

## FEDERAL FUNDING OPPORTUNITY

FY 2010 Summer Undergraduate Research Fellowship – NIST Boulder

### **Overview Information**

1. Federal Agency Name(s): Department of Commerce, National Institute of Standards and Technology (NIST)
2. Funding Opportunity Title: Fiscal Year (FY) 2010 Summer Undergraduate Research Fellowship (SURF) NIST Boulder
3. Announcement Type: Initial Announcement
4. Funding Opportunity Number: 2010-SURF-B-01
5. Catalog of Federal Domestic Assistance (CFDA) Number(s): 11.609
6. Dates: February 16, 2010, 5:00 pm Mountain Standard Time

Summary: The Summer Undergraduate Research Fellowship (SURF) NIST Boulder Programs are soliciting applications in the areas of Electronics and Electrical Engineering, Chemical Science and Technology, Physics, Materials Science and Engineering, and Information Technology.

---

### **Full Text of Announcement**

- a. Funding Opportunity Description:

Authority: 15 U.S.C. § 278g-1

The SURF NIST Boulder Programs are soliciting applications in the areas of Electronics and Electrical Engineering, Chemical Science and Technology, Physics, Materials Science and Engineering, and Information Technology.

The SURF programs will provide an opportunity for the NIST laboratories and the National Science Foundation (NSF) to join in a partnership to encourage outstanding undergraduate students to pursue careers in science and engineering. The program will provide research opportunities for students to work with internationally known NIST scientists, to expose them to cutting-edge research and promote the pursuit of graduate degrees in science and engineering. SURF NIST Boulder Program Directors will work with appropriate department chairs, outreach coordinators, and directors of multi-disciplinary academic organizations to identify outstanding undergraduates (including

graduating seniors) who would benefit from off-campus summer research in a world-class scientific environment.

The NIST SURF Boulder Program Directors will work with appropriate department chairs, outreach coordinators, and directors of multi-disciplinary academic organizations to identify outstanding undergraduates (including graduating seniors) who would benefit from Off-campus summer research in a world-class scientific environment.

The objective of the SURF programs is to build a mutually beneficial relationship among the student, the institution, and NIST. NIST's mission is to 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. 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 Electronics and Electrical Engineering Lab (EEEL), the Chemical Science and Technology Lab (CSTL), the Physics Lab (PL), the Materials Science and Engineering Lab (MSEL), and the Information Technology Lab (ITL) to offer unique research and training opportunities for undergraduates, providing them a research-rich environment and exposure to state-of-the-art equipment.

NIST's EEEL 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 EEEL'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.

NIST's CSTL strives to be a world-class research laboratory that is recognized by the nation as the primary source for the chemical, biochemical, and chemical engineering measurements, data, models, and reference standards that are required to enhance U.S. industrial competitiveness in the world market. CSTL is the primary reference laboratory for chemical measurements, entrusted with developing, maintaining, advancing, and enabling the chemical measurement system for the U.S., thereby enhancing industry's productivity and competitiveness, establishing comparability of measurements to facilitate equity of global trade, and improving public health, safety,

and environmental quality. CSTL's activities include: transportation, biomaterials, biotechnology, chemical and allied products, energy systems, environmental technology and systems, health and medical products and services, industrial and analytical instruments and services, forensics, microelectronics, food and nutritional products, international measurement standards, data and informatics, and emerging technologies (nanotechnology, molecular electronics, microfluidics, and combinatorial chemistry).

Attending to the long-term needs of many U.S. high-technology industries, NIST's PL conducts basic research in the areas of quantum, electron, optical, atomic, molecular, and radiation physics. To achieve these goals, PL staff members develop and utilize 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.

