



NATIONAL SCIENCE FOUNDATION  
INDUSTRY/UNIVERSITY COOPERATIVE RESEARCH CENTERS

# Final Report

## *2004-2005 STRUCTURAL INFORMATION<sup>1</sup>*

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<sup>1</sup>**NOTE:** 2004-2005 data collected from 42/42 Center Director Surveys (100% response rate).

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**Table 1: 2004-2005 GENERAL CENTER INFORMATION\* (Sorted Chronologically)**

<i>Yr Funded:</i>	<i>Center Name</i>	<i>University Name: Director</i>	<i>Partner University 1 Director</i>	<i>Partner University 2 Director</i>	<i>Partner University 3 Director</i>	<i>Partner University 4 Director</i>
1984	Microcontamination Control	Northeastern Univ. Busnaina	Univ. of Arizona Parks			
1985	Measurement and Control Engineering	Univ. of Tennessee, Knoxville Jendrucko	Oklahoma State Univ. Tree			
1985	Nondestructive Evaluation	Iowa State Univ. Thompson				
1986	Berkeley Sensor & Actuator Center	Univ. of California, Berkeley Huggins	Univ. of California, Davis Tien			
1988	Composite & Ceramic Materials	Rutgers Univ. Haber	Univ. of New Mexico Dayte	Penn State Univ. Adair		
1995	Health Management	Univ. of Washington Conrad	Univ. of California, Berkeley Rundall			
1995*	Coatings Research	Univ. of Southern Mississippi Urban	Eastern Michigan Univ. Provder			
1995*	Manufacturing & Packaging of Micro, Optical & Digital E	Univ. of Colorado, Boulder Mahajan				
1995*	Pharmaceutical Processing Research	Purdue Univ. Pinal	Univ. of Connecticut Pikal	Univ. of Puerto Rico Ghaly	Univ. of Minnesota Grant	
1996	Power Systems Engineering	Arizona State University Vittal	Carnegie Mellon Univ. Talukdar	Cornell Univ. Thomas	Georgia Inst. Of Technology Meliopoulous	Univ. of Illinois (23) Sauer
1997	Advanced Polymer and Composite Engineering	Ohio State Univ. Koelling	Florida State Univ. Wang	Univ. of Wisconsin Turng		
1997	Built Environment	Univ. of California, Berkeley Arens				
1997	Management of Information	Univ. of Arizona Nunamaker				
1997	Virtual Proving Ground Simulation	Univ. of Iowa Chen	Univ. of Texas, Austin Longoria			
1998	Advanced Studies in Novel Surfactants	Columbia Univ. Somasundaran				
1998	Biological Surface Science	State Univ. of New York, Buffalo Baier	Univ. of Memphis Jahan			
1998	Information Technology and Organizations Consortium	Univ. of California, Irvine Gurbaxani				
1998	Precision Metrology	Univ. of North Carolina, Charlotte Hocken				
1998	Silicon Wafer Engineering and Defect Science	North Carolina State Univ. Rozgonyi	Univ. of California, Berkeley Weber			
1999	Advanced Vehicle Electronics	Auburn Univ. Suhling				
1999	Repair of Buildings and Bridges	Univ. of Missouri, Rolla Nanni	North Carolina State Univ. Rizkalla	Washington State Univ.		
1999	Tree Genetics Research	Purdue Univ. Michler	Oregon State Univ. Strauss			
1999	Water Quality	Univ. of Arizona Pepper	Arizona State Univ. Abbaszaddegan			
2000	Biocatalysis & Bioprocessing of Macromolecules	Polytechnic Univ. of New York Gross				
2001	Biomolecular Interaction Technologies	Univ. of New Hampshire Laue				

\* Report sorted by Status, Organized by Year Funded; \* = Last year funded by NSF

IUCRC Structure Database, FY 2004-200

<i>Yr Funded:</i>	<i>Center Name</i>	<i>University Name: Director</i>	<i>Partner University 1 Director</i>	<i>Partner University 2 Director</i>	<i>Partner University 3 Director</i>	<i>Partner University 4 Director</i>
2001	Dielectric Studies	Pennsylvania State Univ. Randall	Univ. of Missouri, Rolla Dogan			
2001	Fundamentals & Applications of Photopolymerizations	Univ. of Iowa Scranton	Univ. of Colorado Bowman			
2001	Intelligent Maintenance Systems	University of Cincinnati Lee	Univ. of Michigan, Ann Arbor Ni	Univ. of Missouri Rolla		
2001	Membrane Applied Science and Technology	Univ. of Colorado, Boulder Greenberg	Univ. of Cincinnati Clarson			
2002	Compact High-Performance Cooling Technologies	Purdue Univ. Garimella				
2002	Engineering Logistics and Distribution	Univ. of Arkansas English	Oklahoma State Univ. Ingalls	Univ. of Oklahoma Pulat	Univ. of Louisville Usher	Univ. of Florida (24) Welt
2002	Identification Technology Research	West Virginia Univ. Hornak				
2002	Plasmas & Lasers in Advanced Manufacturing	Univ. of Virginia Gupta	Univ. of Michigan Mazumder	Southern Methodist Univ. Radovan		
2003	Communications Circuits & Systems	Arizona State Univ. Kiaei	Univ. of Arizona Rodríguez	Univ. of Hawaii Iskander	Rensselaer Polytechnic Institute Shur	
2003	E-Design Manufacturing	Univ. of Pittsburgh Nnaji	Univ. of Massachusetts Grosse	Univ. of Central Florida Crumpton-Young		
2003	Experimental Research in Computer Systems	Georgia Tech Institute of Technology Schwan				
2003	Fuel Cell Center	Univ. of South Carolina Van Zee				
2003	Technology and Innovation Management	Northwestern Univ. Radnor				
2004	Friction Stir Processing	South Dakota Sch. Mine Patnaik	Univ. South Carolina Reynolds	Brigham Young University Nelson	Univ. of Missouri, Rolla Mishra	
2004	Multiphase Transport Phenomena	Michigan State University Petty	University of Tulsa Mohan	Univ. of Akron Chase	Univ. of Central Florida Kumar	
2004	Safety, Security, Rescue Research Center	Univ. of South Florida Murphy	Univ. of Minnesota Voyles			
2004	Wireless Internet Center for Advanced Technology	Poly Tech NY Batoni	Columbia University Misra			
<b>New</b>						
2005	Childrens Injury Prevention Science	Children's Hospital of Philadelphia	Univ. of Pennsylvania			
2005	Computational Materials Design	GA Tech	Penn State Univ.			
2005	Information Protection	Iowa State Univ.				

