

NASA Science and Technology Institute for Minority Institutions (NSTI-MI)

Brenda J. Collins, Project Manager
Natalie Gore, Deputy Project Manager
NASA Ames Research Center, Moffett Field, CA
650-604-3540

EXECUTIVE SUMMARY

The NASA Science and Technology Institute for Minority Institutions (NSTI-MI) was designed to build research capacity at minority colleges and universities throughout the United States. In Fiscal Year 2010 this project accomplished this goal in several ways. The institutional research cluster program that is its bedrock continued to expand and grow. The three Institutional research clusters embody eleven universities, and over fifty faculty, undergraduate students, graduate and post-doctoral fellows. The focus of each cluster is different and reflects the overarching research theme of the collaborating NASA Center (Johnson Space Center, Glenn Research Center and Ames Research Center). Many of the professors associated with the project reported building substantive collaborations with NASA, industry, universities, nonprofit institutions, and national laboratories. Eleven papers were published by faculty attributable to research being done as part of the NSTI project. Seven faculty members were invited to present their NSTI research results at national and international conferences. In 2010 the existing three clusters reassessed their research priorities. Many projects were realigned to meet current NASA research priorities. Two clusters assigned new NASA Lead Scientists to their projects, and one appointed a new NSTI Faculty Lead Scientist. One university (Jackson State University) withdrew from the project because it did not have a faculty member who could continue the cluster related research, after the original cluster faculty member left the university. Three universities received additional funding, from non-NASA sources, to support cluster related research. The project also continued to provide students from minority institutions with hands-on research experiences at the three NSTI participating NASA centers (Ames, Johnson, and Glenn). Eighteen undergraduate students were placed at NASA centers in the summer of 2010, and one student was nominated for the outstanding intern award at Johnson Space Center.

In an effort to attract early career faculty to the cluster program and to prepare for the expansion of the cluster program to additional NASA centers, the Faculty Fellowship component expanded to four additional NASA centers in FY2010. Nine Faculty Fellows were placed at four NASA centers (Ames, Johnson, Goddard, Marshall). A few of the research opportunities posted for the fellows were

further developed, and were subsequently placed in a new solicitation to expand the cluster project to other NASA centers and universities. This solicitation will be available for proposals in early 2011.

PROJECT DESCRIPTION

The NASA Science and Technology Institute for Minority Institutions (NSTI-MI) was established in 2006 to provide leading-edge research opportunities for faculty and students from MIs that complement NASA's research programs and make original contributions to NASA in astrobiology, biotechnology, information technology, energy, environment research, and other emerging technologies. NSTI-MI brings together the talent and expertise of MIs to communicate, connect, and collaborate with government, the private sector, one another, and majority institutions through the establishment of R&D collaborations and partnerships. By placing MIs within this nexus of business and intellectual property transfer networks, NSTI-MI aims to: stimulate cross-disciplinary research; improve the transfer of information ideas and technology; promote the development of market-based technologies; foster technology management strategies that will move advances from scientific discovery to basic and applied technology; and establish educational frameworks and networks that will continue to expand the Nation's talent base for research and development.

The first institutional cluster was located at Ames Research Center. In calendar year 2008, the NSTI-MI project was expanded into an Office of Education national project with new research clusters placed at Glenn Research Center and Johnson Space Center. Each cluster receives \$250,000.00 to support its research goals, and is allotted two graduate fellows and one post-doctoral fellow. The graduate fellows are students at cluster universities and spend a majority of their time working at the university on cluster related research. The post-doctoral fellows spend one hundred percent of their time supporting cluster research activities at the NASA center associated with a cluster project. The NSTI project currently has three active clusters:

UNCFSP-NSTI Information and Emerging Technologies Cluster (UNITE) conducts research that addresses pressing challenges in the areas of Supercomputing, Networking and Intelligent Systems. This Cluster also engages in nano-scale research to support Aerospace and Thermal Protection Systems as well as human exploration of space. UNITE institutions are listed below:

Information and Emerging Technologies Trust (UNITE)-Ames (ARC)

San Francisco State University

Texas Southern University (Norfolk University is a sub-contractor)

California State University- Fullerton

Southern University

Tuskegee University

UNCFSP-NSTI Mission Enabling Technologies Cluster (UNIMET) conducts human exploration missions enabling research in the areas of Science Missions Payloads, Biotechnology, Astrobiology, Human Factors, Advanced Life Support and Bio-nanotechnology. UNIMET Institutions are listed below:

Mission Enabling Technologies Trust (UNIMET) –Johnson (JSC)

Jackson State

University of Texas

Southern University

Savannah State University

Jarvis Christian College

Tougaloo College

UNCFSP-NSTI Energy and Environmental Cluster (UNEEC) addresses energy and environmental issues as it relates to space travel and life on earth. UNEEC institutions are listed below:

Energy and Environmental Trust (UNEEC) –Glenn (GRC)

Savannah State University

University of Texas at El Paso

Wilberforce University Texas

Southern University

The program has also grown to include two additional components beyond the institutional research clusters. The other components of the NSTI Project are the Summer Scholars Program and the NSTI Summer Faculty Fellowship Program. The Summer Scholars program offers undergraduate students 10 week internships at the three NASA centers associated with the NSTI Cluster project (Ames, Johnson, and Glenn). Students must have at least a 3.0 grade point average, and attend a minority serving institution to be eligible for this program. The internship pays a small stipend of \$7000.00. The 2010 interns were the program's fifth cohort.

