

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

**FINAL
1994-1995 STRUCTURAL INFORMATION^{1,2}**

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NOTE: 1994-1995 Table data collected from 49/51 Center Director Surveys (96% response rate).

PLEASE DIRECT QUESTIONS AND COMMENTS TO THE AUTHORS³

TABLE 1
1994-1995 GENERAL INFORMATION

| STATUS | YEAR FUNDED | UNIVERSITY (CENTER) | DIRECTOR | # OF DEPTS. INVOLVED | |
|-----------------------------------|---------------------------------|--|--|--|------------|
| SELF-SUSTAINING | 1990 | 1. University of Massachusetts (Center on Research on Polymers) | Moynahan, E. Bradley | 6 | |
| | 1991 | 2. Case Western Reserve (Center for Applied Polymer Research) | Hiltner, Anne | 5 | |
| | 1992 | 3. North Carolina State University/Duke University (Center for Communications & Signal Processing) | 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 (Materials Handling Research Center) | Nembauser, G. & Landers, T. | 6 |
| | | | 6. Pennsylvania State University (Center for Dielectric Studies) | Dougherty, Joseph P. | 5 |
| | 1994 | 7. Colorado School of Mines (Advanced Steel Processing and Products Research) | Matlock, David | 3 | |
| | | | 8. University of Washington (Center for Process Analytical Chemistry) | Baughman, E. | 6 |
| | | | 9. New Jersey Institute of Technology (Hazardous Substance Management Research Center) | Magee, Richard S. | 6 |
| | | | 10. University of Arizona (Center for Optical Circuitry) | Peyghambarian, N. | * |
| | | | 11. Northwestern University/Georgia Institute of Technology (Center for Engineering Tribology) | Cheng, Herbert S. & Danyluk, S. | 4 |
| | | | 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 (Chemical Process Modeling & Control Research Center) | Georgakias, Christos | 4 |
| | 1985 | 15. Carnegie Mellon University (Iron & Steelmaking Research) | Fruehan, R.J. & Cramb, A.W. | 3 | |
| | | | 16. Lehigh University (Center for Innovation Management Studies) | Bean, Alden S. | 2 |
| | | | 17. University of Texas at Arlington (Center for Advanced Electron Devices) | Alavi, Kambiz | 3 |
| | | | 18. University of Tennessee (Measurement & Control Engineering) | Garrison, Arlene A. | 4 |
| | | | 19. Iowa State University (Center for Nondestructive Evaluation) | Thompson, Donald O. | 8 |
| | 1986 | 20. Oklahoma State University (Web Handling Research Center) | Reid, Karl N. | 3 | |
| | | | 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) | Mathur, A., Thebaut, S., & Fickas, S. | 3 |
| | | | 24. University of California - Berkeley (Sensors & Actuators Centers) | Muller, Richard | 5 |
| | 1987 | 25. University of Iowa (Center for Simulation & Design Optimization of Mechanical Systems) | Haug, Edward J. | 4 | |
| | | | 26. North Carolina State Univ./ Univ. of Calif. at Davis (Center for Aseptic Processing & Packing Studies) | Schwartz, S. Shocmaker, S., & Schwartzel, K. | 10 |
| | 1988 | 27. University of Colorado (Microwave, Optical & Digital) | Mahajan, Roop | 2 | |
| | | | 28. State University of New York at Buffalo (Center for Biosurfaces) | Baier, R. | 7 |
| | 1989 | 29. University of New Mexico (Center for Micro-Engineered Ceramics) | Datye, Abhaya K. | 4 | |
| | | | 30. University of California at San Diego (Center for Integrated Circuits & Systems) | Ku, Walter | * |
| | | | 31. Georgia Institute of Technology/University of Arizona (Information Management Research) | McCracken, W.M. & Nunamaker, J. | 2 |
| | | | 32. Washington State University (Center for Analog/Digital Integrated Circuits) | Ringo, John | 1 |
| MEAN "SELF-SUSTAINING:" | | | | 4.0 | |
| 3 to 5 YEAR OLDS | 1990 | 33. University of Illinois, Urbana (Air Conditioning & Research Center) | Bullard, Clark W. | 2 | |
| | | 34. University of Connecticut (Center for Grinding Research & Development) | Howes, Trevor D. | 4 | |
| | | 35. University of Michigan (Dimensional Measurement and Control in Manufacturing) | Ni, Jun | 4 | |
| | 1991 | 36. Eastern Michigan/North Dakota State (Center for Coatings Research) | Jones, Frank & Urban, Marek | 3 | |
| | | 37. University of North Texas (Center for Nanostructural Materials Research) | McDaniel, Floyd | 3 | |
| | 1992 | 38. University of Colorado at Boulder (Center for Separations using Thin Films) | Alan Greenberg & Noble, Richard | 5 | |
| | | 39. Lehigh University (Center for Polymer Interfaces) | El-Aasser, Mohamed S. | 5 | |
| | | 40. North Carolina State University (Center for Integrated Pest Management) | Stinner, Ronald E. | 5 | |
| | | 41. Rutgers University (Center for Wireless Information Networks) | Goodman, David J. | 3 | |
| | | 42. Villanova University (Center for Advanced Communications) | Di Giacomo, Joseph | 5 | |
| | | 43. Carnegie-Mellon University (Center for Building Performance) | Hartkopf, Volker | 1 | |
| | | 44. Arizona State Univ. & Western Network for Educ. in Health Admin. (Center for Health Management) | Zuckerman, H. & Robinson, C. | 14 | |
| | MEAN "3 to 5 YEAR OLDS:" | | | | 4.5 |
| | 2 YEARS & LESS | 1993 | 45. Ohio University (Center for Corrosion in Multiphase Systems) | Jepson, W. Paul | 1 |
| 1994 | | 46. University of Illinois (Center for Machine-Tool Systems) | Kapoor, Shiv | 6 | |
| | | 47. University of Massachusetts (Center for Polymer Biodegradation) | McCarthy, Steve & Gross, Richard | 4 | |
| | | 48. New Jersey Institute of Technology (Center for Emission Reduction Research) | Watts, Daniel | 4 | |
| | | 49. University of Rhode Island (Center for Ocean Technology) | Callahan, Jefferey | 4 | |
| | | 50. Stanford University (Center for Composite Design) | Tsai, Stephen | 1 | |
| | | 51. Colorado School of Mines/Arizona State University (Ctr. for Adv. Control of Energy and Power Sys.) | Shoureshi, R. & Heydt, G. | 3 | |
| MEAN "2 YEARS & LESS:" | | | | 3.3 | |
| GRAND MEAN: | | | | 4.0 | |
| GRAND SUM: | | | | 198 | |
| NEW CENTERS | 1995 | 52. Texas A&M (Center in Ergonomics) | Congleton, Jerome | | |
| | | 53. Purdue University (Pharmaceutical Center) | Nail, Stephen | | |
| | | 54. Pennsylvania State University (Particulate Materials Center) | Messing, Gary | | |
| | | 55. Rutgers University (Center for Packaging and Resource Recovery) | McLaren, Malcolm | | |