**Table 2: 2004-2005 OPERATING BUDGET AND TOTAL FUNDING**

Center Name	Total <sup>4</sup> Funding	NSF <sup>5</sup>		INDUSTRY		State <sup>8</sup>	University <sup>9</sup>	OTHER		
		NSF/ IUCRC	Other NSF	Member <sup>6</sup> Fees	Addl <sup>7</sup> Industry			Other <sup>10</sup> Federal	Non- <sup>11</sup> Federal	Other <sup>12</sup> Cash
Advanced Polymer and Composite Engineering	\$2,712,310	\$208,000	\$286,366	\$745,000	\$0	\$0	\$290,352	\$1,182,592	\$0	\$0
Advanced Studies in Novel Surfactants	\$306,495	\$92,995	\$0	\$143,500	\$70,000	\$0	\$0	\$0	\$0	\$0
Advanced Vehicle Electronics	\$1,989,819	\$69,228	\$160,000	\$807,556	\$0	\$0	\$226,116	\$80,763	\$0	\$646,156
Berkeley Sensor & Actuator Center	\$7,105,238	\$83,000	\$380,000	\$1,557,840	\$1,095,248	\$49,236	\$0	\$3,618,299	\$321,615	\$0
Biocatalysis & Bioprocessing of Macromolecules	\$1,721,000	\$35,000	\$0	\$475,000	\$0	\$0	\$106,000	\$965,000	\$140,000	\$0
Biological Surface Science	\$210,000	\$110,000	\$0	\$80,000	\$0	\$0	\$20,000	\$0	\$0	\$0
Biomolecular Interaction Technologies	\$305,000	\$50,000	\$0	\$255,000	\$0	\$0	\$0	\$0	\$0	\$0
Built Environment	\$1,135,167	\$43,000	\$0	\$290,000	\$0	\$0	\$0	\$58,378	\$0	\$743,789
Coatings Research	\$1,640,000	\$10,000	\$1,400,000	\$150,000	\$0	\$0	\$80,000	\$0	\$0	\$0
Communications Circuits & Systems	\$2,575,000	\$475,000	\$0	\$875,000	\$925,000	\$150,000	\$150,000	\$0	\$0	\$0
Compact High-Performance Cooling Technologies	\$2,383,528	\$70,000	\$80,000	\$480,000	\$480,000	\$961,028	\$112,500	\$0	\$200,000	\$0
Composite & Ceramic Materials	\$3,806,711	\$65,000	\$175,000	\$897,500	\$25,000	\$68,000	\$291,746	\$1,699,132	\$585,333	\$0
Dielectric Studies	\$2,446,000	\$130,000	\$0	\$591,000	\$520,000	\$70,000	\$135,000	\$1,000,000	\$0	\$0
E-Design Manufacturing	\$1,657,000	\$30,000	\$0	\$600,000	\$0	\$0	\$620,000	\$407,000	\$0	\$0
Engineering Logistics and Distribution	\$5,519,821	\$327,925	\$1,027,896	\$1,085,000	\$1,652,000	\$0	\$215,000	\$962,000	\$0	\$250,000
Experimental Research in Computer Systems	\$370,000	\$0	\$0	\$120,000	\$125,000	\$0	\$0	\$0	\$0	\$125,000
Friction Stir Processing	\$690,000	\$182,000	\$0	\$508,000	\$0	\$0	\$0	\$0	\$0	\$0
Fuel Cell Center	\$721,000	\$70,000	\$0	\$551,000	\$0	\$0	\$100,000	\$0	\$0	\$0
Fundamentals & Applications of Photopolymerization	\$398,000	\$73,000	\$0	\$325,000	\$0	\$0	\$0	\$0	\$0	\$0
Health Management	\$260,000	\$50,000	\$0	\$210,000	\$0	\$0	\$0	\$0	\$0	\$0
Identification Technology Research	\$2,364,065	\$87,000	\$315,805	\$387,260	\$0	\$100,000	\$0	\$853,000	\$621,000	\$0
Information Technology and Organizations Consortiu	\$329,952	\$75,000	\$0	\$179,952	\$0	\$0	\$75,000	\$0	\$0	\$0
Intelligent Maintenance Systems	\$619,000	\$130,000	\$5,000	\$450,000	\$34,000	\$0	\$0	\$0	\$0	\$0
Management of Information	\$1,378,000	\$43,000	\$0	\$650,000	\$0	\$235,000	\$0	\$400,000	\$50,000	\$0
Manufacturing & Packaging of Micro, Optical & Digital	\$487,482	\$0	\$0	\$105,000	\$0	\$0	\$0	\$382,482	\$0	\$0
Measurement and Control Engineering	\$735,103	\$104,350	\$151,866	\$282,000	\$16,800	\$0	\$65,987	\$64,100	\$0	\$50,000
Membrane Applied Science and Technology	\$1,402,406	\$56,000	\$926,318	\$150,000	\$22,500	\$103,500	\$106,187	\$0	\$0	\$37,901
Microcontamination Control	\$507,437	\$110,000	\$0	\$246,537	\$150,900	\$0	\$0	\$0	\$0	\$0
Multiphase Transport Phenomena	\$302,000	\$110,000	\$0	\$120,000	\$0	\$0	\$72,000	\$0	\$0	\$0
Nondestructive Evaluation	\$5,446,621	\$99,000	\$139,351	\$455,000	\$0	\$531,057	\$40,271	\$3,864,524	\$0	\$317,418
Pharmaceutical Processing Research	\$430,000	\$150,000	\$0	\$280,000	\$0	\$0	\$0	\$0	\$0	\$0
Plasmas & Lasers in Advanced Manufacturing	\$986,000	\$75,000	\$50,000	\$285,000	\$0	\$0	\$119,000	\$392,000	\$65,000	\$0
Power Systems Engineering	\$3,191,920	\$545,000	\$0	\$1,740,000	\$40,000	\$0	\$120,811	\$721,109	\$25,000	\$0
Precision Metrology	\$499,663	\$43,000	\$0	\$270,000	\$0	\$87,455	\$99,208	\$0	\$0	\$0
Repair of Buildings and Bridges	\$1,946,305	\$141,000	\$100,000	\$363,500	\$0	\$0	\$203,515	\$1,138,290	\$0	\$0
Safety, Security, Rescue Research Center	\$630,750	\$130,000	\$50,000	\$307,500	\$0	\$0	\$46,250	\$97,000	\$0	\$0
Silicon Wafer Engineering and Defect Science	\$715,000	\$95,000	\$0	\$425,000	\$100,000	\$0	\$0	\$0	\$0	\$95,000
Technology and Innovation Management	\$450,000	\$70,000	\$0	\$300,000	\$0	\$0	\$0	\$80,000	\$0	\$0
Tree Genetics Research	\$401,000	\$30,000	\$0	\$150,000	\$0	\$0	\$221,000	\$0	\$0	\$0
Virtual Proving Ground Simulation	\$719,540	\$0	\$150,000	\$569,540	\$0	\$0	\$0	\$0	\$0	\$0
Water Quality	\$1,441,453	\$133,000	\$0	\$584,478	\$123,057	\$580,918	\$20,000	\$0	\$0	\$0
Wireless Internet Center for Advanced Technology	\$753,000	\$80,000	\$0	\$315,000	\$98,000	\$0	\$140,000	\$0	\$0	\$120,000
<b>Grand Mean</b>	\$1,516,400	\$106,679	\$128,514	\$461,004	\$130,417	\$69,909	\$87,522	\$427,754	\$47,808	\$56,792
<b>Grand Sum</b>	\$63,688,786	\$4,480,498	\$5,397,602	\$19,362,163	\$5,477,505	\$2,936,194	\$3,675,943	\$17,965,669	\$2,007,948	\$2,385,264