The NSTI Summer Faculty Fellowship project targets early career faculty from minority serving institutions. The faculty must identify a NASA host for their proposed project and create a detailed research plan for their summer activities. The fellowship is a 10 week hands on research experience and occurs in conjunction with the NSTI Summer Scholars Project. Faculty members receive a stipend of \$13,500.00 for the 10 week research experience. This project started in 2009 and all fellows were located at NASA Ames research center that year. In 2010 this project was offered to all centers. However, only three additional NASA centers actually accepted faculty fellows in 2010. The other NASA centers chose not to participate.

The NSTI-MI is currently administered by the United Negro College Fund Special Programs Corporation (UNCFSP) through a cooperative agreement and managed by NASA Ames Research Center's Office of Education.

PROJECT GOALS

NSTI-MI focuses its efforts to meet the goals and objectives listed below:

Goal 1: Link Minority institutions, industry, non-profits, and other entities through close association and alignment of research interests and expertise to create symbiotic partnerships.

Goal 2: Channel R&D efforts toward the development of market-based concepts that can be leveraged for sustainability.

Goal 3: Provide professional development, including research, business acumen, and leadership building expertise that will groom and prepare faculty, students, and others to be highly-skilled science and technology leaders and managers.

Goal 4: Work with Key Stakeholders to perform the following:

- Select students through a competitive application process to increase their STEM awareness and knowledge through individual experiential opportunities
- Select faculty at minority institutions through competitive application processes to engage in collaborative research and increase their awareness and knowledge of NASA disciplines and missions
- Select minority-serving institutions participating in the NSTI Cluster project through competitive application processes to increase their research capability and capacity for competitiveness for mainstream research and development awards.

NSTI-MI accomplishes its goals through the formation of research clusters that include faculty, students, post-doctoral fellows and collaborates with NASA scientist/engineers, majority institutions and the private sector to engage in NASA-related research and development. NSTI-MI research clusters provide excellent leadership opportunity for faculty from MI's to lead research teams and assist member institutions in competing for new research grants and/or contracts. NSTI-MI provides professional development training in R&D leadership and development, project management, business development, marketing and contract management. NSTI-MI is committed to STEM workforce development. It provides fellowship and internship opportunities for undergraduate and graduate students in NASA related programs and activities.

PROJECT BENEFIT TO OUTCOMES

All NSTI-MI goals and objectives are designed to support the Agency Strategic Plan and Education goals. NSTI-MI supports five objectives under Education Outcomes 1: Contribute to the development of the STEM workforce in disciplines needed to achieve NASA's Strategic goals through a portfolio of investments.

- Objective 1.1- Faculty and Research Support
 - Provide NASA competency-based education and Research opportunities for faculty, researchers and post-doctoral fellows.
- Objective 1.2- Student Support
 - Provide NASA competency-building education and research opportunities to individuals in order to develop qualified undergraduate and graduate students who are prepared for employment in STEM disciplines at NASA, industry or higher education institutions.
- Objective 1.3 -Student Involvement
 - Provide opportunities for groups of post-secondary students to engage in authentic NASA-related mission-based research and development activities.
- Objective 1.4- Course Development
 - Develop NASA-related course resources for integration into STEM disciplines.
- Objective 1.5- Targeted Institution Research and Academic Infrastructure Support
 - Improve the ability of target institutions to compete for NASA research and development work.

The NSTI project met all five objectives in FY2010. NSTI met Objective 1.1: Faculty and Research Support and Objective 1.2: Student Support through its Faculty Fellowship, Summer Scholars and UNCFSP Graduate Fellows programs. In FY2010 nine fellows were accepted into the Faculty Fellowship project. These fellows worked at four different NASA centers. Since 2009, a total of sixteen Faculty Fellows have been provided the opportunity to collaborate with NASA scientists and technologists. One 2009 NSTI Faculty Fellow was selected by Goddard Space Flight Center to be a 2010 NSTI Faculty Fellow. Another 2009 Faculty Fellow was funded directly by the NASA host he collaborated with in the summer of 2009, to continue his research at NASA Ames Research Center for a second year in FY2010. Eighteen undergraduate scholars were selected for the 10 week Summer Scholar Research opportunity. Since 2006, seventy-seven NSTI Summer Scholars have been provided internship opportunities and sixty-nine students have graduated with STEM degrees. Three graduate fellows were also hired to work at a NSTI associated university in FY2010. One of the 2010 UNCFSP Graduate Fellows, selected to support research being done at the University of Texas, El Paso, received her Ph.D. degree. She is now working at a start-up company that was created to commercialize materials developed as a result of her NSTI related research.

