December 12, 2011

ANNOUNCEMENT OF FEDERAL FUNDING OPPORTUNITY (FFO)
Summer Undergraduate Research Fellowship (SURF) NIST Gaithersburg Programs

EXECUTIVE SUMMARY

- **Federal Agency Name:** National Institute of Standards and Technology (NIST), United States Department of Commerce (DoC)

- **Funding Opportunity Title:** Summer Undergraduate Research Fellowship (SURF) NIST Gaithersburg Programs

- **Announcement Type:** Initial

- **Funding Opportunity Number:** 2012-NIST-SURF-G-01

- **Catalog of Federal Domestic Assistance (CFDA) Number:** 11.609, Measurement and Engineering Research and Standards

- **Dates:** Applications must be received no later than 5:00 p.m. Eastern Time, Wednesday, February 15, 2012. Applications received after this deadline will not be reviewed or considered. Review, selection, and award processing is expected to be completed in April 2012. The earliest anticipated start date for awards made under this FFO is expected to be May 1, 2012. The SURF NIST Gaithersburg Programs are anticipated to run from May 24, 2012 to August 9, 2012; adjustments may be made to accommodate specific academic schedules (e.g., a limited number of 9-week programs with the schedule shifted to begin after the regular start, i.e., June 7, 2012 to August 9, 2012, in order to accommodate colleges or universities operating on quarter systems).

- **Application Submission Address:**

  - Paper Submission: Ms. Anita Sweigert
    National Institute of Standards and Technology
    SURF NIST Gaithersburg Programs
    100 Bureau Drive, Mail Stop 8400
    Gaithersburg, MD 20899-8400

    Phone: (301) 975-4200

  - Electronic Submission: www.grants.gov

- **Funding Opportunity Description:** NIST Gaithersburg is soliciting applications from eligible colleges and universities located in the U.S. and its territories nominating undergraduate students to participate in the SURF NIST Gaithersburg Programs. The SURF NIST Gaithersburg Programs will provide research opportunities for undergraduate students to work with internationally known NIST scientists, to expose them to cutting-edge research, and to promote the pursuit of graduate degrees in science and engineering.

- **Total Amount to be Awarded:** Approximately $700,000 for new awards.

- **Anticipated Amounts:** NIST anticipates that individual awards to institutions will range from approximately $9,000-$72,000 and will support approximately 78 undergraduate students in total The total number of awards will depend upon the number of undergraduate students selected per institution to attend the SURF NIST Gaithersburg Program.

- **Funding Instrument:** Cooperative Agreement.

- **Who is Eligible:** Colleges and universities in the U.S. and its territories with degree-granting programs in materials science, chemistry, biology, nanoscale science, neutron research, engineering, computer science, mathematics, and/or physics. Each undergraduate student nominated to participate in the SURF NIST Gaithersburg Programs from the applicant college or university must meet all of the eligibility requirements in Section III.1. of this FFO.

- **Cost Sharing Requirements:** These Programs do not require cost sharing.

FULL ANNOUNCEMENT TEXT

I. Funding Opportunity Description

The statutory authority for the SURF NIST Gaithersburg programs is 15 U.S.C. § 278g-1.

NIST is one of the nation's premiere research institutions for the physical and engineering sciences and, as the lead Federal agency for technology transfer, it provides a strong interface between government, industry and academia. NIST embodies a science culture, developed from a large and well-equipped research staff that enthusiastically blends programs that address the immediate needs of industry with longer-term research that anticipates future needs. This occurs in few other places and enables the Center for Nanoscale Science and Technology (CNST), Engineering Laboratory (EL), Information Technology Laboratory (ITL), Material Measurement Laboratory (MML), NIST Center for Neutron Research (NCNR), and Physical Measurement Laboratory (PML), to offer unique research and training opportunities for undergraduates, providing them a research-rich environment and exposure to state-of-the-art equipment.

Substantially supported by the National Science Foundation (NSF), the SURF NIST Gaithersburg Programs will provide an opportunity for the NIST laboratories and NSF to encourage outstanding undergraduate students to pursue careers in science and engineering. The objective of the SURF NIST Gaithersburg Programs is to build a mutually beneficial relationship among the student, the institution, and NIST. The SURF NIST Gaithersburg Programs are conducted in English and will provide research opportunities for students to work with internationally known NIST scientists, to expose them to cutting-edge research, and to promote the pursuit of graduate degrees in science and engineering. It is expected that the students in the SURF NIST Gaithersburg Programs will have a proficiency in writing and speaking English, the ability to live and work with others, a commitment to honesty, and an interest in learning new things and using their own innovativeness to develop new science.

SURF students will have the opportunity to work one-on-one with our nation's top scientists and engineers. It is anticipated that successful SURF students will move from a position of reliance on guidance from their research advisors to one of research independence during the 11-week period. One goal of these programs is to provide opportunities for our nation's next generation of scientists and engineers to engage in world-class scientific research at NIST**,** especially in ground-breaking areas of emerging technologies. This carries with it the hope of motivating individuals to pursue Ph.D.s in nanoscale science, engineering, computer science, mathematics, materials science,

chemistry, biology, neutron research, and/or physics, and to consider research careers.

The SURF NIST Gaithersburg Programs are soliciting applications in the areas of nanoscale science, engineering, computer science, mathematics, materials science, chemistry, biology, neutron research, and/or physics.

The SURF NIST Gaithersburg Program Directors will answer questions regarding the application process and encourage the appropriate department chairs, outreach coordinators, and directors of multi-disciplinary academic organizations to advertise the program and solicit their best students (including graduating seniors) who would benefit from off-campus summer research in a world-class scientific environment to apply.

