654	\$418,000	\$0	\$65,000	\$0	\$39,232	
		38. Lehigh (Polymer Interfaces)	\$496,391	\$50,000	\$297,500	\$119,996	\$0	\$26,875	\$2,220	
		39. NCSU (Pest Management)	\$393,736	\$70,508	\$205,479	\$95,749	\$0	\$22,000	\$0	
		40. Rutgers (Wireless Information)	\$1,087,594	\$17,329	\$645,000	\$40,739	\$0	\$153,010	\$231,516	
		41. Villanova (Advanced Communication)	\$241,000	\$50,000	\$120,000	\$0	\$71,000	\$0	\$0	
		42. Carnegie-Mellon (Building Performance)	\$874,898	\$75,000	\$270,000	\$324,000	\$0	\$205,898	\$0	
		43. Arizona St./West. Network (Health Mgmt.)	\$376,687	\$50,000	\$326,687	\$0	\$0	\$0	\$0	
	1993	44. Ohio (Corrosion)	\$578,000	\$40,000	\$368,000	\$145,000	\$0	\$0	\$25,000	
		MEAN "3 to 5 YEAR OLDS"	\$701,209	\$50,949	\$313,067	\$213,348	\$19,100	\$59,778	\$34,967	
	1994	45. Illinois (Machine-Tool Systems)	\$522,780	\$75,000	\$447,780	\$0	\$0	\$0	\$0	
		46. Mass. (Polymer Biodegradation)	\$512,000	\$50,000	\$270,000	\$132,000	\$0	\$0	\$60,000	
		47. NJIT/Penn St./MIT/Ohio St. (Emission Reduction)	\$3,678,407	\$50,000	\$475,000	\$441,555	\$140,000	\$2,295,852	\$276,000	
		48. Rhode Island (Ocean Technology)	\$236,565	\$36,765	\$65,000	\$8,000	\$88,800	\$0	\$38,000	
		49. Stanford (Composite Design)	\$330,000	\$30,000	\$150,000	\$0	\$0	\$150,000	\$0	
		50. CSM/ASU/Wichita State (Energy & Power)	\$940,000	\$120,000	\$650,000	\$0	\$0	\$120,000	\$50,000	
	1995	51. Colorado (Microwave, Optical & Digital)	\$600,475	\$39,843	\$261,250	\$120,000	\$0	\$176,882	\$2,500	
		52. Texas A&M (Center in Ergonomics)	\$305,442	\$37,931	\$137,931	\$34,483	\$0	\$27,856	\$67,241	
		53. Purdue (Pharmaceutical Center)	\$291,000	\$33,000	\$199,000	\$0	\$0	\$0	\$59,000	
		54. Pennsylvania State (Particulate Materials)	\$1,096,064	\$35,617	\$447,490	\$29,000	\$0	\$421,776	\$162,181	
		MEAN "2 YEARS & LESS"	\$851,273	\$50,816	\$310,345	\$76,504	\$22,880	\$319,237	\$71,492	
		GRAND MEANS:	\$1,104,895	\$66,254	\$361,410	\$165,287	\$120,266	\$332,062	\$59,616	
		GRAND SUMS:	\$58,559,430	\$3,511,469	\$19,154,740	\$8,760,213	\$6,374,099	\$17,599,262	\$3,159,647	

TABLE 3
1995-1996 BUDGET FIGURES & CAPITAL FUNDING

STATUS	YEAR FUNDED	ABBREVIATED NAME	TOTAL DIRECT	TOTAL OVERHEAD	TOTAL BUDGET	UNIVERSITY WAIVED OVERHEAD	EFFECTIVE TOTAL BUDGET	CAPITAL FUNDING AMOUNT	IN KIND				NSF OVERHEAD (%)	INDUSTRY OVERHEAD (%)			
									SOFTWARE	EQUIPMENT	SUPPORT PERSONNEL	OTHER					
6 YEARS OR OLDER	1988	1. Mass (Polymers)	\$1,242,196	\$415,796	\$1,657,992	\$0	\$1,657,992	\$0	\$0	\$0	\$0	\$0	\$0	53%	53%		