\* Report sorted Alphabetically by Center

**Table 3: 2004-2005 CAPITAL AND IN-KIND SUPPORT**

<i>CenterName</i>	<i>Capital and In-Kind Support<sup>13</sup></i>							<i>Overhead</i>	<i>Budget</i>	
	<i>Total Funding</i>	<i>Total Cap In-Kind</i>	<i>Equipment</i>	<i>Facilities</i>	<i>Personnel</i>	<i>Software</i>	<i>Other Support</i>	<i>% to Mem<sup>14</sup></i>	<i>Typical<sup>15</sup></i>	<i>Admin<sup>16</sup></i>
Advanced Polymer and Composite Engineering	\$2,712,310	\$159,500	\$60,000	\$12,500	\$30,000	\$2,000	\$55,000	0	48	50000
Advanced Studies in Novel Surfactants	\$306,495	\$39,500	\$39,500	\$0	\$0	\$0	\$0	5	63	25
Advanced Vehicle Electronics	\$1,989,819	\$510,000	\$500,000	\$0	\$0	\$10,000	\$0	46	46	5
Berkeley Sensor & Actuator Center	\$7,105,238	\$650,000	\$650,000	\$0	\$0	\$0	\$0	0	52	9
Biocatalysis & Bioprocessing of Macromolecules	\$1,721,000	\$140,000	\$20,000	\$0	\$120,000	\$0	\$0	10	66	5
Biological Surface Science	\$210,000	\$1,470,000	\$1,470,000	\$0	\$0	\$0	\$0	57	57	15
Biomolecular Interaction Technologies	\$305,000	\$210,000	\$100,000	\$50,000	\$50,000	\$5,000	\$5,000	11	46	0
Built Environment	\$1,135,167	\$0	\$0	\$0	\$0	\$0	\$0	0	52	12
Coatings Research	\$1,640,000	\$1,550,000	\$0	\$1,200,000	\$350,000	\$0	\$0	0	43	5
Communications Circuits & Systems	\$2,575,000	\$4,600,000	\$300,000	\$0	\$0	\$2,000,000	\$2,300,000	10	50	0
Compact High-Performance Cooling Technologies	\$2,383,528	\$0	\$0	\$0	\$0	\$0	\$0	52	52	0
Composite & Ceramic Materials	\$3,806,711	\$0	\$0	\$0	\$0	\$0	\$0	0	55	10
Dielectric Studies	\$2,446,000	\$2,400,000	\$1,500,000	\$700,000	\$200,000	\$0	\$0	0	43	15
E-Design Manufacturing	\$1,657,000	\$500,000	\$0	\$0	\$0	\$500,000	\$0	17	49	18
Engineering Logistics and Distribution	\$5,519,821	\$9,045,000	\$0	\$0	\$40,000	\$9,000,000	\$5,000	36	48	10
Experimental Research in Computer Systems	\$370,000	\$230,000	\$200,000	\$0	\$0	\$30,000	\$0	0	0	5
Friction Stir Processing	\$690,000	\$0	\$0	\$0	\$0	\$0	\$0	44	44	20
Fuel Cell Center	\$721,000	\$0	\$0	\$0	\$0	\$0	\$0	0	45	9
Fundamentals & Applications of Photopolymerizations	\$398,000	\$0	\$0	\$0	\$0	\$0	\$0	0	47	8
Health Management	\$260,000	\$0	\$0	\$0	\$0	\$0	\$0	0	52	0
Identification Technology Research	\$2,364,065	\$0	\$0	\$0	\$0	\$0	\$0	0	46	10
Information Technology and Organizations Consortium	\$329,952	\$50,000	\$0	\$50,000	\$0	\$0	\$0	5	52	25
Intelligent Maintenance Systems	\$619,000	\$30,000	\$30,000	\$0	\$0	\$0	\$0	0	54	9
Management of Information	\$1,378,000	\$0	\$0	\$0	\$0	\$0	\$0	0	51	15
Manufacturing & Packaging of Micro, Optical & Digital	\$487,482	\$42,500	\$42,500	\$0	\$0	\$0	\$0	5	49	20
Measurement and Control Engineering	\$735,103	\$98,500	\$31,000	\$0	\$37,500	\$29,000	\$1,000	0	45	30
Membrane Applied Science and Technology	\$1,402,406	\$23,000	\$23,000	\$0	\$0	\$0	\$0	6	53	25
Microcontamination Control	\$507,437	\$0	\$0	\$0	\$0	\$0	\$0	0	57	16
Multiphase Transport Phenomena	\$302,000	\$60,000	\$0	\$0	\$0	\$60,000	\$0	51	51	20
Nondestructive Evaluation	\$5,446,621	\$0	\$0	\$0	\$0	\$0	\$0	0	47	12
Pharmaceutical Processing Research	\$430,000	\$0	\$0	\$0	\$0	\$0	\$0	52	51	10
Plasmas & Lasers in Advanced Manufacturing	\$986,000	\$0	\$0	\$0	\$0	\$0	\$0	0	42	20
Power Systems Engineering	\$3,191,920	\$256,750	\$200,250	\$0	\$16,500	\$40,000	\$0	5	49	15
Precision Metrology	\$499,663	\$0	\$0	\$0	\$0	\$0	\$0	0	32	10
Repair of Buildings and Bridges	\$1,946,305	\$100,000	\$0	\$0	\$50,000	\$0	\$50,000	0	48	25
Safety, Security, Rescue Research Center	\$630,750	\$0	\$0	\$0	\$0	\$0	\$0	20	51	10
Silicon Wafer Engineering and Defect Science	\$715,000	\$0	\$0	\$0	\$0	\$0	\$0	9	9	15
Technology and Innovation Management	\$450,000	\$0	\$0	\$0	\$0	\$0	\$0	10	49	19
Tree Genetics Research	\$401,000	\$0	\$0	\$0	\$0	\$0	\$0	0	42	0
Virtual Proving Ground Simulation	\$719,540	\$47,273	\$0	\$0	\$0	\$47,273	\$0	0	47	10
Water Quality	\$1,441,453	\$0	\$0	\$0	\$0	\$0	\$0	0	51	0
Wireless Internet Center for Advanced Technology	\$753,000	\$0	\$0	\$0	\$0	\$0	\$0	10	63	22
<i>Grand Mean</i>	\$1,516,400	\$528,858	\$123,006	\$47,917	\$21,286	\$279,126	\$57,524	10.976190	47.547619	1202.5952
<i>Grand Sum</i>	\$63,688,786	\$22,212,023	\$5,166,250	\$2,012,500	\$894,000	\$11,723,273	\$2,416,000	N/A	N/A	N/A