NIST's Center for Nanoscale Science and Technology (CNST) endeavors to provide science and industry with the necessary measurement methods, standards, and technology to facilitate the development and productive use of nanotechnology from discovery to production. CNST projects are focused on three broad program areas: 1) Measurements for Future Electronics, 2) Measurements for Nanofabrication and Nanomanufacturing, and 3) Measurements for Energy Storage, Conversion, and Transport. Examples of projects currently underway within these program areas are nanomagnetics, atomic scale characterization and fabrication of graphene, nanoscale measurement and fabrication using laser-controlled atoms, advanced Focused Ion Beam (FIB) development, modeling nanostructures in mesoscopic environments, characterization of nanophotonic devices, transport in nanoscale devices, scanned force microscopy, diblock copolymers, nanoparticle assembly, metrology for electron-beam lithography, advanced electron-beam resist development, and metrology for directed assembly. Much of this work is done in CNST's state-of-the-art nanofabrication clean room facility. Student research projects will be theoretical or experimental.

NIST's Engineering Laboratory (EL) investigates the use of intelligent machines, precision control of machine tools, and information technology for the integration of all elements of a product's life cycle. Much of this applied research is devoted to overcoming barriers to the next technological revolution, in which manufacturing facilities are spread across the globe. EL's research and development leads to standards, test methods and data that are crucial to industry's success in exploiting advanced manufacturing technology. Critical components of manufacturing at any level are measurement and measurement-related standards, not just of products, but increasingly of information about products and processes. Thus, EL programs enhance both physical and information-based measurements and standards. Research projects can be theoretical or experimental, and will range in focus from intelligent machine control, characterizing a manufacturing process, and improving product data exchange in manufacturing. EL also provides technical leadership and participates in developing the measurement and standards infrastructure related to materials critical to U.S. industry, academia, government, and the public. Building and Fire Research programs at NIST cover a full range of materials issues from design to processing to performance. Separate research initiatives address concrete, coating, earthquake resistance of structures, fire science and engineering, the theory and modeling of materials, and materials reliability. Through laboratory-organized consortia and one-on-one collaborations, EL's scientists and engineers work closely with industrial researchers, manufacturers of high-technology products, and the major users of advanced materials.

NIST's Information Technology Laboratory (ITL) responds to industry and user needs for objective, neutral tests for information technology. These enabling tools help companies produce the next generation of products and services, and help industries and individuals use these complex products and services. ITL works with industry, research and government organizations to develop and demonstrate tests, test methods, reference data, proof of concept implementations and other infrastructural technologies. Program activities include: high performance computing and

communication systems; emerging network technologies; access to, exchange, and retrieval of complex information; computational and statistical methods; information security; and testing tools and methods to improve the quality of software.

NIST's Material Measurement Laboratory (MML) and NIST Center for Neutron Research (NCNR) combine the strengths and facilities of two Operating Units to conduct joint SURF activities. MML serves as the national reference laboratory for measurement research, standards, and data in the chemical, biological, and material sciences. MML research supports areas of national importance such as advanced materials (from nanomaterials to structural steels to complex fluids), electronics (from semiconductors to organic electronics), energy (from characterization and performance of fossil and alternative fuels to next-generation renewable sources of energy), the environment (from the measurement of automotive exhaust emissions and other pollutants to assessment of climate change and the health and safety aspects of man-made nanomaterials), food safety and nutrition (from contaminant monitoring to ensuring the accuracy of nutritional labels), health care (from clinical diagnostics to tissue engineering and more efficient manufacturing of biologic drugs), infrastructure (from assessing the country's aging bridges and pipelines to the quality of our drinking water), manufacturing (from lightweight alloys for fuel-efficient automobiles to biomanufacturing and data for chemical manufacturing), and safety, security and forensics (from gunshot and explosive residue detection, to ensuring the performance of body armor materials, to DNA-based human identity testing). MML conducts research in analytical chemistry, biochemical science, ceramics, chemical and biochemical reference data, materials reliability, metallurgy, polymers, surface and microanalysis science, and thermophysical properties of materials. The activities of the NCNR, a national resource for industry, universities, and government agencies, focus on providing neutron-measurement capabilities to the U.S. research community. Neutrons are powerful probes of the structure and dynamics of materials ranging from molecules inserted into membranes mimicking cell walls to protons migrating through fuel cells. The unique properties of neutrons can be exploited by a variety of measurement techniques to provide information not available by other means. They are particularly well suited to investigate all forms of magnetic materials such as those used in computer memory storage and retrieval. Atomic motion, especially that of hydrogen, can be measured and monitored, like that of water during the setting of cement. Residual stresses such as those inside stamped steel automobile parts can be mapped. Neutron-based research covers a broad spectrum of disciplines, including engineering, biology, materials science, polymers, chemistry, and physics. The MML/NCNR SURF Program offers students two different programmatic choices, *Chemical/Biochemical Sciences* and *Materials Science*.

NIST’s Physical Measurement Laboratory (PML) attends to the long-term needs of many U.S. high-technology industries. NIST's PML conducts basic research in the areas of quantum, electron, optical, atomic, molecular, and radiation physics. To achieve these goals, PML staff develops and utilizes highly specialized equipment, such as polarized electron microscopes, scanning tunneling microscopes, lasers, and x-ray and synchrotron radiation sources. Research projects can be theoretical or experimental and will range in focus from computer modeling of fundamental processes through trapping atoms and choreographing molecular collisions, to standards for radiation therapy. PML also conducts theoretical and experimental research in length, mass, force, vibration, acoustics, and ultrasonics. In addition, NIST’s PML strives to be the world's best source of fundamental and industrial-reference measurement methods and physical standards for electrotechnology. To be a world-class resource for semiconductor measurements, data, models, and standards focused on enhancing U.S. technological competitiveness in the world market, research is conducted in semiconductor materials, processing, devices, and integrated circuits to provide, through both experimental and theoretical work, the necessary basis for understanding measurement-related requirements in semiconductor technology. To provide the world's most technically advanced and fundamentally sound basis for all electrical measurements in the United States, the PML's research

projects include maintaining and disseminating the national electrical standards, developing the measurement methods and services needed to support electrical materials, components, instruments, and systems used for the generation, transmission, and application of conducted electrical power, and related activities in support of the electronics industry including research on video technology and electronic product data exchange. PML offers students two different programmatic choices: *Physics* for students interested in Physics topics and *Electrical Engineering* for students interested in semiconductor and nano- electronics, systems and control engineering, and cross-disciplinary electronics.