The project supports Objective 1.3-Student Involvement by providing hands on research opportunities to students located at one of the cluster schools. In 2010, three NSTI faculty members reported that they provided students the opportunity to work on cluster related research at their universities.

The project supports Objective 1.4: Course Development and Objective 1.5-Targeted Institution research and academic infrastructure support directly through the NSTI Institutional Cluster portion of the project. The NSTI project provided funding to eleven minority serving institutions, three located in Experimental Program to Stimulate Competitive Research (EPSCoR) States. The universities reported using NSTI funding to expand research capacity, create or redesign courses, and provide hands-on NASA content related research opportunities to students and graduate fellows. Three universities indicated that they have received additional non-NASA funding to support research activities at their universities.

Overall this project is meeting the goals that its designers envisioned. It is building research capacity at minority institutions providing research opportunities for students and faculty. It has built research infrastructure at the university by providing the seed money that allowed many of the researchers to seek additional funding or work collaboratively with other universities and national laboratories. FY2010 was the year that this project truly began to produce meaningful long term results for the NASA education portfolio.

PROJECT ACCOMPLISHMENTS

For the period: October 1, 2009 through September 30, 2010

NSTI Summer Faculty Fellowship Project

The Summer Faculty Fellowship was successfully expanded to include more centers this year. All centers were offered the opportunity to host Faculty Fellows, but only three centers were actually available to participate in FY2010. This year's summer faculty fellows were placed at Ames, Johnson, Marshall and Goddard. Ames and Marshall hosted three faculty fellows, Johnson hosted one fellow, and Goddard hosted two fellows in 2010. This year's cohort included many accomplished scientists and technologists who came with many accolades and accomplishments. Among the notables were Michael Watson of Fisk University who is the Coordinator for Tennessee Space Grant Consortium at his University; and Yousef Hijji of Morgan State University who was presented the 2009 Morgan State University Dean's Outstanding Researcher Award.

- The NSTI Faculty Fellowship accomplished all of its goals this year, especially Objective 1.1: faculty and research support. It expanded to three additional centers, providing a wider array of research opportunities for the 2010 Fellows. It also helped to build a strong bridge of collaboration between the NASA research community and faculty from minority institutions, as evidenced by the fellows own words:
 - “My NASA host was extremely helpful and supportive of me throughout the entire fellowship. He gave me the freedom to explore and express my skills and talents to my proposed research plan. He added a great deal of his own experience as a researcher and research mentor to enhance my summer experience.” – Dr. Carla Cotwright Williams, Norfolk State University
 - “This (NSTI Faculty Fellowship Project) is a great opportunity for MIs to encourage faculty to conduct high-grade research.” - Dr. Ehsan Sheybani, Ph.D.
 - “The NSTI Faculty Fellowship served to strengthen the relationship between Fisk and NASA.” - Dr. Michael Watson, Fisk University
 - “My research project when applied into the curriculum will provide students some knowledge, methods and techniques of analysis that will open their eyes to the importance of space research and get excited about what is available on other planets or moons.”- Dr. Yousef Hijji, Morgan State University
- Other accomplishments were:
 - In 2010 thirty-three percent of the faculty fellows were from minority institutions universities in EPSCoR states
 - Inspired by her NSTI Faculty Fellowship experience, Carla Cotwright Williams, Ph.D. signed up to participate with the College of Sciences and Departmental Activities at Norfolk University to promote student and faculty participation with NASA. (UNCFSP 2011)

- The summer research experienced by Zhengtao Deng, Ph.D at NASA prepared him to continue the research in shockwave control at Alabama A &M University (AAMU). A notable activity for the university in 2010 was the installation of a supersonic wind tunnel in September 2010.(UNCFSP 2011)

NSTI Summer Scholars Program.

- 18 Scholars were placed at three different NASA Centers. A more streamlined selection process assured that all of the appropriated slots for the NSTI program were filled with qualified candidates from underrepresented and underserved communities.
- To date the program has provided internship opportunities to 77 students, 69 of whom have graduated with STEM-related degrees. (UNCFSP 2010)
- One 2010 intern, Cleveland Savage, was nominated by his mentor for the 2010 Johnson Space Center Intern of the Year Award. (Johnson Department of Education 2010)
- At least twenty eight percent of the students were from EPSCoR states.
- The Application process for the Summer Scholars program was migrated to the new OSSI/Solar System. All FY2011 candidates will apply to NSTI using the new system.

NSTI Cluster Project

UNCFSP hosted the first annual Business Meeting with the three Clusters which provided an opportunity for Cluster representatives to have an open dialogue with the UNCFSP management and NASA program management to discuss project activities, and present the status of their research. All clusters were able to advance their research projects towards the goal of aligning the projects with NASA's mission while providing opportunities for students and other faculty to engage in STEM-related research. In 2010 two of the three cluster projects made great strides in meeting their graduate student requirements. Three graduate fellows and two post doctoral fellows were hired through UNCFSP to support the cluster projects. Three universities (Savannah State University, Jarvis Christian University, and the University of Texas El Paso) reported receiving additional funding for their NSTI related research in excess of

\$350,000.00. Also many of the faculty representatives have reported that they have been able to provide undergraduate and other graduate students (see below) quality research opportunities by providing them contact hours on cluster projects.