TABLE 2

1994-1995 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 |
|---|-------------|--|--------------|-------------|----------------------|------------------------|---------------|---------------|-------------------------|
| 1988 | 1988 | 1. Mass. (Polymers) | \$721,750 | \$16,448 | \$154,878 | \$384,488 | \$0 | \$0 | \$165,936 |
| | | 2. Case Western (Polymers) | \$807,937 | \$128,730 | \$164,048 | \$320,321 | \$20,593 | \$92,518 | \$81,727 |
| | | 3. NCSU/Duke (Communication/Signal Proc.) | \$4,055,210 | \$55,083 | \$251,572 | \$1,181,068 | \$1,430,355 | \$310,782 | \$826,350 |
| | | 4. Rutgers (Ceramic) | \$663,486 | \$74,746 | \$395,306 | \$0 | \$0 | \$28,114 | \$165,320 |
| | | 5. Georgia Tech. (Materials Handling) | \$421,667 | \$26,635 | \$121,056 | \$155,976 | \$24,000 | \$0 | \$94,000 |
| | | 6. Penn. State (Dielectrics Studies) | \$871,993 | \$26,613 | \$811,106 | \$34,274 | \$0 | \$0 | \$0 |
| | | 7. Colorado School of Mines (Steel) | \$772,897 | \$80,078 | \$558,775 | \$0 | \$0 | \$10,000 | \$124,044 |
| | | 8. Washington (Process Analytical Chem.) | \$10,094,545 | \$74,833 | \$371,428 | \$315,000 | \$2,865,031 | \$5,983,131 | \$485,122 |
| | | 9. NIT (Hazardous Substance Mgmt.) | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| | | 10. Arizona (Optical Circuitry) | \$558,853 | \$48,897 | \$323,750 | \$186,206 | \$0 | \$0 | \$0 |
| | | 11. Northwestern/Georgia Inst. of Tech. (Engrin) | \$425,996 | \$31,800 | \$367,624 | \$0 | \$18,887 | \$5,000 | \$2,685 |
| | | 12. Arizona (Microamination) | \$865,545 | \$58,000 | \$55,000 | \$228,979 | \$0 | \$450,566 | \$73,000 |
| 13. Northeastern (Electromagnetics) | \$259,330 | \$43,000 | \$165,000 | \$0 | \$0 | \$0 | \$51,330 | | |
| 14. Lehigh (Chemical Process) | \$894,000 | \$42,000 | \$700,000 | \$0 | \$0 | \$0 | \$0 | | |
| 15. Carnegie Mellon (Iron & Steelmaking) | \$327,998 | \$45,141 | \$180,000 | \$0 | \$0 | \$98,857 | \$4,000 | | |
| 16. Lehigh (Innovation) | \$129,000 | \$40,000 | \$60,000 | \$9,000 | \$0 | \$0 | \$20,000 | | |
| 17. Texas - Arlington (Adv. Electron Devices) | \$530,264 | \$50,544 | \$377,500 | \$22,000 | \$0 | \$22,733 | \$57,487 | | |
| 18. Tennessee (Measurement & Control) | \$1,163,380 | \$98,000 | \$630,000 | \$0 | \$385,758 | \$0 | \$49,622 | | |
| 19. Iowa State (Nondestructive Evaluation) | \$595,000 | \$43,000 | \$425,000 | \$30,000 | \$42,000 | \$18,000 | \$37,000 | | |
| 20. Oklahoma State (Web Handling) | \$693,444 | \$98,000 | \$595,444 | \$0 | \$0 | \$0 | \$0 | | |
| 21. Alfred (Glass) | \$262,660 | \$35,830 | \$150,830 | \$0 | \$0 | \$0 | \$76,000 | | |
| 22. New Mexico Inst. (Energetic) | \$487,953 | \$98,353 | \$133,800 | \$0 | \$125,000 | \$0 | \$130,800 | | |
| 23. Florida/Purdue (Software Eng.) | \$1,719,845 | \$149,785 | \$830,000 | \$97,359 | \$160,746 | \$474,955 | \$7,000 | | |
| 24. UC Berkeley (Sensors & Actuators) | \$3,765,291 | \$40,000 | \$480,000 | \$471,180 | \$0 | \$2,774,111 | \$0 | | |
| 25. Iowa (Stimulation & Design) | \$383,093 | \$32,654 | \$271,500 | \$8,502 | \$0 | \$34,587 | \$35,850 | | |
| 26. NCSU/UC Davis (Aseptic Processing) | \$667,171 | \$0 | \$451,720 | \$0 | \$2,500 | \$212,951 | \$2,500 | | |
| 27. Colorado (Microwave, Optical & Digital) | \$589,296 | \$178,000 | \$240,000 | \$38,000 | \$0 | \$73,296 | \$60,000 | | |
| 28. SUNY at Buffalo (Biosources) | \$1,608,180 | \$51,759 | \$330,000 | \$252,066 | \$75,000 | \$620,474 | \$278,881 | | |
| 29. New Mexico (Micro-Engineered Ceramics) | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | | |
| 30. Calif. - San Diego (Integrated Circuits) | \$78,000 | \$50,000 | \$0 | \$18,000 | \$0 | \$0 | \$10,000 | | |
| 31. Ga. Tech./Arizona (Information Mgmt.) | \$675,128 | \$140,128 | \$390,000 | \$0 | \$95,000 | \$0 | \$50,000 | | |
| 32. Washington State (Integrated Circuits) | \$1,209,962 | \$64,071 | \$344,322 | \$129,394 | \$180,771 | \$391,796 | \$99,609 | | |
| MEAN 3 to 5 YEAR OLDS | | | \$867,000 | \$35,000 | \$675,000 | \$150,000 | \$0 | \$7,000 | |
| 1990 | | | \$2,390,614 | \$80,000 | \$309,000 | \$6,080 | \$484,500 | \$160,000 | |
| 33. Univ. of Connecticut (Grinding) | | | \$515,000 | \$50,000 | \$350,000 | \$115,000 | \$0 | \$0 | |
| 34. Univ. of Michigan (Dimensional Measurem | | | \$321,167 | \$43,667 | \$210,000 | \$0 | \$60,000 | \$7,500 | |
| 35. Eastern Michigan/North Dakota State (Coat | | | \$771,755 | \$45,000 | \$120,000 | \$550,000 | \$12,000 | \$44,755 | |
| 36. Univ. of North Texas (Nanostucture) | | | \$604,046 | \$45,296 | \$413,250 | \$38,000 | \$65,000 | \$42,500 | |
| 37. Univ. of Colorado (Thin Film) | | | \$400,069 | \$50,000 | \$280,000 | \$38,842 | \$0 | \$8,017 | |
| 38. Lehigh (Polymer Interfaces) | | | \$245,046 | \$71,530 | \$159,817 | \$13,699 | \$0 | \$0 | |
| 39. NCSU (Post Management) | | | \$1,435,063 | \$17,327 | \$870,000 | \$111,058 | \$0 | \$205,900 | |
| 40. Rutgers (Wireless Information) | | | \$420,000 | \$50,000 | \$195,000 | \$0 | \$125,000 | \$0 | |
| 41. Villanova (Advanced Communication) | | | \$513,187 | \$79,207 | \$266,432 | \$44,453 | \$0 | \$50,000 | |
| 42. Carnegie-Mellon (Building Performance) | | | \$393,300 | \$50,000 | \$343,300 | \$0 | \$0 | \$0 | |
| 43. Arizona St./West. Network (Health Mgmt.) | | | \$739,687 | \$51,419 | \$349,317 | \$88,928 | \$62,208 | \$146,103 | |
| 44. Ohio University (Corrosion) | | | \$528,000 | \$40,000 | \$368,000 | \$95,000 | \$0 | \$25,000 | |
| 45. Illinois (Machine-Tool Systems) | | | \$427,247 | \$50,000 | \$377,247 | \$0 | \$0 | \$0 | |
| 46. Mass. (Polymer Biodegradation) | | | \$512,000 | \$50,000 | \$270,000 | \$132,000 | \$0 | \$60,000 | |
| 47. NIT (Emission Reduction) | | | \$2,070,000 | \$50,000 | \$400,000 | \$602,000 | \$90,000 | \$270,000 | |
| 48. Rhode Island (Ocean Technology) | | | \$350,000 | \$50,000 | \$300,000 | \$52,591 | \$7,500 | \$37,000 | |
| 49. Stanford (Composite Design) | | | \$360,000 | \$110,000 | \$250,000 | \$0 | \$0 | \$30,000 | |
| 50. CSM/ASU (Energy & Power) | | | \$665,872 | \$55,252 | \$299,321 | \$125,942 | \$13,929 | \$111,143 | |
| MEAN 2 YEARS & LESS | | | \$1,013,047 | \$59,622 | \$339,008 | \$118,774 | \$126,799 | \$289,444 | |
| GRAND MEANS | | | \$48,626,262 | \$2,861,849 | \$16,272,383 | \$5,701,142 | \$6,086,370 | \$13,893,314 | |
| GRAND TOTALS | | | | | | | | \$3,811,204 | |