II. Award Information

1. Funding Instrument

The funding instrument that will be used is a cooperative agreement. The nature of NIST's "substantial involvement" will generally be collaboration with the recipients in the scope of work and working jointly with an undergraduate student in carrying out the scope of work. Additional forms of substantial involvement that may arise are described in the DoC Grants and Cooperative Agreements Interim Manual, which is available at http://www.osec.doc.gov/oam/grants_management/policy/doc_grants_manual/default.htm.

2. Funding Availability

Funds budgeted for payments to students under this program are stipends, not salaries. The stipend is an amount that is expected to be provided to the participating student to help defray the cost of living, for the duration of the program, in the Washington National Capital Region. The table below summarizes the anticipated annual funding levels to operate the SURF programs, subject to program renewals and availability of funds. In some programs, anticipated NIST co-funding will supplement the number of awards supported. Program funding will be available to provide for the costs of stipends ($500 per week per student), plus travel and lodging (up to $3,500 per student).

Program	Total Program Funding	Anticipated No. of Awards
CNST	~$ 36,000	~4
EL	~$223,000	~25
ITL	~$ 27,000	~3
MML/NCNR-Materials	~$145,000	~16
MML/NCNR-Chemical/Biochemical Sciences	~$ 90,000	~10
PML-Physics	~$100,000	~11
PML-Electrical Engineering	~$ 80,000	~9

The actual number of awards made under this FFO will depend on the proposed budgets and the availability of funding.

NIST anticipates that individual awards to institutions will range from approximately $9,000 to $72,000 and will support approximately 78 undergraduate students in total. The total number of awards will depend on the number of undergraduate students selected per institution to attend the SURF NIST Gaithersburg Program.

Funding for student housing will be included in the awards under this FFO.

The SURF NIST Gaithersburg Programs are anticipated to run from May 24, 2012 to August 9, 2012; adjustments may be made to accommodate specific academic schedules (e.g., a limited number of 9-week programs with the schedule shifted to begin after the regular start, i.e., June 7, 2012 to August 9, 2012, in order to accommodate colleges or universities operating on quarter systems).

III. Eligibility Information

1. Eligible Applicants

The SURF NIST Gaithersburg Program is open to colleges and universities located in the United States and its territories with degree-granting programs in nanoscale science, engineering, computer science, mathematics, materials science, chemistry, biology, neutron research, and/or physics. Participating students must be U.S. citizens or permanent U.S. residents.

Each undergraduate student nominated to participate in the SURF NIST Gaithersburg Programs from the applicant college or university must meet all of the following eligibility requirements:

a. Be a U.S. citizen or permanent U.S. resident.
b. Commit eleven (11) full continuous weeks, or nine (9) full continuous weeks for the nine (9) week program, (Monday through Friday) from 8:30 a.m. to 5 p.m., during the summer of 2012, to participate in the SURF NIST Gaithersburg Program.
c. Be a currently registered undergraduate at a university or college located in the U.S. or its territories with a scientific major at the time of application.
d. Have a G.P.A. of 3.0/4.0 or better (recommended).
e. Are considering pursuing a graduate degree (M.S. or Ph.D.). *Students with nanoscale science, engineering, computer science, mathematics, materials science, chemistry, biology, neutron research, and/or physics majors are always encouraged to apply. There may also be research opportunities for students with other majors.*

Applicants are encouraged, but are not required, to nominate eligible underrepresented minority undergraduate students.

2. Cost Sharing or Matching

The SURF NIST Gaithersburg Programs do not require cost sharing.

3. Other

Pre-Applications. NIST is not accepting pre-applications or white papers under the SURF NIST Gaithersburg Programs listed in this FFO.

IV. Application and Submission Information

1. Address to Request Application Package

The standard application package, consisting of the standard forms, i.e., SF-424, SF-424A, SF-424B, SF-LLL, and the CD-511, is available at www.grants.gov. The full application package, consisting of all of the required forms, i.e., the standard forms plus the SURFing checklist and NIST SURF Program Student Application Information Form, is available at http://www.nist.gov/surfgaithersburg/app.cfm.

The full application package may be requested by contacting:

Ms. Anita Sweigert
National Institute of Standards and Technology
SURF NIST Gaithersburg Programs
100 Bureau Drive, Mail Stop 8400
Gaithersburg, MD 20899-8400

Phone: (301) 975-4200

2. Content and Format of Application Submission

a. Required Forms and Documents

(1) SF-424, Application for Federal Assistance. The SF-424 must be signed by an authorized representative of the applicant organization. The FFO number 2012-NIST-SURF-G-01 must be identified in item 12 of the SF-424. The list of certifications and assurances referenced in item 21 of the SF-424 is contained in the SF-424B.
(2) SF-424A, Budget Information – Non-Construction Programs
(3) SF-424B, Assurances – Non-Construction Programs
(4) CD-511, Certification Regarding Lobbying
(5) SF-LLL, Disclosure of Lobbying Activities (if applicable)
(6) Applicant Information. This is a word-processed document written by the applying college or university and must contain the following information:
  (a) Description of the institution's education and research programs
  (b) A summary list of the student(s) being nominated.
(7) SURFing Application Checklist (http://www.nist.gov/surfgaithersburg/app.cfm)
(8) NIST SURF Program Student Application Information Form (http://www.nist.gov/surfgaithersburg/app.cfm), including required documents listed on the form, from each student nominated to participate in the SURF NIST Gaithersburg Program. The student's name and college/university must appear on all of the documents. **NOTE**: It is recommended that students have a G.P.A. of 3.0 or better, out of a possible 4.0.