\* Report sorted Alphabetically by Center

**Table 4: 2004-2005 INDUSTRY MEMBERSHIP DESCRIPTORS**

<i>CenterName</i>	<b>2004-2005 MEMBERS</b>				<b>LIFETIME MEMBERS</b>			<b>ANNUAL FEES</b>		
	<i>Current Members</i>	<i>Starting</i>	<i>New</i>	<i>Left</i>	<i>Life Starting</i>	<i>Life New</i>	<i>Life Left</i>	<i>Primary</i>	<i>Secondary</i>	<i>Tertiary</i>
Advanced Polymer and Composite Engineering	66	45	21	0	5	95	34	\$35,000	\$25,000	\$10,000
Advanced Studies in Novel Surfactants	7	9	1	3	15	10	18	\$25,000	\$9,500	\$0
Advanced Vehicle Electronics	20	18	2	0	11	14	5	\$75,000	\$37,500	\$10,000
Berkeley Sensor & Actuator Center	41	34	13	6	6	62	27	\$50,000	\$0	\$0
Biocatalysis & Bioprocessing of Macromolecules	10	10	0	0	7	6	3	\$50,000	\$25,000	\$0
Biological Surface Science	1	0	0	0	6	1	6	\$40,000	\$0	\$0
Biomolecular Interaction Technologies	10	12	1	3	8	9	7	\$30,000	\$20,000	\$10,000
Built Environment	22	22	5	5	11	31	20	\$30,000	\$10,000	\$10,000
Coatings Research	5	9	1	5	11	25	31	\$30,000	\$0	\$0
Communications Circuits & Systems	14	13	4	3	9	10	5	\$50,000	\$25,000	\$0
Compact High-Performance Cooling Technologies	16	14	4	2	14	6	4	\$30,000	\$0	\$0
Composite & Ceramic Materials	43	48	8	13	8	80	45	\$35,000	\$10,000	\$5,000
Dielectric Studies	23	23	2	2	18	62	57	\$30,000	\$8,500	\$0
E-Design Manufacturing	24	9	16	1	9	16	1	\$30,000	\$0	\$0
Engineering Logistics and Distribution	28	26	8	6	29	12	13	\$50,000	\$25,000	\$5,000
Experimental Research in Computer Systems	8	0	0	0	8	0	0	\$45,000	\$15,000	\$0
Friction Stir Processing	20	0	0	0	20	0	0	\$35,000	\$30,000	\$30,000
Fuel Cell Center	15	14	2	1	14	2	1	\$35,000	\$17,500	\$0
Fundamentals & Applications of Photopolymerizations	6	15	0	9	9	13	16	\$40,000	\$0	\$0
Health Management	6	7	2	3	6	36	36	\$35,000	\$0	\$0
Identification Technology Research	9	10	1	2	8	9	8	\$40,000	\$0	\$0
Information Technology and Organizations Consortium	6	8	0	2	12	10	16	\$25,000	\$0	\$0
Intelligent Maintenance Systems	19	16	8	5	25	15	21	\$35,000	\$10,000	\$0
Management of Information	7	6	3	2	8	16	17	\$100,000	\$50,000	\$25,000
Manufacturing & Packaging of Micro, Optical & Digital	3	6	0	3	10	20	27	\$60,000	\$45,000	\$30,000
Measurement and Control Engineering	11	11	2	2	14	29	32	\$35,000	\$20,000	\$9,000
Membrane Applied Science and Technology	8	8	0	0	8	22	22	\$50,000	\$0	\$0
Microcontamination Control	8	9	2	3	26	46	64	\$40,000	\$0	\$0
Multiphase Transport Phenomena	6	0	0	0	6	0	0	\$30,000	\$0	\$0
Nondestructive Evaluation	14	15	0	1	14	37	37	\$35,000	\$0	\$0
Pharmaceutical Processing Research	12	22	0	10	11	41	40	\$35,000	\$0	\$0
Plasmas & Lasers in Advanced Manufacturing	8	10	0	2	9	3	4	\$30,000	\$10,000	\$0
Power Systems Engineering	37	36	3	2	17	60	40	\$40,000	\$20,000	\$0
Precision Metrology	10	9	1	0	15	11	16	\$30,000	\$0	\$0
Repair of Buildings and Bridges	14	11	5	2	9	19	14	\$50,000	\$32,500	\$0
Safety, Security, Rescue Research Center	12	0	0	0	7	5	0	\$35,000	\$10,000	\$0
Silicon Wafer Engineering and Defect Science	12	14	2	4	6	19	13	\$50,000	\$25,000	\$0
Technology and Innovation Management	6	7	4	5	7	4	5	\$50,000	\$25,000	\$10,000
Tree Genetics Research	5	6	0	1	13	5	13	\$25,000	\$0	\$0
Virtual Proving Ground Simulation	11	11	1	1	24	27	40	\$40,000	\$20,000	\$0
Water Quality	33	30	5	2	16	36	19	\$30,000	\$12,000	\$3,000
Wireless Internet Center for Advanced Technology	7	0	0	0	7	0	0	\$40,000	\$0	\$0
<i>Grand Mean</i>	15.31	13.64	3.02	2.64	11.81	22.00	18.50	\$40,119	\$12,798	\$3,738
<i>Grand Sum</i>	643	573	127	111	496	924	777			