TABLE 3
1994-1995 BUDGET FIGURES & CAPITAL FUNDING

| STATUS | YEAR | ABBREVIATED NAME | A | | B | | C | | D | | E | | F | | G | | H | | NSF OVERHEAD (%) | INDUSTRY OVERHEAD (%) |
|--------------------|------|---|-----------------------------|------------------|--------------|----------------------------|------------------|-----------------------|-------------|-----------|-----------|-----------|-----|-----|-----|-----|-----|-----|------------------|-----------------------|
| | | | DIRECT FUNDING | OVERHEAD CHARGES | TOTAL BUDGET | UNIVERSITY WAIVED OVERHEAD | EFFECTIVE BUDGET | TOTAL CAPITAL FUNDING | SOFTWARE | EQUIPMENT | PERSONNEL | OTHER | | | | | | | | |
| 1994 | 1 | Mass. (Polymers) | \$721,750 | \$55,313 | \$777,063 | \$0 | \$777,063 | \$0 | \$6,250,000 | \$0 | \$150,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 52% | 52% | |
| | 2 | Case Western (Polymers) | \$807,937 | \$183,115 | \$1,500,000 | \$0 | \$1,500,000 | \$0 | \$200,000 | \$0 | \$200,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 51% | 20% | |
| | 3 | NCSU/Duke (Communication/Signal Proc.) | \$4,055,210 | \$557,767 | \$991,052 | \$92,009 | \$1,083,061 | \$15,000 | \$377,594 | \$0 | \$377,594 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 48% | 10% | |
| | 4 | Rutgers (Ceramic) | \$63,486 | \$99,876 | \$4,612,977 | \$0 | \$4,612,977 | \$0 | \$0 | \$0 | \$15,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 59% | 59% | |
| | 5 | Georgia Tech. (Materials Handling) | \$421,667 | \$622,000 | \$763,362 | \$117,382 | \$880,744 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 46% | 55% | |
| | 6 | Penn. State (Dielectrics Studies) | \$871,993 | \$166,807 | \$2,000,333 | \$41,000 | \$663,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 45% | 45% | |
| | 7 | Colorado School of Mines (Steel) | \$772,897 | \$540,812 | \$1,038,800 | \$133,174 | \$1,171,974 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 24% | 24% | |
| | 8 | Washington (Process Analytical Chem.) | \$10,094,545 | \$2,269,780 | \$1,313,709 | \$0 | \$1,313,709 | \$0 | \$0 | \$0 | \$83,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 49% | 49% | |
| | 9 | NIT (Hazardous Substance Mgmt.) | \$58,853 | \$142,505 | \$12,364,325 | \$2,019,064 | \$14,383,389 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 0% | 5% | |
| | 1993 | 10 | Arizona (Optical Circuitry) | \$425,996 | \$138,576 | \$701,358 | \$132,375 | \$833,733 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 48% | 10% |
| 11 | | Northwestern/Georgia Inst. of Tech. (Eng) | \$65,545 | \$50,000 | \$564,572 | \$20,085 | \$584,657 | \$226,000 | \$0 | \$0 | \$250,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 51% | 51% | |
| 12 | | Arizona (Microcontamination) | \$259,330 | \$18,435 | \$915,545 | \$150,000 | \$1,065,545 | \$0 | \$0 | \$0 | \$100,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 58% | 0% | |
| 13 | | Northeastern (Electromagnetics) | \$894,000 | \$98,000 | \$277,765 | \$87,722 | \$365,487 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 56% | 10% | |
| 14 | | Lehigh (Chemical Process) | \$327,998 | \$72,740 | \$992,000 | \$0 | \$992,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 62% | 62% | |
| 15 | | Carnegie Mellon (Iron & Steelmaking) | \$129,000 | \$0 | \$400,738 | \$0 | \$400,738 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 55% | 10% | |
| 16 | | Lehigh (Innovation) | \$530,264 | \$0 | \$129,000 | \$0 | \$129,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 0% | 0% | |
| 17 | | Texas - Arlington (Adv. Electron Devices) | \$1,163,380 | \$28,085 | \$1,191,465 | \$227,200 | \$1,468,665 | \$150,000 | \$0 | \$0 | \$225,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 44% | 0% | |
| 18 | | Tennessee (Measurement & Control) | \$595,000 | \$0 | \$813,444 | \$182,000 | \$995,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 75% | 0% | |
| 19 | | Iowa State (Nondestructive Evaluation) | \$693,444 | \$120,000 | \$300,000 | \$0 | \$300,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 33% | 33% | |
| 1986 | 20 | Oklahoma State (Web Handling) | \$262,650 | \$37,340 | \$98,284 | \$0 | \$586,237 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 49% | 0% | |
| | 21 | Ahmed (Glass) | \$1,719,845 | \$292,850 | \$2,012,695 | \$414,170 | \$2,426,865 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 50% | 0% | |
| | 22 | New Mexico Inst. (Energetic) | \$383,093 | \$47,447 | \$430,540 | \$114,000 | \$544,540 | \$197,845 | \$0 | \$0 | \$45,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 47% | 0% | |
| | 23 | Florida/Purdue (Software Eng.) | \$667,171 | \$116,409 | \$783,580 | \$196,498 | \$980,078 | \$0 | \$0 | \$150,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 44% | 5% | |
| | 24 | UC Berkeley (Sensors & Actuators) | \$589,296 | \$50,940 | \$640,236 | \$120,000 | \$760,236 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 52% | 12% | |