If submitting the application electronically via Grants.gov, items IV.2.a.(1) through IV.2.a.(5) above are part of the standard application package in Grants.gov and can be completed through the download application process. Items IV.2.a.(6) through IV.2.a.(8) must be completed and attached by clicking on "Add Attachments" found in item 15 of the SF-424, Application for Federal Assistance. This will create a zip file that allows for transmittal of the documents electronically via Grants.gov. Applicants should carefully follow specific Grants.gov instructions at www.grants.gov to ensure the attachments will be accepted by the Grants.gov system. A receipt from Grants.gov indicating an application is received does not provide information about whether attachments have been received.

If submitting an application by paper, all of the required application documents should be submitted in the order listed above.

b. Application Format

(1) Application language. English.

(2) Double-sided copy. For paper submissions, print on both sides of the paper.

(3) **E-mail submissions.** Will not be accepted.

(4) **Facsimile submissions (fax).** Will not be accepted.

(5) **Font.** Easy to read font (10-point minimum). Smaller type may be used in figures and tables but must be clearly legible.

(6) **Line spacing.** Single.

(7) **Margins.** One (1) inch top, bottom, left, and right.

(8) **Number of paper copies.** For paper submissions, one (1) signed stapled original and two (2) stapled copies. If original application is in color, the two (2) copies must also be in color. If submitting electronically via Grants.gov, paper copies are not required.

(9) **Page layout.** Portrait orientation only.

(10) **Page numbering.** Number pages sequentially.

(11) **Paper size.** 21.6 by 27.9 centimeters (8 ½ by 11 inches).

(12) **Staple paper submission.** For paper submissions, staple the original signed application and each of the two (2) copies securely with one (1) staple in the upper left-hand corner.

(13) **Typed document.** All applications, including forms, must be typed.

3. Submission Dates and Times

Applications must be received by NIST no later than 5:00 p.m. Eastern Time, Wednesday, February 15, 2012. This deadline applies to all modes of application submission, including courier services, express mailing, and electronic.

Applications not received by the specified due date and time will not be considered and will be returned without review. NIST determines whether applications submitted by paper have been timely received by the deadline by the date and time receipt they are physically received by NIST at its Gaithersburg, Maryland campus. For electronic submissions, NIST will consider the date and time stamped on the validation generated by www.grants.gov as the official submission time.

NIST strongly recommends that applicants do not wait until the last minute to submit an application. NIST will not make any allowances for late submissions, including but not limited to incomplete Grants.gov registration, delays in mail delivery caused by Federal Government security screening for U.S. Postal Service mail, or for delays by guaranteed express mailing and/or couriers. To avoid any potential processing backlogs due to last minute Grants.gov registrations, applicants are highly encouraged to start their Grants.gov registration process at least four (4) weeks prior to the application due date.

Important: All applicants, both electronic and paper submitters, should be aware that adequate time must be factored into applicants' schedules for delivery of their application. Submitters of electronic applications are advised that volume on Grants.gov may be extremely heavy on the deadline date, and if Grants.gov is unable to accept applications electronically in a timely fashion, applicants are

encouraged to exercise their option to submit applications in paper format. Submitters of paper applications should allow adequate time to ensure a paper application will be received on time, taking into account that Federal Government security screening for U.S. Postal Service mail may delay receipt of mail for up to two (2) weeks and that guaranteed express mailings and/or couriers are not always able to fulfill their guarantees.

In the event of a natural disaster that interferes with timely proposal submissions, NIST may issue an amendment to this FFO to change the proposal submission due date.

4. Executive Order 12372 (Intergovernmental Review of Federal Programs)

Applications under this Program are not subject to Executive Order 12372.

5. Funding Restrictions

The SURF NIST Gaithersburg Programs will not authorize funds for indirect costs or fringe benefits.

6. Other Submission Requirements

a. Applications may be submitted by paper or electronically.

(1) Paper applications must be submitted in triplicate (an original and two copies) and sent to:

Ms. Anita Sweigert
National Institute of Standards and Technology
SURF NIST Gaithersburg Programs
100 Bureau Drive, Mail Stop 8400
Gaithersburg, MD 20899-8400

Phone: (301) 975-4200

(2) Electronic applications must be submitted via Grants.gov at www.grants.gov.

Submitters of electronic applications should carefully follow specific Grants.gov instructions to ensure the attachments will be accepted by the Grants.gov system. A receipt from Grants.gov indicating an application is received does not provide information about whether attachments have been received. For further information or questions regarding applying electronically for the 2012-NIST-SURF-G-01 announcement, contact Christopher Hunton by phone at 301-975-5718 or by e-mail at christopher.hunton@nist.gov.

Applicants are strongly encouraged to start early and not wait until the approaching due date before logging on and reviewing the instructions for submitting an application through Grants.gov. The Grants.gov registration process must be completed before a new registrant can apply electronically. If all goes well, the registration process takes three (3) to five (5) business days. If problems are encountered, the registration process can take up to two (2) weeks or more. Applicants must have a Dun and Bradstreet Data Universal Numbering System (DUNS) number and must be registered with the Federal Central Contractor Registry and with a Credential Provider, as explained on the Grants.gov Web site. After registering, it may take several days or longer from the initial log-on before a new Grants.gov system user can submit an application. Only authorized individual(s) will be able to submit the application, and the system may need time to process a submitted application. Applicants should save

and print the proof of submission they receive from Grants.gov. If problems occur while using Grants.gov, the applicant is advised to (a) print any error message received and (b) call Grants.gov directly for immediate assistance. If calling from within the United States or from a U. S. territory, please call 800-518-4726. If calling from a place other than the United States or a U. S. territory, please call 606-545-5035. Assistance from the Grants.gov Help Desk will be available around the clock every day, with the exception of Federal holidays. Help Desk service will resume at 7:00 a.m. Eastern Time the day after Federal holidays. For assistance using Grants.gov, you may also contact support@grants.gov.