		2. Case Western (Polymers)	\$1,036,748	\$149,963	\$1,186,711	\$54,944	\$1,241,655	\$383,000	\$0	\$0	\$0	\$0	\$0	48%	10%		
		3. NCSU/Duke (Communication/Signal Proc.)	\$3,263,843	\$739,910	\$4,003,753	\$0	\$4,003,753	\$0	\$0	\$0	\$0	\$0	\$0	59%	22%		
		4. Rutgers (Ceramic)	\$1,421,107	\$449,792	\$1,870,899	\$126,395	\$1,997,294	\$0	\$0	\$0	\$0	\$0	\$0	46%	28%		
		5. Georgia Tech/Arkansas (Master/Handing/Logistics)	\$413,190	\$205,517	\$618,707	\$6,402	\$625,109	\$0	\$0	\$0	\$0	\$0	\$0	42%	42%		
		6. Penn. State (Dialectics Studies)	\$356,956	\$81,425	\$438,381	\$196,544	\$1,118,925	\$0	\$0	\$0	\$0	\$0	\$0	24%	24%		
		7. Colorado School of Mines (Steel)	\$1,103,028	\$891,596	\$1,994,624	\$0	\$1,994,624	\$0	\$0	\$0	\$0	\$0	\$0	49%	49%		
		8. Washington (Process Analytical Chem.)	\$9,329,394	\$1,708,839	\$11,038,233	\$1,968,208	\$13,206,441	\$0	\$0	\$0	\$0	\$0	\$0	0%	5%		
		9. NJIT/Princeton/Rutgers/SIT/UNI (Hazardous Subst. Mgmt)	\$872,539	\$124,310	\$996,849	\$52,222	\$1,049,071	\$0	\$0	\$0	\$0	\$0	\$0	49%	26%		
		10. Arizona/Maryland (Optical Circuitry)	\$689,254	\$249,442	\$938,696	\$123,000	\$1,061,696	\$0	\$0	\$0	\$0	\$0	\$0	49%	10%		
1988	1988	11. Northeastern/Georgia Tech. (Eng. Tribology)	\$384,508	\$184,347	\$568,855	\$20,769	\$589,624	\$0	\$0	\$0	\$0	\$0	\$0	51%	51%		
		12. Arizona (Microcombination)	\$969,859	\$61,511	\$1,031,370	\$0	\$1,031,370	\$0	\$0	\$0	\$0	\$0	\$0	58%	0%		
		13. Northeastern (Electromagnetics)	\$281,380	\$19,935	\$301,315	\$104,945	\$406,260	\$0	\$0	\$0	\$0	\$0	\$0	0%	13%		
		14. Lehigh (Chemical Process)	\$150,000	\$31,700	\$181,700	\$0	\$181,700	\$0	\$0	\$0	\$0	\$0	\$0	62%	0%		
		15. Carnegie Mellon (Iron & Steelmaking)	\$333,105	\$96,571	\$429,676	\$0	\$429,676	\$0	\$0	\$0	\$0	\$0	\$0	55%	10%		
		16. Lehigh (Innovation)	\$310,000	\$30,000	\$340,000	\$94,500	\$434,500	\$68,000	\$0	\$0	\$0	\$0	\$0	45%	0%		
		17. Texas/Texas A&M (Adv. Electron Devices)	\$731,985	\$0	\$731,985	\$257,674	\$989,659	\$0	\$0	\$0	\$0	\$0	\$0	43%	0%		
		18. Tennessee (Measurement & Control)	\$1,075,481	\$13,139	\$1,088,620	\$277,200	\$1,365,820	\$0	\$0	\$0	\$0	\$0	\$0	44%	0%		
		19. Iowa State (Nondestructive Evaluation)	\$359,000	\$100,000	\$459,000	\$0	\$459,000	\$383,000	\$0	\$0	\$0	\$0	\$0	0%	0%		
		20. Oklahoma State (Web Handling)	\$737,580	\$100,000	\$837,580	\$0	\$837,580	\$0	\$0	\$0	\$0	\$0	\$0	75%	82%		
1988	1988	21. Alfred/Miami (Glass)	\$244,175	\$54,825	\$299,000	\$0	\$299,000	\$0	\$0	\$0	\$0	\$0	\$0	33%	33%		