| | 25 | Iowa (Simulation & Design) | \$1,608,180 | \$353,209 | \$1,961,389 | \$145,422 | \$2,106,811 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 48% | 0% | |
| | 26 | NCSU/UC Davis (Aspheric Processing) | \$78,000 | \$20,000 | \$98,000 | \$0 | \$98,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 35% | 50% | |
| | 27 | Colorado (Microwave, Optical & Digital) | \$675,128 | \$63,058 | \$738,186 | \$218,250 | \$956,436 | \$0 | \$0 | \$30,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 45% | 0% | |
| | 28 | SUNY at Buffalo (Biosurfaces) | \$867,000 | \$13,000 | \$880,000 | \$629,000 | \$1,509,000 | \$241,548 | \$0 | \$0 | \$3,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 57% | 0% | |
| | 29 | New Mexico (Micro-Engineered Ceramics) | \$2,390,614 | \$180,158 | \$2,570,772 | \$120,000 | \$2,690,772 | \$0 | \$0 | \$30,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 40% | 0% | |
| 1983 | 30 | Calif. - San Diego (Integrated Circuits) | \$315,000 | \$5,000 | \$515,000 | \$221,200 | \$736,200 | \$0 | \$0 | \$50,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 0% | 0% | |
| | 31 | Ga. Tech./Arizona (Information Mgmt.) | \$771,755 | \$5,000 | \$382,500 | \$128,250 | \$510,750 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 48% | 0% | |
| | 32 | Washington State (Integrated Circuits) | \$604,046 | \$43,454 | \$776,755 | \$56,400 | \$833,154 | \$550,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 47% | 0% | |
| | 33 | Univ. of North Texas (Nanostucture) | \$400,069 | \$10,562 | \$647,500 | \$155,321 | \$802,821 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 43% | 5% | |
| | 34 | Univ. of Colorado (Thin Film) | \$245,046 | \$295,149 | \$410,631 | \$65,500 | \$474,131 | \$0 | \$0 | \$0 | \$200,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 59% | 10% | |
| | 35 | NCSTU (Pest Management) | \$1,435,063 | \$65,067 | \$1,500,130 | \$0 | \$1,500,130 | \$0 | \$0 | \$0 | \$32,066 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 59% | 0% | |
| | 36 | Eastern Michigan/North Dakota State (Co) | \$420,000 | \$0 | \$420,000 | \$0 | \$420,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 0% | 0% | |
| | 37 | Univ. of Colorado (Thin Film) | \$513,187 | \$51,047 | \$564,234 | \$0 | \$564,234 | \$333,025 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 61% | 61% | |
| | 38 | Light (Polymer Interfaces) | \$393,300 | \$0 | \$393,300 | \$0 | \$393,300 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 0% | 0% | |
| | 39 | Rutgers (Wireless Information) | \$739,687 | \$39,977 | \$779,664 | \$119,895 | \$899,559 | \$73,585 | \$16,735 | \$9,589 | \$30,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 38% | 7% | |
| 1982 | 40 | Villanova (Advanced Communication) | \$528,000 | \$23,000 | \$553,000 | \$133,000 | \$686,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 44% | 0% | |
| | 41 | Carnegie-Mellon (Building Performance) | \$427,247 | \$0 | \$427,247 | \$124,000 | \$551,247 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 54% | 32% | |
| | 42 | Arizona St./West. Network (Health Mgmt.) | \$512,000 | \$138,000 | \$650,000 | \$71,760 | \$721,760 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 20% | 20% | |
| | 43 | Ohio University (Corrosion) | \$2,020,000 | \$0 | \$2,020,000 | \$0 | \$2,020,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 64% | 64% | |
| | 44 | Illinois (Machine-Tool Systems) | \$263,856 | \$25,446 | \$289,302 | \$52,800 | \$342,102 | \$1,200,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 46% | 0% | |
| | 45 | Mass. (Polymer Biodegradation) | \$350,000 | \$175,000 | \$525,000 | \$0 | \$525,000 | \$0 | \$0 | \$0 | \$10,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 63% | 63% | |
| | 46 | NIT (Emission Reduction) | \$560,000 | \$0 | \$560,000 | \$130,000 | \$690,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 52% | 26% | |
| | 47 | Rhode Island (Ocean Technology) | \$665,872 | \$51,921 | \$717,793 | \$73,080 | \$790,873 | \$171,439 | \$4,405 | \$5,714 | \$1,571 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | 49% | 29% | |
| | 48 | Stanford (Composite Design) | \$1,913,047 | \$138,851 | \$1,999,002 | \$137,932 | \$2,136,934 | \$190,397 | \$215,825 | \$32,258 | \$16,401 | \$3,425 | \$0 | \$0 | \$0 | \$0 | \$0 | 44% | 20% | |
| | 49 | CSM/ASTU (Energy & Power) | \$48,626,262 | \$6,664,851 | \$56,791,113 | \$6,758,665 | \$63,549,778 | \$9,329,464 | \$0 | \$0 | \$803,643 | \$167,842 | \$0 | \$0 | \$0 | \$0 | \$0 | N/A | N/A | |
| MEAN 3-YEAR BUDGET | | | \$1,913,047 | \$138,851 | \$1,999,002 | \$137,932 | \$2,136,934 | \$190,397 | \$215,825 | \$32,258 | \$16,401 | \$3,425 | \$0 | \$0 | \$0 | \$0 | \$0 | 44% | 20% | |
| GRAND TOTAL | | | \$48,626,262 | \$6,664,851 | \$56,791,113 | \$6,758,665 | \$63,549,778 | \$9,329,464 | \$0 | \$803,643 | \$167,842 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | N/A | N/A | |