Information essential to successful submission of applications on the Grants.gov system is detailed in the For Applicants section found in red on the left side of the www.grants.gov home page, and all potential proposers should pay close attention to the information contained therein. The All About Grants, Applicant FAQs, and Submit Application FAQs sections found under the Applicant Resources option are particularly important.

Refer to important information in Section IV.3., Submission Dates and Times, of this FFO to help ensure your application is received on time.

b. Any amendments to this FFO will be announced through Grants.gov. Applicants can sign up for Grants.gov FFO amendments, or alternatively may call Ms. Anita Sweigert at (301) 975-4200, to request copies.

V. Application Review Information

1. Evaluation Criteria

The evaluation criteria that will be used in evaluating applications are as follows:

a. Student's Interest in Participating in the Program, Academic Ability, Laboratory Experience, and Advanced Degree Interest. Evaluation of GPA (grade point average) in courses relevant to the SURF NIST Gaithersburg Programs, career goals, honors and awards, commitment of the student to working in a laboratory environment, and interest in pursuing graduate school.

b. Applicant's Commitment to Program Goals. Evaluation of the institution's academic department(s) relevant to the discipline(s) of the student(s), as demonstrated by accrediting organizations, course offerings in the relevant departments, and extensive publications in nanoscale science, engineering, computer science, mathematics, materials science, chemistry, biology, neutron research, and/or physics.

c. Each of these factors will be given equal weight in the evaluation process.

2. Selection Factors

The Selecting Official shall select applications for award based upon the rank order of the applications, and may select an application out of rank based on one or more of the following selection factors:

a. Fit of the undergraduate student's stated interest and commitment to the program priorities of NIST (*see* Section V.3. of this FFO) and goals of the SURF NIST Gaithersburg Program;

b. Fit of the undergraduate student's interests and abilities to the available projects and when appropriate, to NIST scientists in that laboratory program;

c. Relevance of the student's course of study to the program objectives of the NIST laboratory in which that SURF NIST Gaithersburg Program resides as described in Section I., Funding Opportunity Description, of this FFO;

d. Assessment of whether the laboratory experience is a new opportunity for the student which may encourage future postgraduate training; and

e. The availability of Federal funds.

3. Program Priorities

All applicable fields of science that promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life. More information about those programs can be found at www.nist.gov.

4. Review and Selection Process

a. Initial Administrative Review of Applications. An initial review of timely received applications will be conducted to determine applicant and undergraduate student eligibility and application completeness and responsiveness to this FFO and the scope of the stated program objectives. Applications determined to be ineligible, incomplete, and/or non-responsive based on this FFO may be eliminated from further review.

b. Full Review of Eligible, Complete, and Responsive Applications. Applications that are determined to be eligible, complete, and responsive will proceed for full reviews in accordance with the review and selection processes below:

(1) Applications will be separated into student/applicant packets and directed to the SURF NIST Gaithersburg Program designated by the student as his/her first choice. For the purposes of the selection process, each student selectable program choice on the Student Applicant Infromation Cover Sheet (which means each of the subprograms designated by a subject area) is considered a separate SURF NIST Gaithersburg Program.

(2) The review and selection process occurs in three (3) rounds as follows:

(a) First round: Each SURF NIST Gaithersburg Program will conduct three (3) independent, objective reviews of each student/applicant packet, which will include scores and comments, based on the evaluation criteria (*see* Section V.1. of this FFO). The independent reviewers will be NIST employees who are knowledgeable in the scientific areas of the program. Based on the average of the reviewers' scores, a separate rank order of the student/applicant packets will be prepared within each SURF NIST Gaithersburg program and provided to the Selecting Official for further consideration.

The Selecting Official, who is the SURF NIST Gaithersburg Program Director for each SURF NIST Gaithersburg Program, will select funding recipients based upon the rank order of the student/applicant packets and the selection factors (*see* Section V.2. of this FFO).

Based on these results, the Selecting Official for each SURF NIST Gaithersburg Program will divide the rank ordered student/applicant packets into three categories: Priority Funding; Fund if Possible; and Do Not Fund. Student/applicant packets placed in the Priority Funding category will be selected for funding in that SURF NIST Gaithersburg Program, contingent upon availability of funds. Student/applicant packets placed in the Do Not Fund category will not be considered for funding by any other SURF NIST Gaithersburg Program.

(b) Second round: Student/applicant packets placed in the Fund if Possible Category may be considered for funding at a later time by the category-designating SURF program. The "category-designating" program is the SURF NIST Gaithersburg Program whose Selecting Official first categorized the student/applicant packet as "Priority Funding," "Fund if Possible," or "Do Not Fund." This is the same SURF NIST Gaithersburg Program that was designated by the student on his/her NIST SURF Program Student Application Information Form as his/her first choice. In the interim period these student/applicant packets (along with those for unfunded "Priority Funding" applicants) will be released for consideration for funding by the SURF NIST Gaithersburg Program which was designated by the student on his/her NIST SURF Program Student Application Information Form as his/her second choice.

The student's second choice SURF NIST Gaithersburg Program's Selecting Official will take into consideration the comments and scores of the reviewers who conducted the technical reviews for the student's first choice SURF NIST Gaithersburg Program, apply the selection factors (*see* Section V.2. of this FFO) as applied to that second choice SURF NIST Gaithersburg Program, and arrive at a final rank order of the students available for the second round of selections and placements. Any Selecting Official may look at any student application in advance of the second or subsequent round. Any Selecting Official may choose not to participate in the second round if he/she does not see suitable students in the second round appropriate for the available projects within his/her laboratory and/or there are no slots available.