- Cluster Accomplishments

- NSTI Cluster faculty and/or students published eleven papers. Examples follow:

Author (S)	Year	Title	Publication And Presentation	Author Category
S. Yanamandram and H. Shahnasser	2010	A theoretical scheme to implement MAC protocols in VANETs employing cognitive radio	Publication	Faculty/Student
S. Kumar, H. Shahnasser, H. Jing	2010	Podcasting in mobile WiMAX: A Case Study	Publication	Faculty/Student
A. Hosseni Tehrani, H. Shahnasser	2010	Anonymous Communication in MANETs Solutions and Challenges	Publication	Faculty/Student
Mbarika, V., Bagarukayo, E., Hingorani, V., Stokes, S., Kourouma, M. and Sankar, C.	2010	A Multi-Experimental Study on the Use of Multimedia Instructional Materials to Teach Technical Subjects	Publication	Faculty
L. Tiwari and H.	2010	Exploiting Punctuations along	Publication	Faculty/

Shahnasser		with Sliding Windows to Optimize STREAM Data Manager		Student
A. Joshi and H. Shahnasser	2010	A Qualitative Analysis and Improvement of Naïve Bayes Algorithm Using Cross Validation and Discretization	Publication	Faculty/ Student
S. Yanamandram and H. Shahnasser	2009	Analysis of DSRC based MAC protocols for VANETs	Publication	Faculty/ Student
R. Chianelli, G. Berhault, B. Torres	2009	Unsupported Transition Metal Sulfide Catalysts: 100 years of Science and Application	Publication	Faculty
G. Alonso-Nunez, R. Huirache-Acuna, F. Paraguay-Delgado, J.A. Lumbreras, R. Garcia-Alamilla, A. Castillo-Mares, r. Romero, R. Somanathan and R.R. Chianelli	2009	Synthesis and Characterization of Hexamethylenediammonium Thiomettallates as Precursors of MoS ₂ and WS ₂ Catalysts: In Situ Activation During HDS of DBT	Publication	Faculty

○ **UNNEC - UNCFSP-NSTI Energy and Environmental Cluster**

- UNCFSP Graduate Fellow graduates and starts work in small start-up company
 - UNCFSP Graduate Fellow, Dr. Karina Castillo, (representing the UNNEEC Cluster at UTEP) successfully completed the Ph.D. Her work was the basis for a program at University of Texas, El Paso (UTEP) in collaboration with Hunt Energy. The program is in the process of becoming commercialized. (UNCFSP 2011)
- UNCFSP Post Doctorate Fellow hired by NASA

- UNCFSP Post-doctorate Fellow, Dr. Michael Kullis, (representing the UNEEC Cluster at GRC) will begin employment as a Civil Servant with Glenn Research Center in February, 2011. (UNCFSP 2011)
 - UTEP Faculty create partnerships to develop and commercialize UNNEC catalyst materials
 - Dr. Chianelli at UTEP created partnerships with private companies, national laboratories and other universities to develop and commercialize UNNEC catalyst materials. (Chianelli Biannual Report 2010)
- **UNIMET- UNCFSP-NSTI Mission Enabling Technologies Cluster**
 - Texas Southern Faculty Member presents research at International Conference-
 - Dr. Alamelu Sundaresan, NSTI UNIMET Cluster PI at Texas Southern University, was accepted to present her research findings at the International Academy of Aerospace medicine forum in Singapore along with four other co-authors from NASA (UNCFSP 2011)
 - Dr. Karla Sue Marriott received the Early Career Award in Chemistry from the National Institute of Health. (UNCFSP 2011)
 - Jarvis Christian College scientist collaborating with other university to work on UNIMET project-
 - Shakhawat Bhuiyan, Ph.D of Jarvis Christian College is collaborating with Dr. Christian Zwieb, Professor of Molecular biology, University of Texas Health Center at Tyler to develop the infrastructure to support high quality research at Jarvis Christian College. University of Texas provides Dr. Bhuiyan with laboratory facilities for proposed UNIMET research activities and also for training students through summer research. He also reported that one undergraduate student is working with him in his Laboratory on his UNIMET project. (Bhuiyan Quarterly Report 2010)
 - Texas Southern University provides research experience on UNIMET project to two students-
 - Alamelu Sundaresan of Texas Southern University has one undergraduate and one graduate student working on UNIMET Projects in her Laboratory this fiscal year. The undergraduate student graduated with a degree in biology (Sundaresan Quarterly Report 2010)