TABLE 4

1994-1995 INDUSTRY MEMBERSHIP DESCRIPTORS

| STATUS | YEAR | ABBREVIATED NAME | CURRENT MEMBERS | 1994 - 1995 MEMBERS | | | | | LIFETIME MEMBERS | | | | | ANNUAL MEMBERSHIP | | | FEES | | |
|-----------------|---|--|-----------------|---------------------|-----------|------------|------------|------------|--------------------|------------------|------------|---------|----------|-------------------|------------|------------|------------|--|--|
| | | | | STARTING | NEW | LEFT | STARTING | NEW | LEFT | STARTING | NEW | LEFT | PRIMARY | SECONDARY | MEMBER FEE | MEMBER FEE | MEMBER FEE | | |
| SELF-SUSTAINING | 1980 | 1. Mass. (Polymers) | 24 | 7 | 18 | 1 | 13 | 35 | 20 | \$25,000 | \$15,000 | \$5,000 | | | | | | | |
| | 1981 | 2. Case Western (Polymers) | 10 | 5 | 2 | 0 | 8 | 17 | 18 | \$50,000 | \$20,000 | | | | | | | | |
| | 1982 | 3. NCSU/Duke (Communication/Signal Proc.) | 7 | 14 | 0 | 1 | 10 | 32 | 28 | \$35,000 | | | | | | | | | |
| | | 4. Rutgers (Ceramic) | 14 | 11 | 3 | 0 | 5 | 0 | \$50,000 | | | | | | | | | | |
| | | 5. Georgia Tech. (Materials Handling) | 14 | 15 | 0 | 0 | 18 | 24 | 29 | \$20,000 | \$5,000 | | | | | | | | |
| | | 6. Penn. State (Dielectrics Studies) | 12 | 23 | 2 | 1 | 7 | 26 | 8 | \$42,500 | | | | | | | | | |
| | 1984 | 7. Colorado School of Mines (Steel) | 24 | 35 | 2 | 7 | 0 | 60 | 46 | \$35,000 | | | | | | | | | |
| | | 8. Washington (Process Analytical Chem.) | 30 | 22 | 0 | 5 | 5 | 34 | 19 | \$30,000 | \$15,000 | | | | | | | | |
| | | 9. NJIT (Hazardous Substance Mgmt.) | 17 | 22 | 0 | 0 | 0 | 0 | 0 | \$30,000 | | | | | | | | | |
| | | 10. Arizona (Optical Circuitry) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | \$27,500 | | | | | | | | | |
| | | 11. Northwestern/Georgia Inst. of Tech. (Engineer) | 16 | 12 | 5 | 1 | 14 | 10 | 12 | \$40,000 | \$10,000 | | | | | | | | |
| | | 12. Arizona (Microcontamination) | 19 | 19 | 2 | 2 | 26 | 20 | 32 | \$50,000 | \$25,000 | | | | | | | | |
| | | 13. Northeastern (Electromagnetics) | 9 | 9 | 0 | 0 | 9 | 6 | 9 | \$30,000 | | | | | | | | | |
| | | 14. Lehigh (Chemical Process) | 6 | 6 | 0 | 0 | 0 | 0 | 1 | \$30,000 | | | | | | | | | |
| | | 15. Carnegie Mellon (Iron & Steelmaking) | 22 | 21 | 1 | 0 | 11 | 18 | 4 | \$45,000 | \$32,000 | | | | | | | | |
| | | 16. Lehigh (Innovation) | 10 | 2 | 1 | 0 | 12 | 6 | 6 | \$30,000 | | | | | | | | | |
| | | 17. Texas - Arlington (Adv. Electron Devices) | 2 | 2 | 0 | 0 | 6 | 5 | 8 | \$30,000 | \$15,000 | | | | | | | | |
| | | 18. Tennessee (Measurement & Control) | 14 | 15 | 1 | 2 | 0 | 5 | 5 | \$35,000 | \$15,000 | | | | | | | | |
| | | 19. Iowa State (Nondestructive Evaluation) | 18 | 22 | 2 | 6 | 14 | 15 | 12 | \$35,000 | | | | | | | | | |
| | 1986 | 20. Oklahoma State (Web Handling) | 17 | 17 | 1 | 1 | 5 | 20 | 7 | \$25,000 | | | | | | | | | |
| | | 21. Alfred (Glass) | 25 | 25 | 1 | 1 | 8 | 21 | 5 | \$30,000 | \$20,000 | | | | | | | | |
| | | 22. New Mexico Inst. (Energetic) | 9 | 10 | 1 | 2 | 9 | 23 | 23 | \$50,000 | \$20,000 | | | | | | | | |
| | | 23. Florida/Purdue (Software Eng.) | 14 | 14 | 5 | 5 | 10 | 18 | 16 | \$50,000 | | | | | | | | | |
| | | 24. UC Berkeley (Sensors & Actuators) | 18 | 18 | 2 | 2 | 6 | 22 | 11 | \$50,000 | \$7,500 | | | | | | | | |
| | 1987 | 25. Iowa (Simulation & Design) | 12 | 12 | 0 | 0 | 24 | 5 | 13 | \$40,000 | | | | | | | | | |