(c) Third round: Student/applicant packets not selected for funding by their first or second choice SURF NIST Gaithersburg Program, and students who did not designate a second choice, will then be considered for selection and placement by all Selecting Officials that still have slots available in a third round, using the same process as the second round. In making selections for the third round, each Selecting Official will take into consideration the comments and scores of the reviewers who conducted the technical reviews for the student's first choice SURF NIST Gaithersburg Program, apply the selection factors (*see* Section V.2. of this FFO) as applied to that presently evaluating SURF NIST Gaithersburg Program, and arrive at a final rank order of the students available for the third round of selections and placements. Any Selecting Official may choose not to participate in the third round if he/she does not see suitable students in the third round appropriate for the available projects within his/her laboratory and/or there are no slots available.

NIST reserves the right to negotiate the budget costs with the applicants that have been selected to receive awards, which may include requesting that the applicant remove certain costs. Additionally, NIST may request that the applicant modify objectives or work plans and provide supplemental information required by the agency prior to award. Substitutions for students who decline offers will be made from the remaining pool of ranked students consistent with the review and selection process (*see* Section V.4. of this FFO). NIST also reserves the right to reject an application where information is uncovered that raises a reasonable doubt as to the responsibility

of the applicant. NIST may select part, some, all, or none of the applications. The final approval of selected applications and issuance of awards will be by the NIST Grants Officer. The award decisions of the NIST Grants Officer are final.

5. Anticipated Announcement and Award Dates

Review, selection, and award processing is expected to be completed in April 2012. The earliest anticipated start date for awards made under this FFO is expected to be May 1, 2012.

6. Additional Information

a. Safety. Safety is a top priority at NIST. Undergraduate students participating in the NIST SURF Gaithersburg Program will be expected to be safety-conscious, to attend NIST safety training, and to comply with all NIST safety policies and procedures, and with all applicable NIST visitor policies.

b. Application Replacement Pages. Applicants may not submit replacement pages and/or missing documents once an application has been submitted. Any revisions must be made by submission of a new application that must be received by NIST by the submission deadline.

c. Notification to Unsuccessful Applicants. Unsuccessful applicants will be notified in writing.

d. Retention of Unsuccessful Applications. One (1) of each non-selected application will be retained for three (3) years for record keeping purposes and the other two (2) copies will be destroyed. After three (3) years, the remaining copy will be destroyed.

VI. Award Administration Information

1. Award Notices. Successful applicants will receive an award from the NIST Grants Officer. The award cover page, i.e., CD-450, Financial Assistance Award is available at http://ocio.os.doc.gov/s/groups/public/@doc/@os/@ocio/@oitpp/documents/content/dev01_002513.pdf and the DoC Financial Assistance Standard Terms and Conditions (March 2008), which may be updated by the time of award, are available at http://www.osec.doc.gov/oam/archive/docs/GRANTS/DOC%20STCsMAR08Rev.pdf.

2. Administrative and National Policy Requirements

a. DoC Pre-Award Notification Requirements. The DoC Pre-Award Notification Requirements for Grants and Cooperative Agreements, which are contained in the *Federal Register* notice of February 11, 2008 (73 FR 7696), are applicable to this FFO and are available at http://www2.ntia.doc.gov/files/DOC_pre-award_notification_requirements_73_FR_7696.pdf.

b. Employer/Taxpayer Identification Number (EIN/TIN), Dun and Bradstreet Data Universal Numbering System (DUNS), and Central Contractor Registration (CCR). All applicants for Federal financial assistance are required to obtain a universal identifier in the form of DUNS number and maintain a current registration in the CCR database. On the form SF-424 items 8.b. and 8.c., the applicant's 9-digit EIN/TIN and 9-digit DUNS number must be consistent with the information in CCR (www.ccr.gov) and Automated Standard Application for Payment System (ASAP). For complex organizations with multiple EIN/TIN and DUNS numbers, the EIN/TIN and DUNS numbers MUST be the numbers for the applying organization. Organizations that provide incorrect/inconsistent EIN/TIN and DUNS numbers may experience significant delays in receiving

funds if their application is selected for funding. Confirm that the EIN/TIN and DUNS number are consistent with the information on the CCR and ASAP.

Per the requirements of 2 C.F.R. Part 25, each applicant must:

(1) Be registered in the CCR before submitting an application;
(2) Maintain an active CCR registration with current information at all times during which it has an active Federal award or an application under consideration by an agency; and
(3) Provide its DUNS number in each application it submits to the agency.

See also the *Federal Register* notice published on September 14, 2010, at 75 FR 55671.

c. Use of NIST Intellectual Property. If the applicant anticipates using any NIST-owned intellectual property to carry out the work proposed, the applicant should identify such intellectual property. This information will be used to ensure that no NIST employee involved in the development of the intellectual property will participate in the review process for that competition. In addition, if the applicant intends to use NIST-owned intellectual property, the applicant must comply with all statutes and regulations governing the licensing of Federal government patents and inventions, described in 35 U.S.C. §§ 200-212, 37 C.F.R. Part 401, 15 C.F.R. § 14.36, and in Section B.21 of the DoC Pre-Award Notification Requirements, 73 FR 7696 (February 11, 2008). Questions about these requirements may be directed to the Chief Counsel for NIST, 301-975-2803.

Any use of NIST-owned intellectual property by an applicant is at the sole discretion of NIST and will be negotiated on a case-by-case basis if a project is deemed meritorious. The applicant should indicate within the statement of work whether it already has a license to use such intellectual property or whether it intends to seek one.