- Tougaloo College provides UNIMET related research experience two students-
 - Dr. Jinghe Mao of Tougaloo College has two undergraduate students working on her UNIMET project. One student graduated with a degree in Biology in May 2010. (Mao Quarterly Report 2010)

- **UNITE- UNCFSP-NSTI Information and Emerging Technologies Cluster**
 - Texas Southern faculty develops new course-
 - Dr. Bobby Wilson, PI for the UNITE Cluster at Texas Southern University, and Dr. Renard Thomas, collaborator, developed a new course in Nanoscience in which 50 students (6-8 from 6 HBCU sites) participated. (UNCFSP 2011)

 - Southern University faculty develops two new courses-
 - Victor Mbarika of Southern University developed two new courses: an undergraduate Introductory to Information Technology course and a graduate overview of IT course. (Mbarika Biannual Report 2010)

 - Southern University faculty provides research opportunities for students on cluster projects-
 - Two students who worked on the project at Southern University in 2010. One was a graduate student and the other an undergraduate student. The undergraduate student was the valedictorian for the spring 2010 graduation. (Mbarika Biannual Report 2010)

 - Led by Ames office of Education, the lead NASA center for the UNITE Cluster, cluster members in association with UNCFSP and the NSTI-NASA lead scientist for nano-technology research at Ames held a successful meeting in the fall of 2010 to re-organize the cluster. The new focus will be in bio-nanotechnology with an interactive education component

PROJECT CONTRIBUTION TO PART MEASURES

For the period: October 1, 2009 through September 30, 2010

Summer Faculty Fellowship Program

- Total Number of Participants (Cohort 2): 9
- Objective 1.1- Faculty and Research Support: 9
- Objective 1.5- Minority Institutions Represented: HBCU 78% (7); HSI 22% (2)
- Objective 1.5- The number of Minority Universities located in EPSCoR States: 3 (Tennessee, Puerto Rico, Alabama)

NSTI Faculty Fellows were from three of the states identified as EPSCoR States.

NASA supports the mission of EPSCoR, and tries to ensure that EPSCoR states are represented within the NASA education portfolio. The mission of EPSCoR is to assist the National Science Foundation in its statutory function "to strengthen research and education in science and engineering throughout the United States and to avoid undue concentration of such research and education." EPSCoR goals are:

- To provide strategic programs and opportunities for EPSCoR participants that stimulate sustainable improvements in their R&D capacity and competitiveness.
- To advance science and engineering capabilities in EPSCoR jurisdictions for discovery, innovation and overall knowledge-based prosperity.
- To broaden participation in science and engineering by institutions, organizations and people within and among EPSCoR jurisdictions

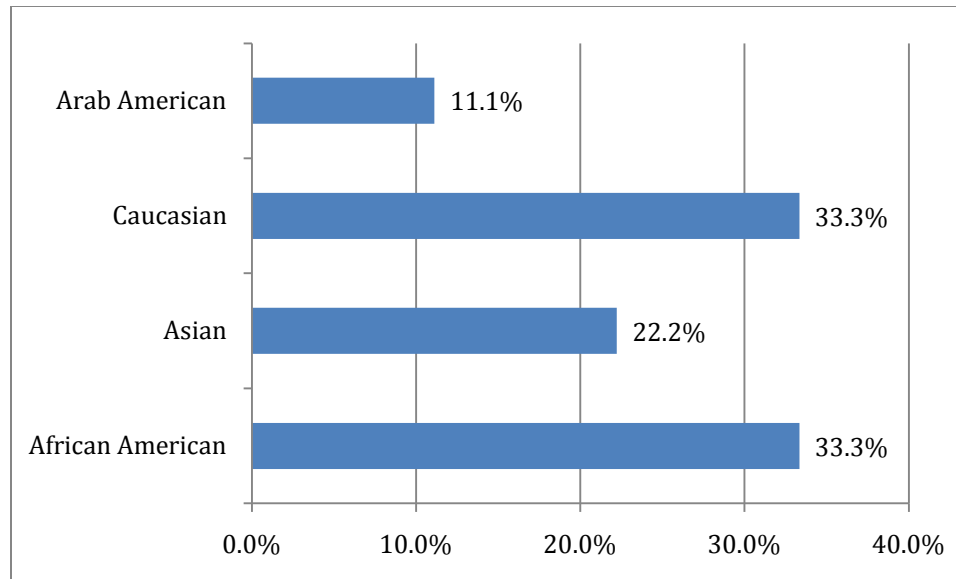


Figure 1- NSTI Faculty Fellowship: Ethnicity of the Participants

The faculty fellows represented a broad range of disciplines in FY2010. As figure 2 demonstrates, Engineers and Physicists were the areas of study most represented among faculty in FY2010.

