

AFOSR-BAA-2008-6

OVERVIEW INFORMATION

1. Federal Agency Name

Air Force Office of Scientific Research
875 North Randolph Street, Suite 325, Room 3112
Arlington VA 22203-1768

2. Funding Opportunity Title

Fiscal Year 2009 University Nanosat Program

3. Announcement Type

This is the initial announcement - Broad Agency Announcement (BAA)

4. Funding Opportunity Number

AFOSR-BAA-2008-6

5. Catalog of Federal Domestic Assistance (CFDA) Number

12.800

6. Response Dates

- Proposals are due 4:00 PM EST, 31 October 2008

7. Additional Overview Content

The Air Force Office of Scientific Research (AFOSR) manages the basic research investment for the U.S. Air Force (USAF). As a part of the Air Force Research Laboratory (AFRL), AFOSR's technical experts foster and fund research within the Air Force Research Laboratory, universities, and industry laboratories to ensure the transition of research results to support USAF needs.

AFOSR announces a fiscal year 2009 competition for research to promote and sustain university research and education focused on small satellites (nanosats) and related technologies. The program description is found in Section I of this announcement. It is expected that multiple awards will be made.

AFOSR will not issue paper copies of this announcement. AFOSR and partner agencies involved in this program reserve the right to select and fund for award all, some, or none of the proposals in response to this announcement. AFOSR and partner agencies provide no funding for direct reimbursement of proposal development costs. Any material submitted in response to this BAA will not be returned. It is AFOSR and partner agencies policy to treat all proposals as sensitive competitive information and to disclose their contents only for the purposes of evaluation.

FULL TEXT OF ANNOUNCEMENT

I. Funding Opportunity Description

AFOSR, in conjunction with the AFRL Space Vehicles Directorate (AFRL/RV), and the American Institute of Aeronautics and Astronautics (AIAA) announces a program to promote and sustain university research and education focused on small satellites (nanosats) and related technologies. The primary outcome of individual projects funded under this program is the design, fabrication and functional testing of a nanosat. Secondary objectives are to foster research in enabling technologies for nanosats and the design of experiments that can be performed by nanosats in orbit. In a related activity, AIAA will sponsor a competition to select a small number of nanosats to be prepared for space launch and operation. AFRL/RV will work actively with program participants to promote space-worthy design and fabrication and to prepare selected nanosats for launch.

Teaming by a maximum of two universities is an acceptable option. In this case, each university must produce its own nanosat and must apply individually to AFOSR. Individual grants will be made to each university. The team of universities will share as a team the constraints of a single entry into the nanosat competition, thereby splitting available design space between team members. Each such proposal should detail the overall team objectives and the role of each university. One institution should be indicated as the Point of Contact (POC) for team operations.

Proposing universities may elect to design experiments to be performed (should there ultimately be a launch) on the nanosat, including the demonstration of novel space technologies. To determine which technologies and demonstrations are of interest to the participating agencies, contact Kent Miller at Kent.Miller@afosr.af.mil. The incorporation of such technologies is not mandatory for proposals. However, this may affect one of the evaluation criteria. (See below).

For this program 'nanosat' will be used to indicate satellites having a mass of no more than 50 kg and with linear dimensions of 50x50x60 cm or less. These restrictions are chosen to maintain a focus on small satellites, to keep project costs reasonable and to facilitate the potential launch of the nanosat. It is anticipated that several awards will be made. The plan is to hold both the AFOSR solicitation and the AIAA competition on a two year cycle.

II. Award Information

It is anticipated the awards will be made in the form of grants to universities. Therefore, applications submitted as a result of this announcement will fall under the Department of Defense Grant and Agreement Regulations (DoDGARs). Each project will be funded at no more than \$55,000 per year for a maximum of two years. Collaborations with government agencies or industry are highly desirable.

III. Eligibility Information

1. **Eligibility.** This competition is open only to and full proposals are to be submitted only by, U.S. institutions of higher education (universities) including DoD institutions of higher education, with degree-granting programs in science and/or engineering. Proposals are encouraged from Historically Black Colleges and Universities and Minority Institutions (HBCU/MI). However, no funds are specifically allocated for HBCU/MI participation.
2. **Cost Sharing.** Cost sharing is not required.