		22. New Mexico Inst. (Energetic)	\$166,858	\$92,465	\$259,323	\$48,971	\$308,294	\$0	\$0	\$0	\$0	\$0	\$0	50%	25%		
		23. Florida/Purdue/Oregon (Software Eng.)	\$3,584,760	\$976,330	\$4,561,090	\$29,434	\$4,590,524	\$0	\$0	\$0	\$0	\$0	\$0	46%	0%		
		24. UC Berkeley (Sensors & Actuators)	\$376,291	\$0	\$376,291	\$0	\$376,291	\$0	\$0	\$0	\$0	\$0	\$0	46%	0%		
		25. Iowa (Simulation & Design)	\$350,551	\$42,203	\$392,754	\$100,000	\$492,754	\$110,000	\$0	\$0	\$0	\$0	\$0	48%	10%		
		26. NCSU/UC Davis (Aspetic Processing)	\$1,029,000	\$112,000	\$1,141,000	\$140,000	\$1,281,000	\$260,000	\$0	\$0	\$0	\$0	\$0	52%	12%		
		27. SUNY/Buffalo/McMurry St. College (Bio surfaces)	\$1,677,946	\$353,623	\$2,031,569	\$165,658	\$2,197,227	\$0	\$0	\$0	\$0	\$0	\$0	48%	0%		
		28. New Mexico (Micro Engineered Materials)	\$232,816	\$1,184	\$234,000	\$0	\$234,000	\$0	\$0	\$0	\$0	\$0	\$0	2%	0%		
		29. UC San Diego (Integrated Circuits)	\$90,848	\$74,145	\$164,993	\$0	\$164,993	\$0	\$0	\$0	\$0	\$0	\$0	52%	0%		
		30. Ga. Tech/Arkansas (Information Mgmt.)	\$752,030	\$57,284	\$809,314	\$264,375	\$1,073,689	\$0	\$0	\$0	\$0	\$0	\$0	45%	0%		
1990	1990	31. Wash./UW/Arizona (Sensors/SUNY-SB (Integr. Circuits))	\$873,000	\$13,000	\$886,000	\$700,000	\$1,586,000	\$0	\$0	\$0	\$0	\$0	\$0	57%	0%		
		32. Illinois (Air Conditioning & Refrigeration)	\$2,278,439	\$59,787	\$2,338,226	\$203,775	\$2,541,999	\$0	\$0	\$0	\$0	\$0	\$0	40%	0%		
		33. Connecticut (Grinding)	\$247,938	\$0	\$247,938	\$418,845	\$1,667,783	\$0	\$0	\$0	\$0	\$0	\$0	40%	0%		
		34. Michigan (Dimensional Measurement)	\$3,382,678	\$228,982	\$3,611,660	\$192,371	\$3,804,031	\$36,485	\$1,820	\$28,850	\$7,132	\$11,995	\$0	43%	17%		
		35. Eastern Michigan/North Dakota State (Coatings)	\$560,000	\$95,000	\$655,000	\$52,000	\$707,000	\$0	\$0	\$0	\$0	\$0	\$0	44%	0%		
		36. North Texas (Nanotechnology)	\$1,804,700	\$5,000	\$1,809,700	\$42,300	\$1,852,000	\$1,500,000	\$0	\$0	\$0	\$0	\$0	47%	0%		
		37. Colorado (Thin Film)	\$398,886	\$35,346	\$434,232	\$140,000	\$574,232	\$0	\$0	\$0	\$0	\$0	\$0	45%	6%		
		38. Lehigh (Polymer Interfaces)	\$496,591	\$18,125	\$514,716	\$65,188	\$579,904	\$0	\$0	\$0	\$0	\$0	\$0	57%	12%		
		39. NCSU (Plant Management)	\$395,736	\$62,109	\$457,845	\$125,341	\$583,186	\$0	\$0	\$0	\$0	\$0	\$0	48%	10%		
		40. Rutgers (Wireless Information)	\$1,087,594	\$76,969	\$1,164,563	\$0	\$1,164,563	\$0	\$0	\$0	\$0	\$0	\$0	59%	0%		
3 to 5 YEAR OLDS	1991	41. Villanova (Advanced Communications)	\$241,000	\$0	\$241,000	\$42,000	\$283,000	\$0	\$0	\$0	\$0	\$0	\$0	0%	0%		