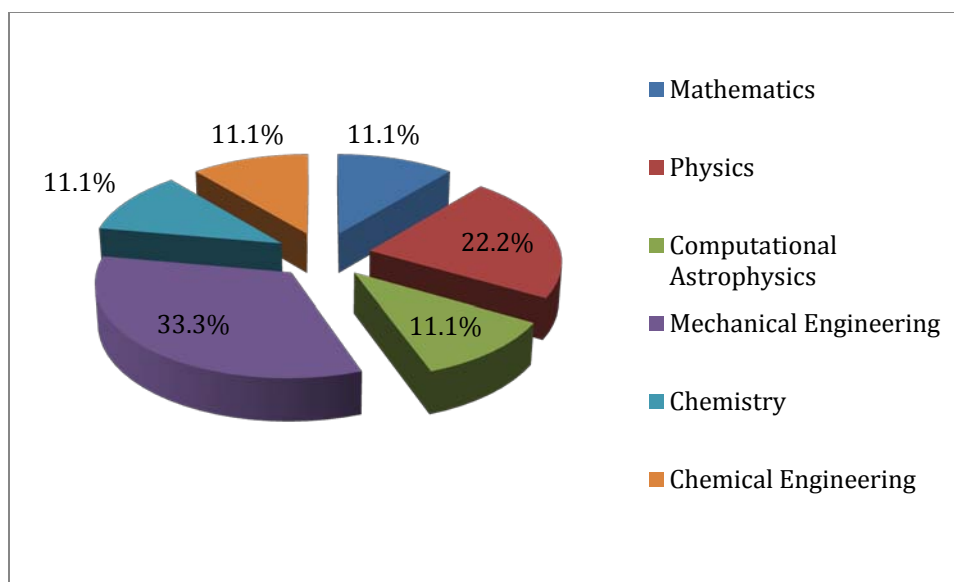


Figure 2- NSTI Faculty Fellowship: Technical Field of the Participants

Summer Scholars Program

- Objective 1.3-Total number participants reported FY10 (Cohort 5): 18
- Number of participants continuing in school: 18
- Number of participants from EPSCoR States: 5
- Objective 1.2: Underserved and Under-represented Students Ethnicity and Gender

	Cohort 1	Cohort 2	Cohort 3	Cohort 4	Cohort 5
Participants	21	10	13	15	18
Male	11	4	4	7	10
Female	10	6	9	8	8

Graduate	5	2	6	0 *	0*
Undergraduate	16	8	7	15	18
Minority Institution	14	7	4	13	15
Majority Institution	7	3	9	2	3
Prior NASA Experience	0	1	3	2	4

*The program was changed in 2009, only undergraduate students are eligible for this project.

The number of males and females in the FY2010 Summer Scholars project were roughly equal. Males outnumbered females by 12% (Figure 3). However, in actual numbers there were only two more males represented among the NSTI Scholars than females. All of the males were from underrepresented populations. Six percent of the Cohort 5 were Asian. However, all Asians were from underserved communities (Figure 4).