| | | 26. NCSU/UC Davis (Aseptic Processing) | 8 | 9 | 0 | 1 | 8 | 8 | 8 | \$35,000 | | | | | | | | | |
| | 1988 | 27. Colorado (Microwave, Optical & Digital) | 10 | 10 | 2 | 2 | 10 | 14 | 7 | \$40,000 | \$25,000 | | | \$12,500 | | | | | |
| | | 28. SUNY at Buffalo (Biosurfaces) | 7 | 5 | 0 | 0 | 6 | 5 | 3 | \$40,000 | | | | | | | | | |
| | 1989 | 29. New Mexico (Micro-Engineered Ceramics) | 15 | 12 | 4 | 1 | 15 | 15 | 2 | \$30,000 | \$10,000 | | | | | | | | |
| | | 30. Calif. - San Diego (Integrated Circuits) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | \$40,000 | | | | | | | | | |
| | | 31. Ga. Tech./Arizona (Information Mgmt.) | 3 | 4 | 0 | 1 | 6 | 5 | 7 | \$40,000 | | | | | | | | | |
| | | 32. Washington State (Integrated Circuits) | 12 | 12 | 1 | 1 | 11 | 11 | 6 | \$30,000 | | | | | | | | | |
| | MEAN SELF-SUSTAINING: | 14 | 14 | 2 | 2 | 9 | 17 | 13 | \$35,862 | \$16,500 | N/A | | | | | | | | |
| | 1990 | 33. Univ. of Illinois (Air Conditioning) | 17 | 18 | 2 | 3 | 13 | 11 | 7 | \$40,000 | | | | | | | | | |
| | 34. Univ. of Connecticut (Grinding) | 15 | 10 | 6 | 1 | 7 | 12 | 4 | \$50,000 | \$12,000 | | | | | | | | | |
| | 35. Univ. of Michigan (Dimensional Measurement) | 8 | 9 | 1 | 2 | 8 | 5 | 4 | \$50,000 | | | | | | | | | | |
| 1991 | 36. Eastern Michigan/North Dakota State (Coatn) | 9 | 8 | 2 | 1 | 11 | 8 | 4 | \$30,000 | | | | | | | | | | |
| | 37. Univ. of North Texas (Nanotechnology) | 5 | 6 | 1 | 2 | 4 | 5 | 4 | \$30,000 | | | | | | | | | | |
| 1992 | 38. Univ. of Colorado (Thin Film) | 11 | 12 | 0 | 1 | 10 | 4 | 4 | \$40,000 | | | | | | | | | | |
| | 39. Lehigh (Polymer Interfaces) | 12 | 11 | 2 | 1 | 10 | 5 | 3 | \$35,000 | | | | | | | | | | |
| | 40. NCSU (Pest Management) | 7 | 6 | 2 | 1 | 7 | 3 | 1 | \$25,000 | | | | | | | | | | |
| | 41. Rutgers (Wireless Information) | 28 | 27 | 3 | 2 | 21 | 9 | 5 | \$30,000 | | | | | | | | | | |
| | 42. Villanova (Advanced Communication) | 9 | 9 | 0 | 0 | 4 | 3 | 1 | \$30,000 | | | | | | | | | | |
| | 43. Carnegie-Mellon (Building Performance) | 7 | 6 | 1 | 0 | 3 | 11 | 0 | \$50,000 | \$25,000 | | | | | | | | | |
| | 44. Arizona St./West. Network (Health Mgmt.) | 9 | 9 | 1 | 1 | 6 | 5 | 2 | \$35,000 | \$15,000 | | | | | | | | | |
| | MEAN 3 to 5 YEAR OLDS: | 11 | 11 | 2 | 1 | 9 | 7 | 3 | \$37,083 | \$17,333 | N/A | | | | | | | | |
| | 1993 | 45. Ohio University (Corrosion) | 16 | 14 | 2 | 0 | 4 | 9 | 2 | \$23,000 | \$15,000 | | | | | | | | |
| | 46. Illinois (Machine-Tool Systems) | 6 | 6 | 1 | 1 | 4 | 1 | 1 | \$50,000 | \$20,000 | | | | | | | | | |
| 1994 | 47. Mass. (Polymer Biodegradation) | 10 | 10 | 2 | 2 | 0 | 6 | 2 | \$30,000 | | | | | | | | | | |
| | 48. NJIT (Emission Reduction) | 11 | 10 | 1 | 0 | 0 | 2 | 0 | \$50,000 | \$5,000 | | | | | | | | | |
| | 49. Rhode Island (Ocean Technology) | 8 | 11 | 0 | 3 | 0 | 2 | 3 | \$25,000 | \$10,000 | | | | | | | | | |
| | 50. Stanford (Composite Design) | 5 | 5 | 0 | 0 | 0 | 6 | 1 | \$100,000 | \$50,000 | | | \$25,000 | | | | | | |
| | 51. CSM/ASU (Energy & Power) | 10 | 8 | 3 | 3 | 0 | 12 | 1 | \$50,000 | | | | | | | | | | |
| | MEAN 7 YEARS & 1 LESS: | 9 | 9 | 1 | 1 | 1 | 5 | 1 | \$46,857 | \$20,000 | N/A | | | | | | | | |
| | GRAND MEANS: | 13 | 12 | 2 | 1 | 8 | 13 | 9 | \$37,771 | \$17,452 | N/A | | | | | | | | |
| | GRAND TOTALS: | 621 | 591 | 88 | 68 | 379 | 605 | 414 | \$1,813,000 | \$366,500 | N/A | | | | | | | | |