NIST's MSEL conducts basic research in the electronic, magnetic, optical, superconducting, mechanical, thermal, chemical, and structural properties of metals, ceramics, polymers, and composites. Much of this applied research is devoted to overcoming barriers to the next technological revolution, in which individual atoms and molecules will serve as the fundamental building blocks of devices. Preparation of unique materials by atomic level tailoring of multi-layers, perfect single crystals, and nanocomposites are just some of the future technologies being developed and explored in NIST's MSEL. To achieve these goals, staff develop and utilize highly specialized equipment, such as high resolution electron microscopes, atomic force microscopes, neutron scattering instruments, x-ray diffraction sources, lasers, magnetometers, plasma furnaces, melt spinners, molecular beam epitaxy systems, and thermal spray systems. Research projects can be theoretical or experimental and will range in focus from the structural, chemical, and morphological characterization of advanced materials made in the NIST laboratories to the accurate measurement of the unique properties possessed by these special materials.

NIST's ITL responds to industry and user needs for objective, neutral tests for information technology. These are enabling tools that help companies produce the next generation of products and services, and that 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 communications 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.

SURF NIST Boulder 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 this partnership 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 a doctorate in physics, chemistry, materials science, engineering, mathematics, or computer science, and to consider research careers.

b. Award Information

Funds budgeted for payments to students under this program are stipends, not salaries. The SURF NIST Boulder Programs will not authorize funds for indirect costs or fringe benefits. The stipend of \$8000 includes a fellowship of \$4500 plus \$3500 for all expenses associated with travel and subsistence. Once they receive their awards, college and university grant recipients are expected to provide the full stipend to participating students in one lump sum before May 24, 2010, the start of the SURF NIST Boulder Programs. NIST will disburse funds to college and university awardees via the Automated Standard Application for Payments (ASAP) system.

The table below summarizes the anticipated funding from the National Science Foundation (NSF) and NIST to operate the SURF NIST Boulder Programs, broken out by Laboratory, subject to program approval and availability of NIST and/or NSF funding.

Laboratory	Anticipated NSF Funding	Anticipated NIST Funding	Total Program Funding	Anticipated Number of Awards
EEEL	\$40,000	\$40,000	\$80,000	10
PL	\$20,000	\$20,000	\$40,000	5
CSTL	\$8,000	\$8,000	\$16,000	2
MSEL	\$16,000	\$16,000	\$32,000	4
ITL	\$4,000	\$4,000	\$8,000	1

The actual number of awards made under this announcement will depend on the proposed budgets and the availability of funding. For the SURF NIST Boulder Programs described in this notice, it is expected that individual awards to institutions will be \$8000 times the number of participating students from that institution.

The SURF NIST Boulder Programs are anticipated to run from May 24, 2010 through August 6, 2010; adjustments may be made to accommodate specific academic schedules (e.g., some 11-week cooperative agreements shifted to begin after the regular start in order to accommodate institutions operating on quarter systems).

b. Eligibility Information

## 1. Eligible Applicants

The SURF NIST Boulder Programs are open to colleges and universities in the United States and its territories with degree granting programs in materials science, chemistry, engineering, computer science, mathematics, or physics. Participating students must be U.S. citizens or permanent U.S. residents.

The SURF NIST Boulder Programs focus on undergraduate fellows. Graduating seniors are eligible to participate but the likelihood of funds for their possible participation is extremely limited. Up to approximately three such participants might be considered if funds become available. If so, NIST will give priority to previous SURF participants.

2. Cost Sharing or Matching: The SURF NIST Boulder program does not require any matching funds.

## d. Application and Submission Information

### 1. Address to Request Application Package

Users of Grants.gov ([www.grants.gov](http://www.grants.gov)) will be able to download a copy of the application package, complete it off-line, and then upload and submit the application package and associated proposal information via the Grants.gov website.

For electronic submission - Applicants should follow the Application Instructions provided at Grants.gov when submitting a response to this funding opportunity. Applicants are 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.

A paper copy of the application package may be obtained by contacting Ms. Cynthia Kotary, Administrative Coordinator, SURF NIST Boulder Programs, National Institute of Standards and Technology, 325 Broadway, Mail Stop 104, Boulder, CO 80305-3337, Tel: (303) 497-3319, E-mail: [kotary@boulder.nist.gov](mailto:kotary@boulder.nist.gov). Complete applications forms will be available on the SURF NIST Boulder Website: <http://www.nist.gov/surfboulder/>.