		42. Carnegie-Mellon (Building Performance)	\$874,898	\$162,587	\$1,037,485	\$0	\$1,037,485	\$309,747	\$0	\$0	\$0	\$0	\$0	56%	56%		
		43. Arizona St./West. Network (Health Mgmt.)	\$376,687	\$0	\$376,687	\$26,000	\$402,687	\$0	\$0	\$0	\$0	\$0	\$0	0%	0%		
		44. Ohio (Corrosion)	\$78,000	\$25,000	\$103,000	\$133,000	\$236,000	\$0	\$0	\$0	\$0	\$0	\$0	44%	0%		
		MEAN 3 to 5 YEAR OLDS			\$781,209	\$58,014	\$839,223	\$32,583	\$871,806	\$180,973	\$0	\$0	\$0	\$0	48%	8%	
		1994	1994	45. Illinois (Machine-Tool Systems)	\$522,780	\$0	\$522,780	\$124,000	\$646,780	\$0	\$0	\$0	\$0	\$0	\$0	56%	0%
				46. Meas. (Polymer Biodegradation)	\$512,000	\$138,000	\$650,000	\$71,760	\$721,760	\$0	\$0	\$0	\$0	\$0	\$0	20%	20%
				47. NJIT/Penn St./MIT/Kho St. (Emission Reduction)	\$3,678,407	\$0	\$3,678,407	\$0	\$3,678,407	\$0	\$0	\$0	\$0	\$0	\$0	68%	68%
				48. Rhode Island (Ocean Technology)	\$236,565	\$38,435	\$275,000	\$50,000	\$325,000	\$0	\$0	\$0	\$0	\$0	\$0	46%	0%
				49. Stanford (Composite Design)	\$330,000	\$220,000	\$550,000	\$0	\$550,000	\$0	\$0	\$0	\$0	\$0	\$0	63%	0%
50. CSMA/SU/Washita State (Energy & Power)	\$940,000			\$0	\$940,000	\$170,625	\$1,110,625	\$0	\$0	\$0	\$0	\$0	\$0	52%	0%		
51. Colorado (Microvare, Optical & Digital)	\$600,475			\$165,092	\$765,567	\$115,000	\$880,567	\$0	\$0	\$0	\$0	\$0	\$0	44%	5%		
52. Texas A&M (Center in Ergonomics)	\$305,442			\$101,799	\$407,241	\$0	\$407,241	\$0	\$0	\$0	\$0	\$0	\$0	45%	11%		
53. Purdue (Pharmaceutical Center)	\$291,000			\$118,000	\$409,000	\$0	\$409,000	\$0	\$0	\$0	\$0	\$0	\$0	51%	51%		
54. Pennsylvania State (Particulate Material)	\$1,096,064			\$129,805	\$1,225,869	\$165,000	\$1,390,869	\$0	\$0	\$0	\$0	\$0	\$0	43%	0%		
MEAN 7 YEARS & LSS			\$851,273	\$90,613	\$941,886	\$59,632	\$1,001,518	\$8	\$5,000	\$26,000	\$5,000	\$0	49%	22%			
GRAND MEANS			\$1,184,848	\$167,866	\$1,352,714	\$127,688	\$1,480,402	\$56,863	\$1,423	\$22,081	\$3,688	\$0	43%	16%			
GRAND TOTALS			\$8,839,430	\$8,896,200	\$17,735,630	\$7,876,073	\$25,611,703	\$3,013,747	\$84,000	\$1,166,033	\$723,019	\$432,623	N/A	N/A			

TABLE 4
1995-1996 INDUSTRY MEMBERSHIP DESCRIPTORS

STATUS	YEAR FUNDED	ABBREVIATED NAME	CURRENT MEMBERS	1995-96 MEMBERS			LIFETIME MEMBERS			FEES		
				STARTING	NEW	LEFT	STARTING	NEW	LEFT	PRIMARY ANNUAL	SECONDARY FEE	TERTIARY FEE
6 YEARS OR OLDER	1980	1. Mass. (Polymers)	39	24	15	0	13	48	22	\$25,000	\$15,000	\$5,000
	1981	2. Case Western (Polymers)	.	.	.	.	.	.	.	.	.	.
	1982	3. NCSU/Duke (Communication/Signal Proc.)	8	7	2	1	8	19	19	\$50,000	\$20,000	.