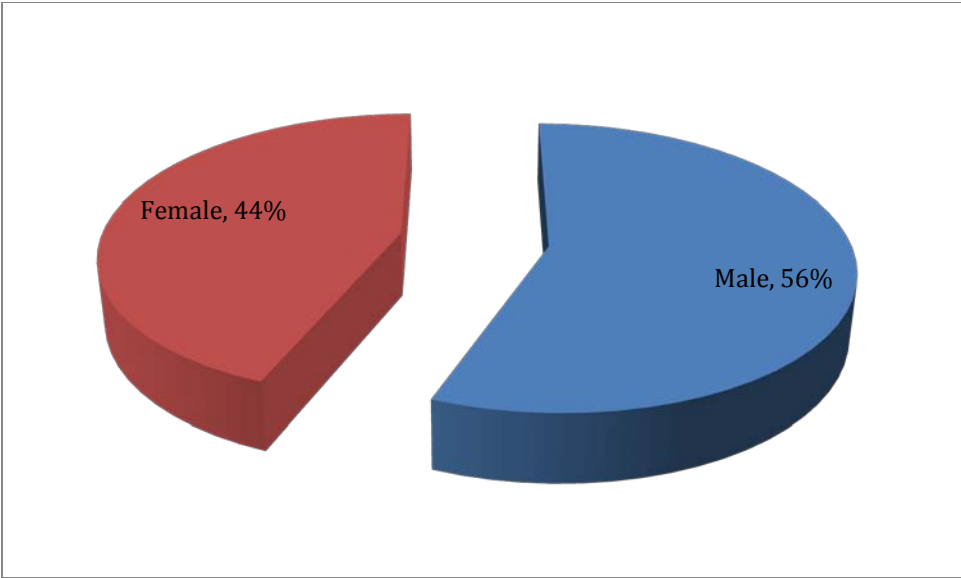


Figure 3- Cohort 5: Gender

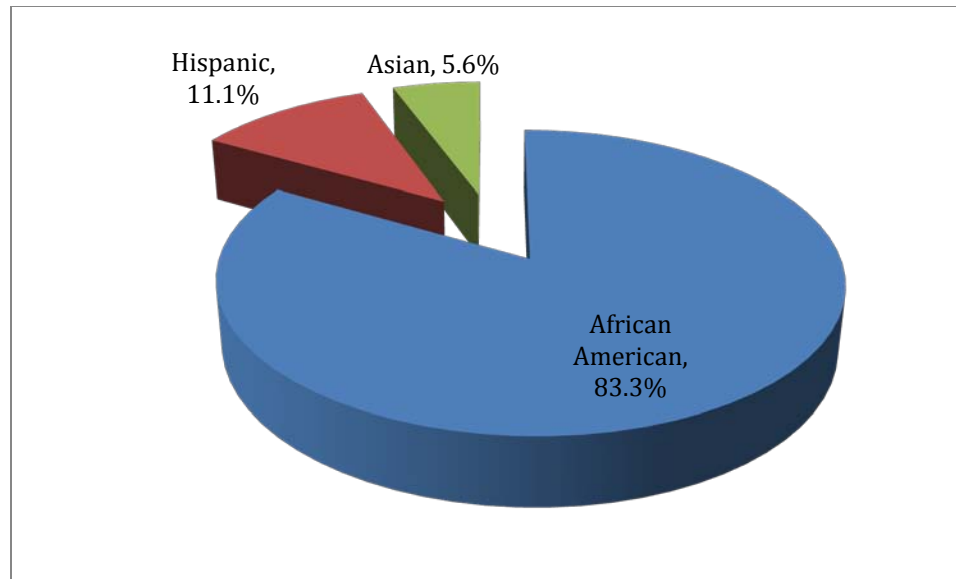


Figure 4- Cohort 5: Ethnicity

Underrepresented and underserved students from majority institutions were selected for the FY2010 Summer Scholars program (Figure 5). The administrator of the program, UNCFSP, requested that these students be allowed to participate, due to the lack of qualified candidates from minority institutions in their internal application pool. The hope is that this will be remedied when the project is migrated into the new NASA OSSI/SOLAR application system in FY2011.

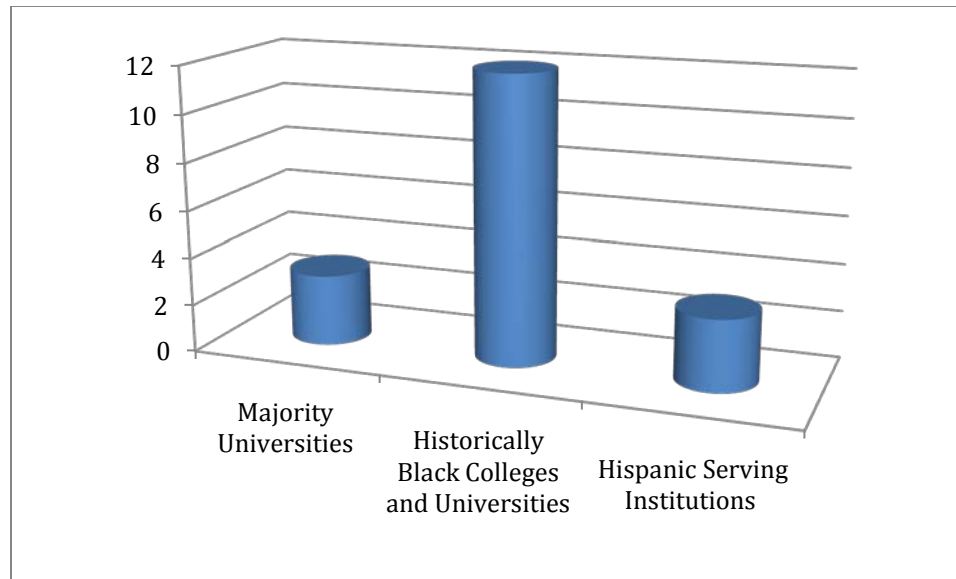


Figure 5- Institution Type

A majority of the students who were selected in FY2010 were engineering and biology majors (Figure 6).