## 2. Content and Form of Application Submission

All SURF NIST Boulder Programs proposals are submitted to the Administrative Coordinator listed in the address above. Proposals should include the required forms described below under "Other Submission Requirements" and the following:

(A) Student Information (student's name and university should appear on all of these documents):

(1) student application information cover sheet;

- (2) academic transcript for each student nominated for participation (it is recommended that students have a G.P.A. of 3.0 or better, out of a possible 4.0);
- (3) a statement of motivation and commitment from each student to participate in the SURF NIST Boulder Program, including a description of the student's prioritized research interests;
- (4) a resume for each student;
- (5) two letters of recommendation for each student; and
- (6) confirmation of U.S. citizenship or permanent legal resident status for each student (copy of passport, green card, or birth certificate).

(B) Information About the Applicant Institution:

- (1) description of the institution's education and research programs; and
- (2) a summary list of the student(s) being nominated, with one paragraph of commentary about each student from a dean or department chair that describes why the students would be successful in the SURF program.

Institution proposals will be separated into student/institution packets. Each student/institution packet will be comprised of the required application forms, including a complete copy of the student information and a complete copy of the institution information. The student/institution packets will be directed to a review committee of NIST staff appointed by the SURF NIST Boulder Directors.

3. Submission Dates and Times: All SURF NIST Boulder Program applications, paper and electronic, must be received no later than 5:00 p.m. Mountain Standard Time February 16, 2010.

This deadline applies to any mode of proposal submission, including courier, express mailing, and electronic. Do not wait until the last minute to submit a proposal. NIST will not make any allowances for late submissions, including incomplete Grants.gov registration. Any proposals not received by the due date will not be considered and will be returned to the applicant without review.

Important: All applicants, both electronic and paper, should be aware that adequate time must be factored into applicant schedules for delivery of the application. Electronic applicants are advised that volume on Grants.gov is currently extremely heavy, 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. Paper applicants should allow adequate time to ensure a paper application will be received on time, taking into account that guaranteed overnight carriers are not always able to fulfill their guarantees.

4. Intergovernmental Review: Executive Order 12372: Applications under this program are not subject to Executive Order 12372, "Intergovernmental Review of Federal Programs."

5. Funding Restrictions: The SURF NIST Boulder program will not authorize funds for indirect costs or fringe benefits.

6. Other Submission Requirements: Applications that are sent via surface mail should be sent to:

Ms. Cynthia Kotary, Administrative Coordinator, SURF NIST Boulder Programs, National Institute of Standards and Technology, 325 Broadway, Mail Stop 104, Boulder, CO 80305-3337.

### **Instructions for Applying for the NIST Announcement 2010-SURF-B-01:**

The following forms are available as part of the Grants.gov application kit and can be completed through the download application process.

- SF-424, Application for Federal Assistance
- SF-424A, Budget Information – Nonconstruction Programs
- SF-424B, Assurances – Nonconstruction Programs
- CD-511, Certification Regarding Lobbying

The list of certifications and assurances referenced in item 21 of the SF-424 is contained in the SF-424B.

**In order for an application to be considered complete it must meet all the application documentation requirements stated in the Federal Funding Opportunity notice.**

Applicant may choose to scan or create the necessary documents and then attach them to the application in Grants.gov. **The following forms and documents are required, but are not available on Grants.gov:**

Institutional Description and Formal Proposal

Student Information – one of each for each student that is being nominated:

- Student application form (can be found at <http://www.nist.gov/surfboulder>)
- Official transcript
- Personal statement
- Resume
- Two letters of recommendation
- Verification of citizenship or legal permanent resident

If you choose to apply via Grants.gov all requirements of the application must be included.

Applicants may choose to scan or create the necessary documents and then attach them to the application in Grants.gov. Applicants 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 a proposal is received does not provide information about whether attachments have been received.