		4. Rutgers (Ceramic)	12	14	0	2	10	32	30	\$35,000	.	.
		5. Georgia Tech/Arkansas (Mater.Handling/Logistics)	21	18	3	0	18	3	0	\$50,000	\$17,000	\$12,000
		6. Penn. State (Dielectrics Studies)	11	12	3	4	18	26	33	\$24,500	\$6,500	.
		7. Colorado School of Mines (Steel)	22	24	1	3	7	27	12	\$45,000	.	.
	1984	8. Washington (Process Analytical Chem.)	30	30	1	1	14	61	45	\$35,000	.	.
		9. NJIT/Princeton/Rutgers/SIT/UNJ (Hazardous Subst. M)	17	17	1	1	8	32	23	\$30,000	\$15,000	.
		10. Arizona/Maryland (Optical Circuitry)	14	6	8	0	.	.	.	\$40,000	\$25,000	.
		11. Northwestern/Georgia Tech. (Eng. Tribology)	15	14	2	1	14	13	12	\$27,500	.	.
		12. Arizona (Microcontamination)	21	19	3	1	26	26	31	\$40,000	\$10,000	.
		13. Northeastern (Electromagnetics)	9	9	1	1	9	9	9	\$50,000	\$15,000	.
		14. Lehigh (Chemical Process)	6	7	0	1	7	1	2	\$30,000	.	.
	1985	15. Carnegie Mellon (Iron & Steelmaking)	24	22	2	0	11	19	6	\$46,000	\$32,000	.
		16. Lehigh (Innovation)	13	13	1	1	12	8	7	\$20,000	.	.
		17. Texas/Texas A&M (Adv. Electron Devices)	7	5	2	0	6	8	7	\$30,000	\$15,000	.
		18. Tennessee (Measurement & Control)	13	14	2	3	14	7	8	\$35,000	\$15,000	.
		19. Iowa State (Nondestructive Evaluation)	20	18	3	1	14	18	12	\$35,000	.	.
	1986	20. Oklahoma State (Web Handling)	19	17	2	0	5	22	8	\$25,000	.	.
		21. Alfred/Missouri (Glass)	23	26	1	4	8	24	9	\$30,000	.	.
		22. New Mexico Inst. (Energetic)	8	8	1	1	9	24	25	\$30,000	\$20,000	.
		23. Florida/Purdue/Oregon (Software Eng.)	8	9	1	2	10	17	19	\$50,000	\$15,000	.
		24. UC Berkeley (Sensors & Actuators)	18	18	1	1	6	24	12	\$50,000	\$7,500	.
	1987	25. Iowa (Simulation & Design)	9	12	1	4	24	4	19	\$40,000	.	.
		26. NCSU/UC Davis (Aseptic Processing)	7	8	0	1	8	8	9	\$35,000	\$20,000	.
	1988	27. SUNY-Buffalo/Memphis/NY St. College (Biosurfaces)	9	7	4	2	6	9	6	\$40,000	.	.
	1989	28. New Mexico (Micro-Engineered Materials)	15	15	2	2	8	15	8	\$30,000	\$10,000	.
		29. UC San Diego (Integrated Circuits)	5	4	1	0	6	.	.	\$50,000	\$25,000	.
		30. Ga. Tech./Arizona (Information Mgmt.)	3	4	0	1	6	5	8	\$40,000	.	.
		31. Wash.St./U.Wash/Oreg.St./SUNY-SB (Integr. Circuits)	17	12	8	3	11	17	11	\$30,000	.	.
	1990	32. Illinois (Air Conditioning & Refrigeration)	17	17	1	1	13	12	8	\$40,000	.	.
		33. Connecticut (Grinding)	13	15	0	2	7	12	6	\$50,000	\$12,000	.
		34. Michigan (Dimensional Measurement)	8	8	0	0	8	5	5	\$50,000	.	.
	MEAN "6 YEARS OR OLDER"	14.6	13.7	2.21	1.36	10.75	17.90	13.90	\$37,515	\$16,389	N/A	
3 to 5 YEAR OLDS	1991	35. Eastern Michigan/North Dakota State (Coatings)	17	18	0	1	11	10	4	\$30,000	.	.
		36. North Texas (Nanostructure)	4	4	0	0	4	5	5	\$30,000	.	.
	1992	37. Colorado (Thin Film)	11	11	1	1	8	7	4	\$40,000	.	.