IV. Application and Submission Information

1. Address to Request Announcement Package – This announcement may be accessed from the Internet at the Grants.gov web site (<http://www.grants.gov>). See ‘For Electronic Submission’ below.

2. Marking of Proposals - Every effort will be made to protect the confidentiality of the proposal and any evaluations. However, under the Freedom of Information Act (FOIA) requirements, such information (or portions thereof) may potentially be subject to release. Offerors should apply the restrictive notice prescribed in the provision of FAR 52.215-1(e) Instructions to Offerors-Competitive Acquisition.

3. Content and Form of Application Submission

Full Proposal format should be as follows:

- Paper Size - 8.5 x 11 inch paper
- Margins - 1 inch
- Spacing - single or double spaced
- Font - Times New Roman, 10 or 12 point
- Number of Pages - no more than twenty-five (25) single-sided pages of program description. NOTE: The SF 424 forms are not included in this 25 page limit. Pages in excess of the page limit will not be evaluated.

Full Proposal Submission: Content and Format of Applications

NOTE: Full Proposals may be submitted electronically via grants.gov or in hardcopy form, but not both.

(1) Advance Preparation for Electronic Submission - Electronic proposals must be submitted through Grants.gov. There are several one-time actions your organization must have completed

before it will be able to submit applications through Grants.gov. Well before the submission deadline, you should verify that the persons authorized to submit proposals for your organization have completed those actions. If not, it may take them up to 21 days to complete the actions before they will be able to submit applications.

The process your organization must complete includes obtaining a Dun and Bradstreet Data Universal Numbering System (DUNS) number, registering with the Central Contract Registry (CCR), registering with the credential provider, and registering with Grants.gov. (Designating an E-Business Point of Contact (EBiz POC) and obtaining a special password called MPIN are important steps in the CCR registration process.) Go to http://www.grants.gov/applicants/get_registered.jsp. Use the Grants.gov Organization Registration Checklist at <http://www.grants.gov/section3/OrganizationRegCheck.pdf> to guide you through the process. To submit a proposal to through Grants.gov, applicants will need to download Adobe Reader. This small, free program will allow you to access, complete, and submit applications electronically and securely. To download a free version of the software, visit the following web site: http://www.grants.gov/help/download_software.jsp. Consult Grants.gov to ensure you have the required version of Adobe Reader installed. Should you have questions relating to the registration process, system requirements, how an application form works, the submittal process or Adobe Reader forms, call Grants.gov at 1-800-518-4726 or support@Grants.gov for updated information.

(2) Submitting the Application

(a) For Electronic Submission – Application forms and instructions are available at Grants.gov. To access these materials, go to <http://www.grants.gov>, select “Apply for Grants”, and then follow the instructions. In the Grants.gov search function, enter the funding opportunity number for this announcement (AFOSR-BAA-2008-6). In the Search Results, click on the Opportunity title: UNIVERSITY NANOSAT PROGRAM. On the next page, click on the box marked "Application" in the upper right hand corner of the page. Then click on 'download' under the heading 'Instructions and Application' to download the application package. You can also search for the CFDA Number 12.800, Air Force Defense Research Sciences Program. On the Selected Grant Applications for Download page, click on 'download' under the heading 'Instructions and Applications' to download the application package.

The funding opportunity will be listed. Select the Competition ID ‘NANOSAT’ to download the instructions and application.

All attachments to all forms must be submitted in PDF format (Adobe Portable Document Format). Grants.gov provides links to PDF file converters at this site: <http://grants.gov/agencies/asoftware.jsp#3>.