For further information or questions regarding applying electronically for the 2010-SURF-B-01 announcement please contact Christopher Hunton at 301-975-5718, e-mail [christopher.hunton@nist.gov](mailto:christopher.hunton@nist.gov).

**Applicants are strongly encouraged to start early and not to wait until the approaching due date before logging on and reviewing the instructions for submitting an application through [Grants.gov](http://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 from 3 to 5 business days. If problems are encountered, the registration process can take up to 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](http://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 at 800-518-4726 for immediate assistance. 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 with using the Grants.gov, you may also contact [support@grants.gov](mailto:support@grants.gov).

Please refer to important information in "Submission Dates and Times" above to help ensure your application is received on time.

#### e. Application Review Information

Evaluation Criteria: For the SURF NIST Boulder Programs, the evaluation criteria are as follows:

(A) Evaluation of Student's Academic Ability and Commitment to Program Goals (80%): Includes evaluation of completed course work; expressed research interest; compatibility of the expressed research interest with SURF NIST Boulder research areas; research skills; grade point average in courses relevant to the SURF NIST Boulder program; career goals; honors and activities;



(B) Evaluation of Applicant Institution's Commitment to Program Goals (20%): Includes evaluation of the institution's academic department(s) relevant to the discipline(s) of the student(s).

## Review and Selection Process

First, all applications received in response to this announcement will be reviewed to determine whether or not they are complete and responsive to the scope of the stated program objectives. Incomplete or non-responsive proposals will not be reviewed for technical merit, and the applicant will be so notified. The Program will retain one copy of each non-responsive application for three years for record keeping purposes.

Second, each SURF student/university packet will be reviewed by at least three independent, objective NIST employees, who are knowledgeable in the scientific areas of the program and are able to conduct a technical review of each student/university packet based on the Evaluation Criteria described in this funding opportunity notice. The normalized scores based on this merit review will be averaged for each student/institution applicant packet, creating a rank order. The Selecting Official, the Acting Director of NIST Electronics and Electrical Engineering Laboratory, shall award in the rank order unless a proposal is justified to be selected out of rank order based upon one or more of the following factors: availability of funding, and balance or distribution of funds by research or technical disciplines.

The final approval of selected applications and award of financial assistance will be made by the NIST Grants Officer based on compliance with application requirements as published in this notice, compliance with applicable legal and regulatory requirements, and whether the recommended applicants appear to be responsible. Applicants may be asked to modify objectives, work plans, or budgets and provide supplemental information required by the agency prior to award. The decisions of the Grants Officer are final.

Unsuccessful applicants will be notified in writing. The Program will retain one copy of each unsuccessful application for three years for record keeping purposes.

## f. Award Administration Information

### 1. Award Notices

Successful finalists will receive a cooperative agreement award document from the Grant Officer. The document will be mailed via surface mail in triplicate. The recipient should have an authorized official at the organization sign and return two copies to the address listed in the award document. The award document will also include the standard terms and conditions, general terms and conditions (if any), and special award conditions (if any) that are applicable.

## 2. Administrative and National Policy Requirements

**The Department of Commerce Pre-Award Notification Requirements for Grants and Cooperative Agreements:** The Department of Commerce 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 solicitation. On the form SF-424 items 8.b. and 8.c., the applicant's 9-digit Employer/Taxpayer Identification Number (EIN/TIN) and 9-digit Dun and Bradstreet Data Universal Numbering System (DUNS) number must be consistent with the information on the Central Contractor Registration (CCR) ([www.ccr.gov](http://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 proposal is selected for funding. Please confirm that the EIN/TIN and DUNS number are consistent with the information on the CCR and ASAP.

**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 at 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 Department of Commerce Pre-Award Notification Requirements, 73 Fed. Reg. 7696 (Feb. 11, 2008). Questions about these requirements may be directed to the Counsel for NIST, 301-975-2803.

Any use of NIST-owned intellectual property by a proposer 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 notice, 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.