		38. Lehigh (Polymer Interfaces)	10	12	0	2	10	5	5	\$35,000	.	.
		39. NCSU (Pest Management)	12	7	6	1	7	8	3	\$25,000	.	.
		40. Rutgers (Wireless Information)	23	28	1	6	21	10	8	\$30,000	.	.
		41. Villanova (Advanced Communication)	6	4	2	0	4	4	2	\$30,000	\$15,000	\$5,000
		42. Carnegie-Mellon (Building Performance)	9	7	2	0	4	10	5	\$50,000	\$30,000	.
		43. Arizona St./West. Network (Health Mgmt.)	10	9	1	0	6	6	2	\$35,000	\$15,000	.
	1993	44. Ohio (Corrosion)	21	16	5	0	4	19	2	\$23,000	\$15,000	.
	MEAN "3 to 5 YEAR OLDS"	12.3	11.6	1.80	1.10	7.90	8.40	4.00	\$32,800	\$18,750	NA	
2 YEARS & LESS	1994	45. Illinois (Machine-Tool Systems)	7	7	0	0	6	2	1	\$50,000	\$20,000	.
		46. Mass. (Polymer Biodegradation)	10	10	2	2	6	8	4	\$30,000	.	.
		47. NJIT/Penn St./MIT/Ohio St. (Emission Reduction)	8	11	1	4	9	3	4	\$50,000	\$5,000	.
		48. Rhode Island (Ocean Technology)	8	8	0	0	6	4	2	\$25,000	\$10,000	.
		49. Stanford (Composite Design)	4	5	0	1	5	3	4	\$100,000	\$50,000	.
		50. CSM/ASU/Wichita State (Energy & Power)	13	10	3	0	5	11	3	\$50,000	\$25,000	.
	1995	51. Colorado (Microwave, Optical & Digital)	10	10	2	2	10	4	4	\$40,000	\$25,000	\$12,500
		52. Texas A&M (Center in Ergonomics)	9	9	1	1	9	1	1	\$25,000	\$15,000	\$10,000
	53. Purdue (Pharmaceutical Center)	12	11	1	0	11	1	0	\$25,000	.	.	
	54. Pennsylvania State (Particulate Materials)	14	12	2	0	12	2	0	\$35,000	\$10,000	.	
	MEAN "2 YEARS & LESS"	9.5	9.3	1.20	1.00	7.9	3.90	2.30	\$43,000	\$20,000	N/A	
	GRAND MEANS:	13.2	12.5	1.94	1.25	9.7	13.29	9.69	\$37,660	\$17,667	N/A	
	GRAND SUMS:	699	662	103	66	502	678	494	N/A	N/A	N/A	

TABLE 5
1995-1996 HUMAN RESOURCES

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STATUS	YEAR FUNDED	ABBREVIATED NAME	RESEARCHER BREAKDOWN				STUDENTS		ADMINISTRATIVE		CLERICAL	
			TOTAL # RESEARCHERS	# FACULTY SCIENTISTS	NON-FACULTY FT	NON-FACULTY PT	# OF GRADS	# OF UNDERGRAD	PROFESSIONALS FT	PROFESSIONALS PT	CLERICAL FT	CLERICAL PT
6 YEARS OR OLDER	1990	1. Mass. (Polymers)	22	22	0	0	16	0	1	0	1	0
	1991	2. Case Western (Polymers)	*	*	*	*	*	*	*	*	*	*
	1992	3. NCSU/Duke (Communication/Signal Proc.)	16	16	0	0	32	2	3	1	3	0
		4. Rutgers (Ceramic)	12	12	0	0	23	55	3	1	6	0
		5. Georgia Tech/Arkansas (Water Handling/Logistics)	19	19	0	0	18	3	1	4	3	3
		6. Penn. State (Dielectrics Studies)	11	5	3	3	4	2	0	1	0	1
		7. Colorado School of Mines (Steel)	8	6	2	0	22	4	1	0	0	1
	1994	8. Washington (Process Analytical Chem.)	27	21	5	1	25	2	5	1	1	1
		9. NJIT/Princeton/Rutgers/SIT/UNJ (Hazardous Subst. Mgmt)	43	40	2	1	42	12	2	3	2	0
		10. Arizona/Maryland (Optical Circuitry)	23	13	6	4	14	2	1	2	0	2
		11. Northwestern/Georgia Tech. (Eng. Tribology)	20	8	12	0	15	0	0	2	1	1
		12. Arizona (Microcontamination)	10	9	1	0	5	3	1	0	1	0
		13. Northeastern (Electromagnetics)	17	13	3	1	12	5	0	0	0	1
		14. Lehigh (Chemical Process)	0	0	0	0	10	1	1	0	1	0
	1995	15. Carnegie Mellon (Iron & Steelmaking)	7	5	2	0	12	9	1	0	1	0
		16. Lehigh (Innovation)	14	10	0	4	2	0	0	2	1	1
		17. Texas/Texas A&M (Adv. Electron Devices)	25	20	3	2	15	5	0	2	1	1