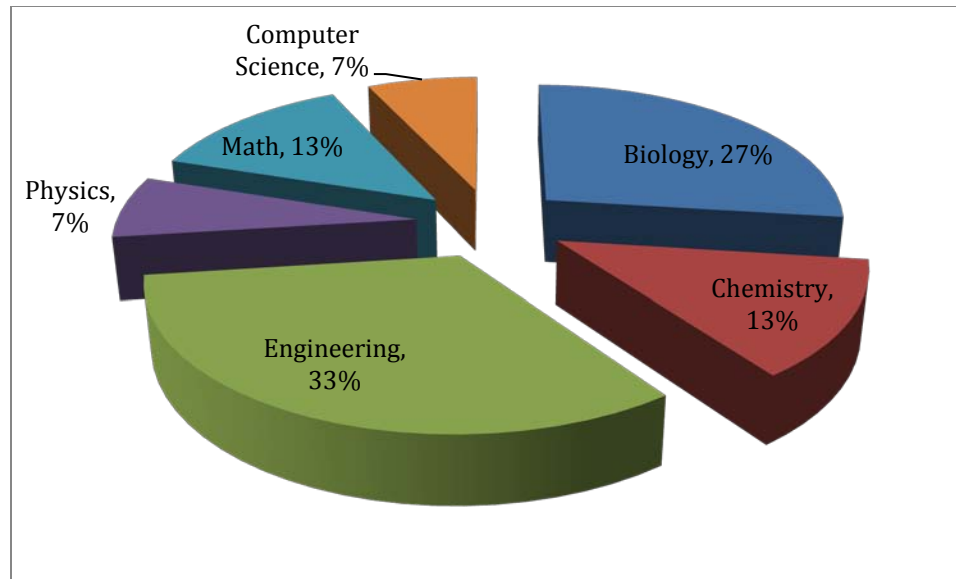


Figure 6- Cohort 5: Undergraduate Degrees Sought

NSTI Cluster Program

Number of Clusters: 3

Objective 1.5- Minority Institutions Participating: 11

- San Francisco State University
- California State University-Fullerton
- Texas Southern University (in 3 Clusters)
- University of Texas-El Paso, Tuskegee University
- Savannah State University (in 2 Clusters)
- Tougaloo College

- Jackson State University (Withdrew 2010: cluster faculty left the university)
- Jarvis Christian College
- Southern University A& M University
- Wiberforce University
- Norfolk State University (sub-contractor to Texas Southern University- UNITE Cluster)

Objective 1.5- Number of Institutions located in EPSCoR States: 3 (one in Louisiana; two in Mississippi)

Total Number of NASA Centers Participating: 3 (Ames, JSC, GRC)

Objective 1.2-Number of Students conducting NASA-related research at Cluster universities supported by NSTI funding in FY2010:3

Objective 1.4-Number of updated or new STEM courses with NASA-related content provided at cluster Universities in FY10: 7

PROJECT IMPROVEMENTS

NSTI Cluster Program

NSTI is scheduled to expand to six additional institutions and at least 3 additional NASA Centers this spring bringing the total number of participating universities to 17. The UNCFSP Graduate Fellowship application process will be migrated into the OSSI/SOLAR system in FY2011.

NSTI Faculty Fellowship Program

In 2010 the NSTI Faculty Fellowship Project provided all NASA Centers the opportunity to take part in this dynamic project. Three additional centers accepted fellows in 2010. To attract more faculty members from Tribal Colleges and Universities to the NSTI project, the NSTI Faculty Fellowship program will alter its eligibility requirements in FY2011. Fellowships will only be offered to individuals from Tribal Colleges and Universities (TCU). The TCU faculty, who are accepted into the program, will be provided 10 week summer Fellowships at NASA Ames Research Center

NSTI Summer Scholars Program

In 2010 the NSTI Summer Scholar application process was successfully migrated into the new NASA OSSI/SOLAR application system. Three organizations were also hired, as Broker Facilitators, to recruit specific populations of underserved and underrepresented communities. The hope is that by having an integrated application and recruitment process more candidates from minority institutions will apply for internships.

PROJECT PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

UNCFSP remains the administrator for this project. In the third funding year of the NSTI project, three NSTI Research Clusters were fully established. The UNITE, UNEEC and UNIMET clusters each specialized in research disciplines that will help to make the Vision for Space Exploration a reality to promote the advancement of space exploration. In 2010 these clusters have gone through many changes. Faculty members have left the project while others have joined to replace them. The UNIMET Cluster had two notable participant changes in FY2010. Dr. Pamela Denkins (Johnson Space Center) accepted the position, within the cluster, as the NSTI Lead NASA Scientist. Also the NSTI Lead University Scientist left the project and was replaced by Dr. Karla Marriott. Dr. Marriott was already a UNIMET Cluster member. Each of these changes has served to strengthen each of the clusters. Many new and exciting projects under the original themes have been proposed and implemented, as a result.

Also, UNCFSP has implemented a plan to ensure that the clusters continue beyond the initial multi-year infusion of funding provided by NASA; and, to that end, UNCFSP has reported building relationships with at least two external private corporations during this fiscal year. The companies are Day & Zimmermann and 4-D Security Solutions, Inc. The role of these two multi-million dollar partners of UNCFSP is to provide opportunities to the research clusters for the sustainability of their respective projects. Information about these two concerns is below:

- Day & Zimmermann is a privately held company that provides customized outsourcing solutions that allow companies to focus on core operations while Zimmermann manages non-core activities. The company focuses on Engineering, Government, Munitions and Workforce Solutions for other companies.
- 4-D Security Solutions, Inc. (4D) exists to provide security systems to protect assets, facilities and infrastructure anywhere in the world from sabotage, terrorism and theft. For that purpose, 4D's structure and approach reflect more than just integration and technologies; 4D established an intelligence division that monitors the operational aspects of terrorist events and in such

identifies current and future trends. 4D also conducts world-class risk analysis analyzing security structures from federal to critical asset levels. 4D's leading laboratories are currently developing and analyzing future, cutting edge technologies. These technologies incorporate our unique behavioral threat assessment techniques, thereby anticipating the next generation of security challenges and solutions.