TABLE 5
1994-1995 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 |
| STEP- SUSTAINING | 1986 | 1. Mass. (Polymers) | 22 | 22 | 0 | 0 | 7 | 0 | 1 | 0 | 1 | 0 |
| | 1981 | 2. Case Western (Polymers) | 15 | 9 | 5 | 1 | 16 | 8 | 0 | 3 | 2 | 0 |
| | 1982 | 3. NCSU/Duke (Communication/Signal Proc.) | 18 | 15 | 3 | 0 | 31 | 0 | 0 | 0 | 2 | 0 |
| | | 4. Rutgers (Ceramic) | 15 | 15 | 0 | 0 | 52 | 42 | 6 | 1 | 6 | 0 |
| | | 5. Georgia Tech. (Materials Handling) | 10 | 10 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 2 |
| | | 6. Penn. State (Dielectrics Studies) | 11 | 6 | 1 | 4 | 5 | 0 | 0 | 2 | 0 | 1 |
| | 1984 | 7. Colorado School of Mines (Steel) | 8 | 6 | 2 | 0 | 22 | 1 | 1 | 1 | 0 | 1 |
| | | 8. Washington (Process Analytical Chem.) | 23 | 15 | 7 | 1 | 28 | 2 | 5 | 1 | 1 | 1 |
| | | 9. MIT (Hazardous Substance Mgmt) | 47 | 45 | 2 | 0 | 52 | 10 | 3 | 0 | 2 | 0 |
| | | 10. Arizona (Optical Circuitry) | • | • | • | • | • | • | • | • | • | • |
| | 11. Northwestern/Georgia Inst. of Tech. (Engin) | 19 | 15 | 4 | 0 | 13 | 0 | 2 | 1 | 1 | 1 | |
| | 12. Arizona (Microcontamination) | 10 | 8 | 0 | 2 | 7 | 1 | 0 | 1 | 1 | 0 | |
| | 13. Northeastern (Electromagnetics) | 19 | 15 | 4 | 0 | 20 | 4 | 5 | 0 | 0 | 2 | |
| | 14. Lehigh (Chemical Process) | 7 | 5 | 2 | 0 | 12 | 2 | 1 | 0 | 1 | 0 | |
| | 15. Carnegie Mellon (Iron & Steelmaking) | 7 | 5 | 2 | 0 | 12 | 10 | 1 | 0 | 1 | 0 | |
| | 16. Lehigh (Innovation) | 14 | 12 | 2 | 0 | 2 | 1 | 0 | 2 | 1 | 1 | |
| | 17. Texas - Arlington (Adv. Electron Devices) | 2 | 2 | 0 | 0 | 3 | 0 | 1 | 1 | 0 | 1 | |
| | 18. Tennessee (Measurement & Control) | 13 | 10 | 0 | 3 | 14 | 3 | 1 | 0 | 2 | 1 | |
| | 19. Iowa State (Nondestructive Evaluation) | 15 | 13 | 0 | 4 | 12 | 4 | 0 | 3 | 0 | 0 | |
| 1986 | 20. Oklahoma State (Web Handling) | 14 | 13 | 1 | 0 | 38 | 4 | 0 | 2 | 0 | 4 | |
| | 21. Alfred (Glass) | 21 | 18 | 0 | 3 | 11 | 2 | 2 | 1 | 1 | 1 | |
| | 22. New Mexico Inst. (Energetic) | 4 | 3 | 1 | 0 | 11 | 20 | 0 | 0 | 2 | 1 | |
| | 23. Florida/Purdue (Software Eng) | 6 | 5 | 1 | 0 | 5 | 2 | 1 | 0 | 1 | 0 | |
| 1987 | 24. UC Berkeley (Sensors & Actuators) | 12 | 8 | 4 | 0 | 39 | 1 | 1 | 1 | 0 | 1 | |
| | 25. Iowa (Stimulation & Design) | 17 | 11 | 42 | 4 | 67 | 7 | 2 | 0 | 3 | 0 | |
| | 26. NCSU/ UC Davis (Aseptic Processing) | 17 | 16 | 1 | 0 | 24 | 13 | 1 | 0 | 3 | 1 | |
| 1988 | 27. Colorado (Microwave, Optical & Digital) | 13 | 9 | 2 | 2 | 13 | 1 | 1 | 2 | 0 | 2 | |
| | 28. SUNY at Buffalo (Biosurfaces) | 34 | 22 | 6 | 6 | 8 | 6 | 2 | 3 | 0 | 2 | |
| 1989 | 29. New Mexico (Micro-Engineered Ceramics) | 26 | 11 | 13 | 2 | 24 | 4 | 1 | 1 | 1 | 1 | |
| | 30. Calif. - San Diego (Integrated Circuits) | • | • | • | • | • | • | • | • | • | • | |
| | 31. Ga. Tech./Arizona (Information Mgmt.) | 5 | 4 | 1 | 0 | 5 | 0 | 1 | 1 | 0 | 1 | |
| | 32. Washington State (Integrated Circuits) | 13 | 13 | 0 | 0 | 44 | 6 | 1 | 5 | 0 | 3 | |
| | MEAN STEP-SUSTAINING* | 16.6 | 12.0 | 3.5 | 1.1 | 20.0 | 5.1 | 1.4 | 1.1 | 1.1 | 0.9 | |
| 3 to 5 YEAR OLDS | 1990 | 33. Univ. of Illinois (Air Conditioning) | 15 | 14 | 1 | 0 | 40 | 18 | 0 | 1 | 1 | 0 |
| | | 34. Univ. of Connecticut (Grinding) | 22 | 14 | 7 | 1 | 14 | 2 | 4 | 3 | 0 | 2 |
| | | 35. Univ. of Michigan (Dimensional Measurement) | 13 | 6 | 3 | 4 | 8 | 2 | 1 | 2 | 1 | 0 |
| | 1991 | 36. Eastern Michigan/North Dakota State (Coat) | 6 | 4 | 1 | 1 | 3 | 3 | 0 | 1 | 0 | 1 |
| | | 37. Univ. of North Texas (Nanostucture) | 12 | 8 | 2 | 2 | 2 | 5 | 0 | 5 | 1 | 0 |
| | | 38. Univ. of Colorado (Thin Film) | 13 | 12 | 1 | 0 | 15 | 3 | 2 | 2 | 1 | 2 |
| | 1992 | 39. Lehigh (Polymer Interfaces) | 12 | 12 | 1 | 0 | 5 | 1 | 0 | 3 | 1 | 1 |
| | | 40. NCSU (Pest Management) | 30 | 28 | 2 | 0 | 13 | 0 | 0 | 1 | 1 | 1 |
| | | 41. Rutgers (Wireless Information) | 9 | 7 | 2 | 0 | 15 | 4 | 3 | 1 | 3 | 0 |
| | | 42. Villanova (Advanced Communication) | 16 | 16 | 0 | 0 | 15 | 9 | 1 | 1 | 0 | 0 |
| | 43. Carnegie-Mellon (Building Performance) | 7 | 5 | 2 | 0 | 10 | 5 | 1 | 1 | 1 | 2 | |
| | 44. Arizona St./West. Network (Health Mgmt.) | 14 | 11 | 0 | 3 | 4 | 0 | 0 | 2 | 0 | 2 | |
| | MEAN 3 to 5 YEAR OLDS* | 15.1 | 11.8 | 2.0 | 1.3 | 11.8 | 4.3 | 1.0 | 1.7 | 0.8 | 0.8 | |
| 1 YEAR OLDS | 1993 | 45. Ohio University (Corrosion) | 5 | 3 | 1 | 1 | 9 | 3 | 1 | 0 | 0 | 1 |
| | | 46. Illinois (Machine-Tool Systems) | 15 | 14 | 1 | 0 | 21 | 0 | 0 | 1 | 0 | 1 |
| | 1994 | 47. Mass. (Polymer Biodegradation) | 11 | 5 | 6 | 0 | 15 | 2 | 2 | 1 | 0 | 1 |
| | | 48. MIT (Emission Reduction) | 27 | 25 | 1 | 1 | 28 | 1 | 1 | 0 | 1 | 0 |
| | | 49. Rhode Island (Ocean Technology) | 4 | 3 | 1 | 0 | 4 | 0 | 1 | 0 | 0 | 1 |
| | | 50. Stanford (Composite Design) | 3 | 2 | 0 | 1 | 5 | 0 | 1 | 0 | 0 | 1 |
| | 51. CSM/ASU (Energy & Power) | 9 | 8 | 1 | 0 | 10 | 2 | 2 | 0 | 0 | 0 | |
| | MEAN 1 YEAR OLDS* | 10.6 | 8.6 | 1.6 | 0.4 | 13.1 | 1.1 | 1.1 | 0.3 | 0.3 | 0.7 | |
| | GRAND MEANS | 15.3 | 11.4 | 2.9 | 1.1 | 17.0 | 4.3 | 1.3 | 1.1 | 0.9 | 0.9 | |
| | GRAND TOTALS | 752 | 560 | 140 | 52 | 833 | 212 | 62 | 55 | 45 | 42 | |