(b) For Hard Copy Submission – For hard copy submission, the original proposal and 10 copies must be delivered to the attention of the program manager at the Air Force Office of Scientific Research at the following address:

AFOSR (Attn: Dr. Kent Miller)
Air Force Office of Scientific Research
875 North Randolph Street, Room 3112
Arlington VA 22203

In case of difficulties in determining the appropriate AFOSR addressee, proposals may be submitted to:

AFOSR/PKC
875 Randolph Street, Room 3112
Arlington VA 22203-1954

(c) SF 424 Research and Related (R&R) – The SF 424 (R&R) form must be used as the cover page for all electronic and hard copy proposals. No other sheets of paper may precede the SF 424 (R&R) for a hard copy proposal. A signed copy of the SF 424 (R&R) should be submitted with all hardcopy proposals. Complete all the required fields in accordance with the “pop-up” instructions on the form and the following instructions for the specified fields. To see the instructions, roll your mouse over the field to be filled out. You will see additional information about that field. For example on the SF424 (R&R) the Phone Number field says 'PHONE NUMBER (Contact Person): Enter the daytime phone number for the person to contact on matters relating to this application. This field is required.' Mandatory fields will have an asterisk marking the field and will appear yellow on most computers. In grants.gov, some fields will self populate based on the BAA selected. Please fill out the SF 424 first, as some fields on the SF 424 are used to auto populate fields in other forms. The completion of most fields is self-explanatory except for the following special instructions:

- Field 2: The Applicant Identifier may be left blank.
- Field 3: The Date Received by State and the State Application Identified are not applicable to research.
- Field 7: Complete as indicated. If Small Business is selected, please note if the organization is Woman-owned and/or Socially and Economically Disadvantaged. If the organization is a Minority Institution, select "Other" and under “Other (Specify)” note that you are a Minority Institution (MI).
- Field 9: List Air Force Office of Scientific Research as the reviewing agency. This field is pre-populated in grants.gov.
- Field 17: Choose ‘No’. Check 'Program is Not Covered By Executive Order 12372'.
- Attachments: All attachments to all Grants.gov forms must be submitted in PDF format (Adobe Portable Document Format). To convert attachments into PDF format, Grants.gov provides a list of PDF file converters at http://www.grants.gov/resources/download_software.jsp

A signed copy of the SF 424 (R&R) should be submitted with all hardcopy proposals.

(d) Certification – All awards require some form of certifications of compliance with national policy requirements. For assistance awards, i.e., grants and cooperative agreements, proposers using the SF 424 (R&R) are providing the certification required by 32 CFR Part 28 regarding lobbying. (The full text of this certification may be found at <http://www.wpafb.af.mil/shared/media/document/AFD-070817-127.pdf>). If you have lobbying activities to disclose, you must complete the optional form SF-LLL, Standard Form – LLL, ‘Disclosure of Lobbying Activities’ in the downloaded Adobe forms package.

(e) Research and Related (R&R) Other Forms – The following other forms must be used for all electronic and hard copy proposals: R&R Senior/Key Person Profile form, R&R Project/Performance Site Locations form, R&R Other Project Information form and the R&R Budget form. The R&R Subaward Budget Attachment Forms is required when subawardees are involved in the effort. The SF-LLL form is required when applicants have lobbying activities to disclose. PDF copies of all forms may be obtained at the grants.gov website.

(f) R&R Senior/Key Person Profile Form – Complete the R&R Senior/Key Person Profile Form for those key persons who will be performing the research. Information about an individual is subject to the requirements of the Privacy Act of 1974 (Public Law 93 579). The information is requested under the authority of Title 10 USC, Sections 2358 and 8013. The principal purpose and routine use of the requested information are for evaluation of the qualifications of those persons who will perform the proposed research. Failure to provide such information will delay award. For the principal investigator and each of the senior staff, provide a short biographical sketch and a list of significant publications (vitae) and attach it to the R&R Senior/Key Person Profile Form.

(g) R&R Project/Performance Site Locations Form – Complete all information as requested.

(h) R&R Other Project Information Form – Human Subject/Animal Use and Environmental Compliance.

Human Subject Use. Each proposal must address human subject involvement in the research by addressing Field 1 and 1a of the R&R Other Project Information Form. If Field 1 indicates “Yes”, the Air Force must receive a completed OMB No. 0990-0263 form before a contract, grant, or cooperative agreement may be awarded to support research involving the use of human subjects. Attach the document to the R&R Other Project Information Form. If using grants.gov, a completed OMB No. 0990-0263 form shall be attached in field 11 of the R&R Other Project Information Form. Refer any questions regarding human subjects to the AFOSR Directorate of Mathematics, Information and Life Sciences at (703) 696-7720.