		18. Tennessee (Measurement & Control)	13	10	0	3	13	7	1	0	2	2
		19. Iowa State (Nondestructive Evaluation)	15	11	0	4	10	3	0	3	0	3
	1996	20. Oklahoma State (Web Handling)	11	9	2	0	28	4	0	3	0	4
		21. Alfred/Missouri (Glass)	16	13	3	0	10	5	2	1	1	1
		22. New Mexico Inst. (Energetic)	5	1	3	1	6	6	0	2	0	1
		23. Florida/Purdue/Oregon (Software Eng.)	9	9	0	0	6	7	1	3	1	2
		24. UC Berkeley (Sensors & Actuators)	14	9	5	0	41	1	1	0	2	1
	1997	25. Iowa (Simulation & Design)	50	7	40	3	41	12	2	0	3	0
		26. NCSU/UC Davis (Aseptic Processing)	24	16	2	6	11	5	0	2	0	1
	1998	27. SUNY-Buffalo/Memphis/NY St. College (Biosurfaces)	30	19	7	4	12	8	2	3	0	2
	1989	28. New Mexico (Micro-Engineered Materials)	18	15	3	0	33	6	1	1	2	1
		29. UC San Diego (Integrated Circuits)	13	10	1	2	5	2	4	0	1	0
		30. Ga. Tech./Arizona (Information Mgmt.)	12	6	5	1	15	6	0	1	1	0
		31. Wash.St/U.Wash/Oreg.St/SUNY-SB (Integr. Circuits)	14	14	0	0	29	4	0	5	1	3
	1990	32. Illinois (Air Conditioning & Refrigeration)	14	13	0	1	41	23	0	1	1	0
		33. Connecticut (Grinding)	20	11	7	2	11	7	3	3	0	2
		34. Michigan (Dimensional Measurement)	16	9	3	4	7	2	1	0	1	0
	MEAN "6 YEARS OR OLDER"	17.2	12.2	3.6	1.4	17.8	6.5	1.2	1.4	1.2	1.1	
3 to 5 YEAR OLDS	1991	35. Eastern Michigan/North Dakota State (Coatings)	18	10	7	1	20	6	3	0	2	3
		36. North Texas (Nanostructure)	12	8	2	2	1	4	0	4	1	0
	1992	37. Colorado (Thin Film)	16	14	2	0	15	3	2	1	0	1
		38. Lehigh (Polymer Interfaces)	23	16	2	5	15	2	0	3	1	1
		39. NCSU (Pest Management)	29	26	3	0	4	10	0	0	0	1
		40. Rutgers (Wireless Information)	11	7	4	0	12	3	1	0	3	0
		41. Villanova (Advanced Communication)	7	7	0	0	7	3	0	0	0	1
		42. Carnegie-Mellon (Building Performance)	8	6	2	0	10	5	1	1	2	0
		43. Arizona St./West. Network (Health Mgmt.)	27	25	0	2	2	0	0	2	0	2
	1993	44. Ohio (Corrosion)	5	3	1	1	14	6	1	0	1	0
	MEAN "3 to 5 YEAR OLDS"	18.6	12.2	2.3	1.1	10.0	4.2	0.8	1.1	1.0	0.9	
2 YEARS & LESS	1994	45. Illinois (Machine-Tool Systems)	16	15	1	0	25	0	0	1	0	1
		46. Mass. (Polymer Biodegradation)	11	5	6	0	15	2	2	1	0	1
		47. NJIT/Penn St./MIT/Ohio St. (Emission Reduction)	18	15	3	0	14	2	1	3	1	0
		48. Rhode Island (Ocean Technology)	4	3	1	0	3	0	1	0	0	1
		49. Stanford (Composite Design)	2	1	1	0	4	0	0	1	0	1
		50. CSM/ASU/Wichita State (Energy & Power)	8	8	0	0	10	0	2	1	1	0
	1995	51. Colorado (Microwave, Optical & Digital)	8	8	0	0	10	1	2	2	0	1
		52. Texas A&M (Center in Ergonomics)	8	5	0	3	5	5	1	1	0	0
		53. Purdue (Pharmaceutical Center)	6	6	0	0	7	0	0	2	0	1
		54. Pennsylvania State (Particulate Materials)	12	10	0	2	10	9	1	1	2	0
	MEAN "2 YEARS & LESS"	9.3	7.6	1.2	0.5	10.3	1.9	1.0	1.3	0.4	0.6	
	GRAND MEANS:	15.4	11.3	2.9	1.2	14.9	5.2	1.1	1.3	1.0	0.9	
	GRAND TOTALS:	617	599	155	63	789	274	55	71	52	50	

TABLE 7

1995-1996 INTELLECTUAL PROPERTY EVENTS

TABLE 7a Centers Reporting One or More Intellectual Property Events		
INTELLECTUAL PROPERTY EVENT	NUMBER of CENTERS	PERCENTAGE of CENTERS
INVENTION DISCLOSURES	21	39%
PATENT APPLICATIONS	17	31%
SOFTWARE COPYRIGHTS	8	15%