**Research Projects Involving Human Subjects, Human Tissue, Data or Recordings Involving Human Subjects:** Any proposal that includes research involving human subjects, human tissue, data or recordings involving human subjects must meet the requirements of the Common Rule for the Protection of Human Subjects, codified for

the Department of Commerce at 15 C.F.R. Part 27. In addition, any proposal 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 Presidential statements of policy on these topics.

NIST will accept the submission of human subjects protocols that have been approved by Institutional Review Boards (IRBs) possessing a current, valid Multiple Project Assurance (MPA) or Federal-wide Assurance (FWA) from DHHS. NIST will not issue a single project assurance (SPA) for any IRB reviewing any human subjects protocol proposed to NIST.

President Obama has issued Executive Order No. 13,505 (74 FR. 10667, March 9, 2009), revoking previous Executive Orders and Presidential statements regarding the use of human embryonic stem cells in research. On July 30, 2009, President Obama issued a memorandum directing that agencies that support and conduct stem cell research adopt the "National Institutes of Health Guidelines for Human Stem Cell Research" (NIH Guidelines), which became effective on July 7, 2009, "to the fullest extent practicable in light of legal authorities and obligations." On September 21, 2009, the Department of Commerce submitted to the Office of Management and Budget a statement of compliance with the NIH Guidelines. In accordance with the President's memorandum, the NIH Guidelines, and the Department of Commerce statement of compliance, NIST will support and conduct research using only human embryonic stem cell lines that have been approved by NIH in accordance with the NIH Guidelines and will review such research in accordance with the Common Rule and NIST implementing procedures, as appropriate. NIST will not support or conduct any type of research that the NIH Guidelines prohibit NIH from funding. NIST will follow any additional policies or guidance issued by the current Administration on this topic.

**Research Projects Involving Vertebrate Animals:** Any proposal that includes research involving 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, 2101 Constitution Avenue, NW., Washington, D.C. 20075. In addition, such proposals must meet the requirements of the Animal Welfare Act (7 § 2131 et seq.), 9 C.F.R. Parts 1, 2, and 3, and if appropriate, 21C.F.R. Part 58. These regulations do not apply to proposed research using pre-existing 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.

### **Limitation of Liability**

Funding for the programs listed in this notice is contingent upon the availability of Fiscal Year 2010 appropriations. NIST issues this notice subject to the appropriations made available under the current continuing resolution, H.R. 2918, "Continuing Appropriations Resolution, 2010," Public Law 111-68, as amended by H.R. 2996, "Further Continuing Appropriations, 2010," Public Law 111-88. NIST anticipates making awards for the program listed in this notice provided that funding for the program is continued beyond December 18, 2009, the expiration of the current continuing resolution. In no event will NIST or the Department of Commerce be responsible for proposal preparation costs if this program fails to receive funding or is cancelled because of agency priorities. Publication of this announcement does not obligate NIST or the Department of Commerce to award any specific project or to obligate any available funds."

### 3. Reporting

The successful applicants will be required to complete a SF-425, Federal Financial Report. In addition, each student will be required to complete an abstract that will be submitted and made a part of the official award file and will take the place of the Final Project/Performance report required as part of the closeout procedures of any award.

#### g. Agency Contact(s):

Program questions should be addressed to Ms. Cynthia Kotary, Administrative Coordinator, SURF Boulder Programs, National Institute of Standards and Technology, 325 Broadway, Mail Stop 104, Boulder, CO 80305-3337, Tel: (303) 497-3319, E-mail: [kotary@boulder.nist.gov](mailto:kotary@boulder.nist.gov); Website: <http://www.nist.gov/surfboulder/>. All grants related administration questions concerning this program should be directed to Hope Snowden, NIST Grants and Agreements Management Division at (301) 975-6002 or [hope.snowden@nist.gov](mailto:hope.snowden@nist.gov) or for assistance with using Grants.gov contact [support@grants.gov](mailto:support@grants.gov).