Animal Use. Each proposal must address animal use protocols by addressing Field 2 and 2a of the R&R Other Project Information Form. If selected for award, additional documentation in accordance with Air Force standards will be required. Refer any questions regarding animal subjects to the AFOSR Directorate of Mathematics, Information and Life Sciences at (703) 696-7720.

Environmental Compliance. Federal agencies making contract, grant, or cooperative agreement awards and recipients of such awards must comply with various environmental requirements. The National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. Sections 4321-4370 (a), requires that agencies consider the environmental impact of “major Federal actions” prior to any final agency decision. With respect to those awards which constitute “major Federal actions,” as defined in 40 CFR 1508.18, federal agencies may be required to comply with NEPA and prepare an environmental impact statement (EIS) even if the agency does no more than provide grant funds to the recipient. Questions regarding NEPA compliance should be referred to the AFOSR legal staff at (703) 696-9705. Most research efforts funded by AFOSR will, however, qualify for a categorical exclusion from the need to prepare an EIS. Air

Force instructions/regulations provide for a categorical exclusion for basic and applied scientific research usually confined to the laboratory, if the research complies with all other applicable safety, environmental and natural resource conservation laws. Each proposal shall address environmental impact by filling in fields 4a through 4d of the R&R Other Project Information Form. This information will be used by AFOSR to make a determination if the proposed research effort qualifies for categorical exclusion.

Abstract - Include a concise (not to exceed 300 words) abstract that describes the research objective, technical approaches, anticipated outcome and impact of the specific research. In the header of the abstract include the program manager's name and directorate who should receive the proposal for consideration and evaluation. Attach the Abstract to the R&R Other Project Information form in field 6.

(i) R&R Other Project Information Form – Project Narrative Instructions

Project Narrative – Describe clearly the research including the objective and approach to be performed keeping in mind the evaluation criteria listed in Section V of this announcement. Also briefly indicate whether the intended research will result in environmental impacts outside the laboratory, and how the proposer will ensure compliance with environmental statutes and regulations. Attach the proposal narrative to R&R Other Project Information form in field 7.

Project Narrative - Statement of Objectives – Describe the actual research to be completed, including goals and objectives, on one-page titled Statement of Objectives. This statement of objectives may be incorporated into the award instead of incorporating the entire technical proposal. Active verbs should be used in this statement (for example, “conduct” research into a topic, “investigate” a problem, “determine” to test a hypothesis). It should not contain proprietary information.

Project Narrative - Research Effort – Describe in detail the research to be performed. State the objectives and approach and their relationship and comparable objectives in progress elsewhere. Additionally, state knowledge in the field and include a bibliography and a list of literature citations. Discuss the nature of the expected results. The adequacy of this information will influence the overall evaluation. Proposals for renewal of existing support must include a description of progress if the proposed objectives are related.

Project Narrative – Principal Investigator (PI) Time. PI time is required. List the estimate of time the principal investigator and other senior professional personnel will devote to the research. This shall include information pertaining to other commitments of time, such as sabbatical or extended leave; and proportion of time to be devoted to this research and to other research. Awards may be terminated when the principal investigator severs connections with the organization or is unable to continue active participation in the research. State the number of graduate students for whom each senior staff member is responsible. If the principal investigator or other key personnel are currently engaged in research under other auspices, or expect to receive support from other agencies for research during the time proposed for AFOSR support, state the title of the other research, the proportion of time to be devoted to it, the amount of support, name of agency, dates, etc. Send any changes in this information as soon as they are

known. Submit a short abstract (including title, objectives, and approach) of that research and a copy of the budget for both present and pending research projects.

Project Narrative – Facilities. Describe facilities available for performing the proposed research and any additional facilities or equipment the organization proposes to acquire at its own expense. Indicate government-owned facilities or equipment already possessed that will be used. Reference the facilities contract number or, in the absence of a facilities contract, the specific facilities or equipment and the number of the award under which they are accountable.