**Table 5: 2004-2005 HUMAN RESOURCES**

Center Name	RESEARCHERS				STUDENTS			
	Faculty <sup>18</sup> Scientists	Administrative	Post Docs	Research Staff	PhD	Masters	Undergraduate	
Advanced Polymer and Composite Engineering	27	1	4	4	21	23	28	
Advanced Studies in Novel Surfactants	5	2	2	0	3	0	0	
Advanced Vehicle Electronics	15	1	1	4	15	9	3	
Berkeley Sensor & Actuator Center	12	1	19	2	72	36	3	
Biocatalysis & Bioprocessing of Macromolecules	9	0	6	6	7	2	4	
Biological Surface Science	9	2	3	1	0	6	1	
Biomolecular Interaction Technologies	6	2	1	3	3	0	0	
Built Environment	4	3	0	6	4	9	1	
Coatings Research	6	2	1	1	7	2	3	
Communications Circuits & Systems	27	5	1	1	20	9	1	
Compact High-Performance Cooling Technologies	10	1	3	0	12	6	2	
Composite & Ceramic Materials	25	5	7	8	25	15	34	
Dielectric Studies	18	2	4	3	6	6	2	
E-Design Manufacturing	31	2	1	2	6	2	4	
Engineering Logistics and Distribution	48	1	0	0	9	39	14	
Experimental Research in Computer Systems								
Friction Stir Processing	11	2	0	1	0	10	9	
Fuel Cell Center	8	3	0	8	15	3	3	
Fundamentals & Applications of Photopolymerizations	7	0	1	0	15	0	5	
Health Management	8	2	0	1	0	2	0	
Identification Technology Research	14	1	0	2	5	12	5	
Information Technology and Organizations Consortium	33	6	0	3	22	3	13	
Intelligent Maintenance Systems	4	3	2	2	9	3	1	
Management of Information	5	0	0	4	12	1	3	
Manufacturing & Packaging of Micro, Optical & Digital Electron	12	0	1	1	20	4	0	
Measurement and Control Engineering	15	1	5	1	31	13	8	
Membrane Applied Science and Technology	12	1	0	0	1	6	0	
Microcontamination Control	4	3	0	0	8	0	0	
Multiphase Transport Phenomena	32	0	0	0	9	1	0	
Nondestructive Evaluation	27	8	5	21	21	24	46	
Pharmaceutical Processing Research	16	2	1	0	9	1	0	
Plasmas & Lasers in Advanced Manufacturing	2	1	4	0	2	0	0	
Power Systems Engineering	42	0	0	5	47	3	5	
Precision Metrology	15	1	0	4	13	10	4	
Repair of Buildings and Bridges	12	1	1	3	5	13	4	
Safety, Security, Rescue Research Center	12	0	0	0	8	3	0	
Silicon Wafer Engineering and Defect Science	11	1	5	0	10	4	2	
Technology and Innovation Management	13	1	3	6	0	6	0	
Tree Genetics Research	2	1	4	13	2	2	29	
Virtual Proving Ground Simulation	3	1	0	5	1	5	2	
Water Quality	30	1	7	15	23	18	11	
Wireless Internet Center for Advanced Technology	19	2	0	0	8	0	0	
<b>Grand Mean</b>	<b>15.15</b>	<b>1.76</b>	<b>2.24</b>	<b>3.32</b>	<b>12.34</b>	<b>7.59</b>	<b>6.10</b>	
<b>Grand Sum</b>	<b>621</b>	<b>72</b>	<b>92</b>	<b>136</b>	<b>506</b>	<b>311</b>	<b>250</b>	

\* Report sorted Alphabetically by Center

**Table 6: 2004-2005 CENTER DIRECTOR DESCRIPTORS**

*\*Includes only primary center director*

CenterName	Rank	Tenure	Reports To	TIME ALLOCATION 19				
				Center Admin	Other Admin	Research	Teaching	Other
Advanced Polymer and Composite Engineering	Full Professor	Tenured	Dean, College of Engineering	10	5	35	40	10
Advanced Studies in Novel Surfactants	Full Professor	Tenured	Dean	10	5	40	35	10
Advanced Vehicle Electronics	Full Professor	Tenured	Dean of College of Engineering	25	10	40	15	10
Berkeley Sensor & Actuator Center	No Academic Rank	Non-Tenure Track	Associate Dean of Research	80	10	10	0	0
Biocatalysis & Bioprocessing of Macromolecules	Full Professor	Tenured	Dean	20	10	60	10	0
Biological Surface Science	Full Professor	Tenured	Vice President for Research	15	15	20	40	10
Biomolecular Interaction Technologies	Full Professor	Tenured	Dean, College of Life Science and Agriculture	40	40	20	0	0