TABLE 6
1994-1995 CENTER DIRECTOR DESCRIPTORS

| STATUS | YEAR | ABBREVIATED NAME | DIRECTOR'S RANK | DIRECTOR TENURE | DIRECTOR REPORTS TO | TIME ALLOCATION | | | | | | |
|--------------------------|--------------------|---|---|---------------------|---------------------|-------------------|------------------|--------------|--------------|-----------|-------------------|-----|
| | | | | | | CENTER ADMIN. (%) | OTHER ADMIN. (%) | RESEARCH (%) | TEACHING (%) | OTHER (%) | ADMIN. BUDGET (%) | |
| 1989 1981 1982 | 1. | Mass. (Polymers) | Professor | • | V-Chancellor | 100% | 0% | 0% | 0% | 0% | 23% | |
| | 2. | Case Western (Polymers) | Professor | Yes | Dean | 30% | 10% | 40% | 20% | 0% | 8% | |
| | 3. | NCSU/Duke (Communication/Signal Proc.) | Professor | Yes | Dean | 65% | 15% | 10% | 10% | 0% | 18% | |
| | 4. | Rutgers (Ceramic) | Professor | Yes | Director | 25% | 25% | 25% | 20% | 5% | 25% | |
| | 5. | Georgia Tech. (Materials Handling) | Professor | Yes | Department Head | 25% | 0% | 50% | 25% | 0% | 20% | |
| | 6. | Penn. State (Dielectrics Studies) | Associate Professor | No | Director | 30% | 10% | 40% | 20% | 0% | 20% | |
| | 7. | Colorado School of Mines (Steel) | Professor | Yes | Dept. Head | 20% | 10% | 30% | 30% | 10% | 20% | |
| | 8. | Washington (Process Analytical Chem.) | N/A | N/A | Chair | 70% | 0% | 10% | 10% | 20% | 13% | |
| | 9. | MIT (Hazardous Substance Mgmt.) | Professor | Yes | V-Pres. | 50% | 40% | 5% | 0% | 5% | 18% | |
| | 10. | Arizona (Optical Circuitry) | • | • | • | • | • | • | • | • | • | |
| 1985 1986 | 11. | Northwestern/Georgia Inst. of Tech. (Engine | Professor | Yes | Dean | 18% | 30% | 25% | 28% | 0% | 7% | |
| | 12. | Arizona (Microcontamination) | Professor | Yes | Department Head | 17% | 17% | 33% | 33% | 0% | 25% | |
| | 13. | Northeastern (Electromagnetics) | Professor | Yes | Dean | 20% | 20% | 20% | 20% | 20% | 20% | |
| | 14. | Lehigh (Chemical Process) | Professor | Yes | Dean | 30% | 10% | 30% | 30% | 0% | 10% | |
| | 15. | Carnegie Mellon (Iron & Steelmaking) | Professor | Yes | Dean | 15% | 15% | 40% | 20% | 10% | 12% | |
| | 16. | Lehigh (Innovation) | Professor | Yes | Dean | 25% | 25% | 40% | 10% | 55% | 55% | |
| | 17. | Texas - Arlington (Adv. Electron Devices) | N/A | Yes | Chair | 34% | 0% | 34% | 33% | 0% | 12% | |
| | 18. | Tennessee (Measurement & Control) | N/A | N/A | Dean | 80% | 10% | 0% | 10% | 0% | 18% | |
| | 19. | Iowa State (Nondestructive Evaluation) | Professor | Yes | Director | 15% | 65% | 5% | 5% | 10% | 15% | |
| | 20. | Oklahoma State (Web Handling) | Professor | Yes | Provost | 15% | 70% | 15% | 0% | 0% | 5% | |
| 1987 | 21. | Alfred (Glass) | Professor | Yes | Dean | 40% | 20% | 20% | 20% | 0% | 20% | |
| | 22. | New Mexico Inst. (Energetic) | Professor | Yes | Dean | 40% | 20% | 20% | 20% | 0% | 20% | |
| | 23. | Florida/Purdue (Software Eng.) | Professor | Yes | Director | 20% | 10% | 30% | 20% | 20% | 20% | |
| | 24. | UC Berkeley (Sensors & Actuators) | Professor | Yes | Dean | 25% | 0% | 21% | 40% | 15% | 25% | |
| | 25. | Iowa (Simulation & Design) | Professor | Yes | Chair | 40% | 0% | 50% | 10% | 0% | 80% | |
| | 26. | NCSU/ UC Davis (Aseptic Processing) | Professor | Yes | Dean | 15% | 35% | 25% | 25% | 0% | 10% | |
| | 27. | Colorado (Microwave, Optical & Digital) | Professor | No | Dean | 0% | 0% | 50% | 50% | 13% | 12% | |
| | 28. | SUNY at Buffalo (Biosurfaces) | Professor | Yes | Dean | 20% | 15% | 40% | 25% | 0% | 20% | |
| | 29. | New Mexico (Micro-Engineered Ceramics) | Professor | Yes | Vice President | 35% | 5% | 40% | 30% | 5% | 13% | |
| | 1989 | 30. | Calif. - San Diego (Integrated Circuits) | • | • | • | • | • | • | • | • | • |
| 31. | | Ga. Tech./Arizona (Information Mgmt.) | Principal Researcher | No | Dean | 20% | 30% | 10% | 40% | 0% | 30% | |
| 32. | | Washington State (Integrated Circuits) | Professor | Yes | Dean | 35% | 50% | 0% | 15% | 0% | 15% | |
| MEAN 3 YEAR SUSTAINING** | | | | | | 32% | 18% | 25% | 20% | 5% | 20% | |
| 1988 | | 33. | Univ. of Illinois (Air Conditioning) | Professor | Yes | Head | 20% | 0% | 30% | 30% | 20% | 8% |
| | | 34. | Univ. of Connecticut (Grinding) | Professor | Yes | Dean | 20% | 20% | 20% | 0% | 40% | 20% |
| | | 35. | Univ. of Michigan (Dimensional Measurement) | Associate Professor | Yes | Dean | 25% | 25% | 20% | 25% | 0% | 10% |
| | | 36. | Eastern Michigan/North Dakota State (Coatit | Professor | No | Dean | 33% | 0% | 67% | 0% | 0% | 5% |
| | | 37. | Univ. of North Texas (Nanostructure) | Professor | • | Director | 20% | 10% | 50% | 20% | 0% | 8% |
| | | 38. | Univ. of Colorado (Thin Film) | Professor | No | V-Pres | 10% | 15% | 35% | 35% | 5% | 21% |
| | 39. | Lehigh (Polymer Interfaces) | Professor | Yes | Vice Provost | 20% | 20% | 40% | 20% | 0% | • | |
| | 40. | NCSU (Pest Management) | Professor | Yes | NCARS Director | 50% | 0% | 38% | 12% | 0% | 15% | |
| | 41. | Rutgers (Wireless Information) | Professor | Yes | Dean | 40% | 0% | 20% | 40% | 0% | 26% | |
| | 42. | Villanova (Advanced Communication) | • | • | • | 25% | 25% | 25% | 0% | 25% | 16% | |
| 1992 | 43. | Carnegie-Mellon (Building Performance) | Staff | • | Dean | 10% | 0% | 20% | 70% | 0% | 15% | |
| | 44. | Arizona St./West. Network (Health Mgmt.) | Professor | Yes | Associate Dean | 25% | 0% | 40% | 35% | 0% | 22% | |
| | MEAN 3 YEAR OLDS** | | | | | | 25% | 10% | 34% | 24% | 8% | 15% |
| | 1993 1994 | 45. | Ohio University (Corrosion) | N/A | N/A | N/A | 25% | 10% | 27% | 16% | 11% | 15% |
| | | 46. | Illinois (Machine-Tool Systems) | Professor | Yes | Dean | 50% | 0% | 20% | 30% | 0% | 10% |
| | | 47. | Mass. (Polymer Biodegradation) | Professor | Yes | Dean | 10% | 10% | 40% | 40% | 0% | 15% |
| | | 48. | MIT (Emission Reduction) | Professor | Yes | Provost | 20% | 0% | 30% | 20% | 0% | 10% |
| | | 49. | Rhode Island (Ocean Technology) | CEES Director | N/A | CEES Director | 40% | 40% | 20% | 0% | 0% | 15% |
| | | 50. | Stanford (Composite Design) | Staff | No | Vice Provost | 30% | 55% | 0% | 0% | 15% | 15% |
| | | 51. | CSM/ASU (Energy & Power) | Professor | No | Chair | 40% | 0% | 50% | 0% | 10% | 20% |
| MEAN 7 YEARS & LESS** | | | | | | 30% | 16% | 27% | 16% | 11% | 15% | |
| GRAND MEANS: | | | | | | 30% | 16% | 28% | 20% | 6% | 18% | |
| GRAND SUMS: | | | | | | N/A | N/A | N/A | N/A | N/A | N/A | |

TABLE 7 1994-1995 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 | 43% |
| PATENT APPLICATIONS | 17 | 35% |
| SOFTWARE COPYRIGHTS | 11 | 22% |
| PATENTS GRANTED | 11 | 22% |
| LICENSING AGREEMENTS | 6 | 12% |
| ROYALTIES REALIZED | 2 | 4% |

| TABLE 7b Total Number of Intellectual Property Events | |
|--|------------------------|
| INTELLECTUAL PROPERTY EVENT | TOTALS for ALL CENTERS |
| INVENTION DISCLOSURES | 66 |
| PATENT APPLICATIONS | 30 |
| SOFTWARE COPYRIGHTS | 11 |
| PATENTS GRANTED | 18 |
| LICENSING AGREEMENTS | 6 |
| ROYALTIES REALIZED | 2 |

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 only includes data on Centers which were considered active participants in the NSF IUCRC Program during the past fiscal year. Self-sustaining Centers which are no longer affiliated with the IUCRC program are not included.
- 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/PI 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.