If any inventions made in whole or in part by a NIST employee arise in the course of an award made pursuant to this FFO, the United States government may retain its ownership rights in any such invention. Licensing or other disposition of NIST's rights in such inventions will be determined solely by NIST, and include the possibility of NIST putting the intellectual property into the public domain.

d. Research Projects Involving Human Subjects, Human Tissue, Data or Recordings Involving Human Subjects. Any application that includes an undergraduate student's participation in research involving human subjects, human tissue/cells, data or recordings involving human subjects must meet the requirements of the Common Rule for the Protection of Human Subjects ("Common Rule"), codified for the Department of Commerce (DoC) at 15 C.F.R. Part 27. In addition, any such application that includes research on these topics must be in compliance with any statutory requirements imposed upon the Department of Health and Human Services (DHHS) and other Federal agencies regarding these topics, all regulatory policies and guidance adopted by DHHS, the Food and Drug Administration, and other Federal agencies on these topics, and all Executive Orders and Presidential statements of policy on these topics.

NIST reserves the right to make an independent determination of whether an applicant's research involves human subjects. If NIST determines that your research project involves human subjects, you will be required to provide additional information for review and approval. If an award is issued, no research activities involving human subjects shall be initiated or costs incurred under the award until the NIST Grants Officer issues written approval. Retroactive approvals are not permitted.

NIST will accept applications that include research activities involving human subjects that have been or will be approved by an Institutional Review Board (IRB) currently registered with the Office for Human Research Protections (OHRP) within the DHHS and that will be performed by entities possessing a currently valid Federal wide Assurance (FWA) on file from OHRP that is appropriately linked to the cognizant IRB for the protocol. NIST will not issue a single project assurance (SPA) for any IRB reviewing any human subjects protocol proposed to NIST. Information regarding how to apply for an FWA and register and IRB with OHRP can be found at http://www.hhs.gov/ohrp/assurances/index.html.

Generally, NIST does not fund research involving human subjects in foreign countries. NIST will consider, however, the use of **preexisting** tissue, cells, or data from a foreign source on a limited basis if all of the following criteria are satisfied:

(1) the scientific source is considered unique,
(2) an equivalent source is unavailable within the United States,
(3) an alternative approach is not scientifically of equivalent merit, and
(4) the specific use qualifies for an exemption under the Common Rule.

Any award issued by NIST is required to adhere to all Presidential policies, statutes, guidelines and regulations regarding the use of human embryonic stem cells. The DoC follows the NIH Guidelines by supporting and conducting research using only human embryonic stem cell lines that have been approved by NIH in accordance with the NIH Guidelines. Detailed information regarding NIH Guidelines for stem cells is located on the NIH Stem Cell Information website: http://stemcells.nih.gov. The DoC will not support or conduct any type of research that the NIH Guidelines prohibit NIH from funding. The DoC will review research using human embryonic stem cell lines that it supports and conducts in accordance with the Common Rule and NIST implementing procedures, as appropriate.

Any request to support or conduct research using human embryonic stem cell lines not currently approved by the NIH, will require that the owner, deriver or licensee of the human embryonic stem cell line apply for and receive approval of the registration of the cell line through the established NIH application procedures: http://hescregapp.od.nih.gov/NIH_Form_2890_Login.htm. Due to the timing uncertainty associated with establishing an embryonic stem cell line in the NIH registry, the use of existing human embryonic stem cell lines in the NIH Embryonic Stem Cell Registry may be preferred by applicants or current award recipients. The NIH Embryonic Stem Cell Registry is located at: http://grants.nih.gov/stem_cells/registry/current.htm.

An applicant or current award recipient proposing to use a registered embryonic stem cell line will be required to document an executed agreement for access to the cell line with the provider of the cell line, and acceptance of any established restrictions for use of the cell line, as may be noted in the NIH Embryonic Stem Cell Registry.
If the applicant's proposal includes exempt and/or non-exempt research activities involving human subjects the following information is required in the proposal:

(1) The name(s) of the institution(s) where the research will be conducted;
(2) The name(s) and institution(s) of the cognizant IRB(s), and the IRB registration number(s);
(3) The FWA number of the applicant linked to the cognizant IRB(s);
(4) The FWAs associated with all organizations engaged in the planned research activity linked to the cognizant IRB;
(5) If the IRB review(s) is pending, the estimated start date for research involving human subjects;

(6) The IRB approval date (if currently approved for exempt or non-exempt research);
(7) If any FWAs or IRB registrations are being applied for, that should be clearly stated.

Additional documentation may be requested, as warranted, during review of the applicant's proposal, but may include the following for research activities involving human subjects that are planned in the first year of the award:

(1) A signed (by the study principal investigator) copy of each applicable final IRB-approved protocol;
(2) A signed and dated approval letter from the cognizant IRB(s) that includes the name of the institution housing each applicable IRB, provides the start and end dates for the approval of the research activities, and any IRB-required interim reporting or continuing review requirements;
(3) A copy of any IRB-required application information, such as documentation of approval of special clearances (i.e. biohazard, HIPAA, etc.) conflict-of-interest letters, or special training requirements;
(4) A brief description of what portions of the IRB submitted protocol are specifically included in the applicant's proposal submitted to NIST, if the protocol includes tasks not applicable to the proposal, or if the protocol is supported by multiple funding sources. For protocols with multiple funding sources, NIST will not approve the study without a nonduplication-of-funding letter indicating that no other federal funds will be used to support the tasks proposed under the proposed research or ongoing project;
(5) If a new protocol will only be submitted to an IRB if an award from NIST issued, a draft of the proposed protocol may be requested.
(6) Any additional clarifying documentation that NIST may request during review of proposals to perform the NIST administrative review of research involving human subjects.

e. Research Projects Involving Vertebrate Animals. Any application that includes an undergraduate student's participation in research involving live vertebrate animals must be in compliance with the National Research Council's "Guide for the Care and Use of Laboratory Animals," which can be obtained from National Academy Press, 500 5th Street, N.W., Department 285, Washington, DC 20055. In addition, such applications must meet the requirements of the Animal Welfare Act (7 U.S.C. § 2131 et seq.), 9 C.F.R. Parts 1, 2, and 3, and if appropriate, 21 C.F.R. Part 58. These regulations do not apply to proposed research using **preexisting** images of animals or to research plans that do not include live animals that are being cared for, euthanized, or used by the project participants to accomplish research goals, teaching, or testing. These regulations also do not apply to obtaining animal materials from commercial processors of animal products or to animal cell lines or tissues from tissue banks.