Built Environment	Full Professor	Tenured	Vice Chancellor for Research	100	0	0	0	0
Coatings Research	Full Professor	Tenured	Dean	10	10	60	10	10
Communications Circuits & Systems	Full Professor	Tenured	Electrical Engineering Chair	25	25	20	10	20
Compact High-Performance Cooling Technologies	Full Professor	Tenured	Head of Mechanical Engineering	20	5	50	20	5
Composite & Ceramic Materials	Full Professor	Tenured	Vice President for Research	30	5	30	30	5
Dielectric Studies	Full Professor	Tenured	Director of Materials Research Institute	20	5	30	30	15
E-Design Manufacturing	Full Professor	Tenured	Dean, School of Engineering	25	5	35	25	10
Engineering Logistics and Distribution	Full Professor	Tenured	Dean of Engineering	25	50	15	5	5
Experimental Research in Computer Systems	Full Professor	Tenured	Charles Liotta, Vice President for Research	5	5	40	40	10
Friction Stir Processing	No Academic Rank	Non-Tenure Track	Vice President of Research	15	30	45	5	5
Fuel Cell Center	Full Professor	Tenured	Dean, College of Engineering and Information	15	0	50	25	10
Fundamentals & Applications of Photopolymerizations	Full Professor	Tenured	Dean	5	50	40	5	0
Health Management	Full Professor	Tenured	Department Chair	20	0	50	30	0
Identification Technology Research	Full Professor	Tenured	VP for Research and Economic Development	25	15	35	20	5
Information Technology and Organizations Consortium	Full Professor	Tenured	Director of CRITO	25	25	25	25	0
Intelligent Maintenance Systems	Full Professor	Tenured	Dean of College of Engineering	40	0	30	30	0
Management of Information	Full Professor	Tenured	Dr. Mohan Tanniru	20	10	50	20	0
Manufacturing & Packaging of Micro, Optical & Digital El	Full Professor	Tenured	Dean, College of Engineering and Applied Scie	5	10	40	30	15
Measurement and Control Engineering	Full Professor	Tenured	Dr. Wayne T. Davis, Assoc. Dean of Engineeri	50	0	10	40	0
Membrane Applied Science and Technology	Full Professor	Tenured	Mechanical Eng. Dept. Chair, Univ. of Colorado	0	0	0	0	0
Microcontamination Control	Full Professor	Tenured	Dean	20	10	30	25	5
Multiphase Transport Phenomena	Full Professor	Tenured	Associate Dean of Research and Graduate Stu	30	2	30	30	8
Nondestructive Evaluation	Full Professor	Tenured	Director, Inst. for Physical Research & Technol	50	5	25	15	5
Pharmaceutical Processing Research	Assistant Professor	Tenure Track	Department Head	10	15	35	35	5
Plasmas & Lasers in Advanced Manufacturing	Full Professor	Tenure Track	Department Chair	15	4	60	20	1
Power Systems Engineering	Full Professor	Tenured	Dean of Engineering	40	10	25	20	5
Precision Metrology	Full Professor	Tenured	Associate Provost for Research	10	10	25	50	5
Repair of Buildings and Bridges	Full Professor	Tenured	Vice Provost-Research	25	25	20	25	5
Safety, Security, Rescue Research Center	Full Professor	Tenured	Dean of Engineering	25	0	25	25	25
Silicon Wafer Engineering and Defect Science	Full Professor	Tenured	Dean, College of Engineering	20	5	40	30	5
Technology and Innovation Management	Full Professor	Tenured	VP Research	18	16	20	38	8
Tree Genetics Research	Full Professor	Tenured	Department Head, Forest Science	2	10	80	5	3
Virtual Proving Ground Simulation	Full Professor	Tenured	Vice President for Research	20	30	25	25	0
Water Quality	Full Professor	Tenured	Dean, College of Agriculture and Life Sciences	30	35	20	10	5
Wireless Internet Center for Advanced Technology	Full Professor	Tenured	Department Chair	20	15	25	25	15
<b>Grand Mean</b>				24.17	12.79	32.50	21.86	6.07