PATENTS GRANTED	14	26%
LICENSING AGREEMENTS	8	15%
ROYALTIES REALIZED	4	7%

TABLE 7b Total Number and Means of Intellectual Property Events		
INTELLECTUAL PROPERTY EVENT	TOTALS for ALL CENTERS	MEANS for ALL CENTERS
INVENTION DISCLOSURES	65	1.23
PATENT APPLICATIONS	39	0.74
SOFTWARE COPYRIGHTS	6	0.11
PATENTS GRANTED	17	0.32
LICENSING AGREEMENTS	11	0.21
ROYALTIES REALIZED	4	N/A

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) This report includes only data on Centers which were considered active participants in the NSF IUCRC Program during the 1995-96 fiscal year.
- 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 1 through 6, a bullet (*) indicates missing data due to non-response.
- 5) On Tables 2 and 3, direct funding does not include overhead and may underestimate actual dollars.
- 6) 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.
- 7) 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.
- 8) On Table 2, "INDUSTRIAL MEMBERSHIP FEES" refers to support from industry derived from membership fees.
- 9) On Table 2, "OTHER INDUSTRY" refers to any additional support for operations provided by industrial members (e.g., enhancements, contracts, donations, etc.).
- 10) On Table 2, "STATE" refers to the support provided by state government and/or an agency or program funded by state government.
- 11) 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.
- 12) On Table 2, "UNIVERSITY DIRECT" refers to actual support for Center operating costs, including: salary, travel, etc. This figure does include overhead returned to Center. However, it does NOT include cost of items like utilities or space, which universities are obligated to provide for all grants.
- 13) On Table 3, "OVERHEAD CHARGES" refers to the sum of all overhead, including: NSF, Industry Member Fees, Other Industry, State, and Other.
- 14) On Table 3, "TOTAL BUDGET" refers to the sum of DIRECT FUNDING and OVERHEAD CHARGES. Because one Center provided the total budget but failed to provide direct and indirect breakdowns the grand sums of Columns A + B will not equal Column C.
- 15) On Table 3, "UNIVERSITY-WAIVED OVERHEAD" refers to the amount of overhead the university has waived by reducing its normal overhead rate.
- 16) On Table 3, "EFFECTIVE BUDGET" refers to the value of the center's budget if full overhead were collected.
- 17) On Table 3, "CAPITAL TOTAL FUNDING" includes 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.
- 18) On Table 3, "IN KIND SUPPORT" refers to additional equipment or personnel contributions not reflected in operating budget figures.
- 19) On Table 4, "FEES" are broken down into primary, secondary, and tertiary (the latter two represent variable membership fees).
- 20) On Table 5, "FT" means "Full-time" and "PT" means "Part-time."
- 21) On Table 6, "TIME ALLOCATION" refers to allocation of director's full-time equivalent for budgetary purposes.
- 22) 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.