NIST reserves the right to make an independent determination of whether your research involves live vertebrate animals. If NIST determines that your research project involves live vertebrate animals, you will be required to provide additional information for review and approval. If an award is issued, no research activities involving live vertebrate animals subjects shall be initiated or costs incurred under the award until the NIST Grants Officer issues written approval.

If the applicant's proposal includes research activities involving live vertebrate animals the following information is required in the proposal:

(1) The name(s) of the institution(s) where the animal research will be conducted;
(2) The assurance type and number, as applicable, for the cognizant IACUC where the research activity is located. [For example: Animal Welfare Assurance from the Office of Laboratory

Animal Welfare (OLAW) should be indicated by the OLAW assurance number, i.e. A-1234; an USDA Animal Welfare Act certification should be indicated by the certification number i.e. 12-R-3456; and an Association for the Assessment and Accreditation of Laboratory Animal Care (AAALAC) should be indicated by AAALAC.]

(3) The IACUC approval date (if currently approved);

(4) If the review by the cognizant Institutional Animal Care and Use Committee (IACUC) is pending, the estimated start date for research involving vertebrate animals;

(5) If any assurances or IACUCs need to be obtained or established, that should be clearly stated.

Additional documentation will be requested, as warranted, during review of the proposal, but may include the following for research activities involving live vertebrate animals that are planned in the first year of the award:

(1) A signed (by the Principal Investigator) copy of the IACUC approved Animal Study Proposal (ASP);

(2) Documentation of the IACUC approval indicating the approval and expiration dates of the ASP; and

(3) If applicable, a nonduplication-of-funding letter if the ASP is funded from several sources.

(4) If a new ASP will only be submitted to an IACUC if an award from NIST issued, a draft of the proposed ASP may be requested.

(5) Any additional clarifying documentation that NIST may request during review of proposals to perform the NIST administrative review of research involving live vertebrate animals.

f. Funding Availability and Limitation of Liability. Funding for the program listed in this FFO is contingent upon the availability of appropriations. In no event will NIST or DoC be responsible for application preparation costs if this program fails to receive funding or is cancelled because of agency priorities. Publication of this FFO does not oblige NIST or DoC to award any specific project or to obligate any available funds.

3. Reporting

a. Reporting Requirements. In lieu of the reporting requirements described in sections A.01 Financial Reports and B.01 Performance (Technical) Reports of the DoC Financial Assistance Standard Terms and Conditions dated March 2008 (http://www.osec.doc.gov/oam/archive/docs/GRANTS/DOC%20STCsMAR08Rev.pdf), the following reporting requirements shall apply:

(1) Financial Report. Each award recipient will be required to submit an SF-425, Federal Financial Report, in triplicate (an original and two (2) copies) within 30 days after the award expiration date.

(2) Performance (Technical) Report. Each award recipient shall require the undergraduate students accepted into the SURF NIST Gaithersburg Program to submit to NIST a brief (at least one (1) page) oral report on his/her experiences and accomplishments during the Program. The report must be submitted prior to the last day of the undergraduate student's participation in the SURF NIST Gaithersburg Program, at a symposium specifically organized for the student presentations, or to the student's mentor in the case of extenuating circumstances preventing the student from attending the symposium. The level of detail should allow for NIST's assessment of the overall success of the Program.

b. OMB Circular A-133 Audit Requirements. Single or program-specific audits shall be performed in accordance with the requirements contained in OMB Circular A-133, "*Audits of States, Local Governments, and Non-Profit Organizations*," and the related *Compliance Supplement*. OMB Circular A-133 requires any non-Federal entity (*i.e.*, including non-profit institutions of higher education and other non-profit organizations) that expends Federal awards of $500,000 or more in the recipient's fiscal year to conduct a single or program-specific audit in accordance with the requirements set out in the Circular. Applicants are reminded that NIST, the DoC Office of Inspector General or another authorized Federal agency may conduct an audit of an award at any time.

c. Federal Funding Accountability and Transparency Act of 2006. In accordance with 2 C.F.R. part 170, all recipients of a Federal award made on or after October 1, 2010, are required to comply with reporting requirements under the Federal Funding Accountability and Transparency Act of 2006 (Pub. L. No. 109-282). In general, all recipients are responsible for reporting sub-awards of $25,000 or more. In addition, recipients that meet certain criteria are responsible for reporting executive compensation. Applicants must ensure they have the necessary processes and systems in place to comply with the reporting requirements should they receive funding. Also see the *Federal Register* notice published September 14, 2010, at 75 FR 55663.

VII. Agency Contacts:

Subject Area	Point of Contact
Programmatic and technical questions	Anita Sweigert Phone: (301) 975-4201 Fax: (301) 975-3038 E-mail: anita.sweigert@nist.gov
Electronic application submission	Christopher Hunton Phone: (301) 975-5718 Fax: (301) 840-5976 E-mail: christopher.hunton@nist.gov
Grants rules and regulations	James Browning Phone: (301) 975-8088 Fax: (301) 840-5976 E-mail: james.browning@nist.gov