**Table 7: 2004-2005 CENTER OUTCOMES**

Center Name:	STUDENTS RECEIVING DEGREE 20			STUDENTS HIRED BY INDUSTRY21			PUBLICATIONS 22		
	BA Grad	MA Grad	PhD Grad	BA Hired	MA Hired	PhD Hired	w/ Ctr Research	w/ IAB Members	Presentations
Advanced Polymer and Composite Engineering	14	10	6	3	3	3	41	10	61
Advanced Studies in Novel Surfactants	0	2	3	0	0	3	18	3	10
Advanced Vehicle Electronics	1	17	3	0	2	0	78	25	62
Berkeley Sensor & Actuator Center	1	10	15	0	4	6	68	2	37
Biocatalysis & Bioprocessing of Macromolecules	2	2	2	0	0	2	22	4	18
Biological Surface Science	0	0	0	0	0	0	0	0	0
Biomolecular Interaction Technologies	0	0	0	0	0	0	2	0	3
Built Environment	2	9	2	0	1	0	18	2	39
Coatings Research	2	1	4	0	0	0	13	4	22
Communications Circuits & Systems	5	8	3	3	5	3	12	3	30
Compact High-Performance Cooling Technologies	1	4	3	0	2	2	44	3	32
Composite & Ceramic Materials	18	3	7	6	4	5	34	9	59
Dielectric Studies	1	2	2	0	0	0	15	3	20
E-Design Manufacturing	0	0	2	0	0	2	30	0	25
Engineering Logistics and Distribution	9	23	5	2	1	0	35	3	16
Experimental Research in Computer Systems	0	0	0	0	0	0	0	0	0
Friction Stir Processing	0	0	0	0	0	0	0	0	5
Fuel Cell Center	0	2	3	0	0	4	3	0	4
Fundamentals & Applications of Photopolymerizations	1	1	4	0	0	0	14	1	27
Health Management	0	0	0	0	0	0	10	2	15
Identification Technology Research	0	4	1	2	0	0	12	0	19
Information Technology and Organizations Consortiu	0	0	1	0	0	0	14	0	16
Intelligent Maintenance Systems	1	2	1	0	0	1	15	2	25
Management of Information	1	0	2	0	0	0	20	5	36
Manufacturing & Packaging of Micro, Optical & Digital	0	0	10	0	0	5	22	3	20
Measurement and Control Engineering	0	5	1	0	0	0	20	2	29
Membrane Applied Science and Technology	0	1	0	0	0	0	7	0	5
Microcontamination Control	0	0	0	0	0	1	4	0	16
Multiphase Transport Phenomena	0	1	1	0	0	0	0	0	5
Nondestructive Evaluation	7	7	5	0	0	1	0	0	0
Pharmaceutical Processing Research	0	1	1	0	0	1	10	1	15
Plasmas & Lasers in Advanced Manufacturing	0	0	0	0	0	1	3	2	3
Power Systems Engineering	12	18	22	13	3	8	113	34	141
Precision Metrology	0	3	3	0	1	1	7	0	3
Repair of Buildings and Bridges	8	11	4	0	7	0	15	6	17
Safety, Security, Rescue Research Center	0	0	0	0	0	0	0	0	3
Silicon Wafer Engineering and Defect Science	1	1	5	0	0	0	20	8	35
Technology and Innovation Management	0	0	0	0	0	0	0	0	61
Tree Genetics Research	0	1	0	0	0	0	11	0	20
Virtual Proving Ground Simulation	0	3	0	0	0	0	0	2	8
Water Quality	3	8	7	0	0	0	12	2	49
Wireless Internet Center for Advanced Technology	0	0	1	0	0	0	24	1	8
<i>Grand Mean</i>	2.14	3.81	3.07	0.69	0.79	1.17	18.71	3.38	24.26
<i>Grand Sum</i>	90	160	129	29	33	49	786	142	1019

\* Report sorted by Alphabetically by Center

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**Table 8: 2004-2005 INTELLECTUAL PROPERTY EVENTS**

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**Table 8a: Centers Reporting One or More Intellectual Property Event Last Fiscal Year**

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<b>Intellectual Property Event</b>	<b># of Centers</b>	<b>% of Centers</b>
Invention Disclosures	14	33.33
Patent Applications	15	35.71
Software Copyrights	3	7.14
Patents Granted/Derived	9	21.43
Licensing Agreements	9	21.43
Royalties Realized	4	9.52

**Table 8b: Total Number and Means of Intellectual Property Events last Fiscal Year**

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<b>Intellectual Property Event</b>	<b>Total for all Centers</b>	<b>Mean for All Centers</b>
Invention Disclosures	65	1.55
Patent Applications	46	1.10
Software Copyrights	4	0.10
Patents Granted/Derived	17	0.40
Licensing Agreements	20	0.48
Royalties Realized	9	0.21

# APPENDIX

## FOOTNOTES AND 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 2004-2005 fiscal year.
- 3) On Table 1, "YEAR FUNDED" indicates the year NSF gave the center the operating grant it is currently operating under.
- 4) On Table 2, "TOTAL FUNDING" refers to the total cash income coming into the Center.
- 5) On Table 2, "NSF FUNDING" refers to two kinds of support, "IUCRC FUNDING" which refers to the total support provided by the IUCRC program, including operating grant, self-sustaining Center funding, evaluator support, TIE awards, RUI/PUI awards, etc. "NSF OTHER" refers to cash support for Center operations provided by other NSF groups or divisions. Neither of these categories include money transferred through NSF from other Federal Agencies (MIPRs).
- 6) On Table 2, "INDUSTRY MEMBERSHIP FEES" refers to the total cash membership fees from Center members.
- 7) On Table 2, "INDUSTRY OTHER" refers to additional industry cash funding for operations provided by industrial members (e.g., enhancements, donations, etc.) which is applied to the Center as a whole (e.g., income that results in outcomes shared equally by all Center members).
- 8) On Table 2, "STATE TOTAL" refers to the support provided by state government and/or an agency or program funded by state government.
- 9) On Table 2, "UNIV. TOTAL" refers to the support for the Center operating costs including salary, travel, and overhead returned to the Center. It does NOT include items such as utilities and space.
- 10) On Table 2, "OTHER FEDERAL AGENCY" refers to cash support for Center operations provided by other Federal funding sources, but does NOT include funding from NSF.
- 11) On Table 2, "OTHER NON-FEDERAL AGENCY" refers to cash support for Center operations provided by other non-Federal funding sources, foundations, etc.
- 12) On Table 2, "OTHER FUNDING" refers to any other cash support, such as contracts, received by Center researchers that would not have been received if the Center did not exist. The funding would not result in outcomes shared equally by Center members.
- 13) On Table 3, "CAPITAL AND IN-KIND CONTRIBUTIONS" refers to capital support for items of value over \$25,000 and includes equipment, facilities, personnel, and software.
- 14) On Table 3, "% to MEM" refers to the overhead rate charged to industry membership fees.
- 15) On Table 3, "TYPICAL OVERHEAD" refers to the typical overhead rate charged to funding sources.
- 16) On Table 3, "ADMIN. BUDGET (%)" refers to the estimated percentage of the Center's direct operating budget allocated to administration (e.g., administrative salaries, travel, telephone).
- 17) On Table 4, "FEES" are broken down into primary, secondary, and tertiary (the latter two represent variable membership fees).
- 18) On Table 5, "FACULTY SCIENTISTS" includes the Center Director(s) and Faculty Researchers.
- 19) On Table 6, "TIME ALLOCATION" refers to allocation of director's full-time equivalent for budgetary purposes.
- 20) On Table 7, "STUDENTS RECEIVING DEGREE" refers to the number of Ph.D.'s, M.S.'s, and B.A./B.S.'s that received a degree during the reporting period.
- 21) On Table 7, "STUDENTS HIRED BY INDUSTRY" refers to the number of Ph.D.'s, M.S.'s, and B.A./B.S.'s that were hired by member companies during the reporting period.
- 22) On Table 7, "PUBLICATIONS" refers to the publications in the open literature the Center researchers produced based on Center research including publications reported that have a Center industry member as an author.
- 23) Additional Universities and Directors for the Power Systems Engineering Center are: Texas A&M University (Kezunovic), Washington State Univ. (Bose), Univ. of California, Berkeley (Oren), Colorado School of Mines (Sen), Wichita State Univ. (Jewell), & Howard Univ. (Momoh).
- 24) Additional Universities and Directors for the Center for Engineering Logistics and Distribution are: Leigh Univ. (Zimmers)