Project Narrative – Special Test Equipment. List special test equipment or other property required to perform the proposed research. Segregate items to be acquired with award funds from those to be furnished by the Government. When possible and practicable, give a description or title and estimated cost of each item. When information on individual items is unknown or not available, group the items by class and estimate the values. In addition, state why it is necessary to acquire the property with award funds.

Project Narrative – Equipment. Justify the need for each equipment item. Additional facilities and equipment will not be provided unless the research cannot be completed by any other practical means. Include the proposed life expectancy of the equipment and whether it will be integrated with a larger assemblage of apparatus. If so, state who owns the existing apparatus.

Project Narrative – High Performance Computing Availability. Researchers that are supported under an AFOSR grant or contract, and meet certain restrictions, are eligible to apply for special accounts and participation in a full-spectrum of activities within the DOD high performance computing modernization program. This program provides, at no cost to the user, access to a range of state-of-the-art high performance computing assets and training opportunities that will allow the user to fully exploit these assets. Details of the capabilities of the program can be found at the following Internet address: <http://www.hpcmo.hpc.mil>. Researchers needing high performance cycles should address the utilization of this program to meet their required needs. AFOSR program managers will facilitate the establishment of accounts awarded.

(j) R&R Budget Form – Estimate the total research project cost. Categorize funds by year and provide separate annual budgets for projects lasting more than one year. In addition to the Research & Related Budget forms available on Grants.gov, the budget proposal should include a budget justification for each year, clearly explaining the need for each item. Applicants who enter a fee on Part J of the budget will not be eligible to receive a grant or cooperative agreement. Should a grant be awarded AFOSR will make payments to educational and non-profit recipients based upon a predetermined payment schedule. Payments will normally be made quarterly in advance of performance, based upon a spending profile which must be provided as part of the proposal. Payments should be limited to the amounts needed to conduct research during each respective period. Educational and Non-profit organizations shall submit a spending profile with their cost proposal. Attach the budget justification and/or spending profile to Section K of the R&R Budget form.

It is anticipated that the awards will have an initial performance period of eleven months with one fourteen month option, assuming a 1 January 2009 effective date. However, the start date is subject to negotiations. Individual budgets should be provided for each period.

4. Other Submission Requirements

Proposals submitted in whole or in part by electronic media (computer disk or tape, facsimile machine, electronic mail, etc.) will not be accepted (unless the full proposal is submitted electronically through Grants.gov).

5. Application Receipt Notices.

a. For Electronic Submission - The applicant's approved account holder for grants.gov will receive a confirmation page upon completing the submission to Grants.gov. This confirmation page is a record of the time and date stamp that is used to determine whether the proposal was submitted by the deadline.

Proposals received after the due date and time shall be governed by the provisions of FAR 52.215-1(c)(3).

After an institution submits an application, Grants.gov generates a submission receipt via email and also sets the application status to "Received". This receipt verifies the Application has been successfully delivered to the Grants.gov system. Next, Grants.gov verifies the submission is valid by ensuring it does not contain viruses, the opportunity is still open, and the applicant login and applicant DUNS number match. If the submission is valid, Grants.gov generates a submission validation receipt via email and sets the application status to "Validated". If the application is not validated, the application status is set to "Rejected". The system sends a rejection email notification to the institution and the institution must resubmit the application package. Applicants can track the status of their application by logging in to Grants.gov.

b. For Hard Copy Submission – An applicant that submits a hard copy proposal to AFOSR will receive an email from the agency approximately ten days after the proposal due date to acknowledge receipt of the proposal and provide the agency's assigned tracking number. The email is sent to the authorized representative for the applicant institution. A hard copy proposal received at an agency's listed mailing address after the deadline, if one is specifically listed in the announcement, is "late" and will not be considered for an award, except for cases in which there is acceptable evidence to establish that the proposal:

- a. Was delivered to the agency and was under the agency's control prior to the deadline: or
- b. Was sent to the agency's listed mailing address by the U.S. Postal Service Express Mail three or more business days prior to the date specified for the receipt of the proposals. The term "business days" excludes weekends and U.S. federal holidays.

V. Application Review Information

Proposals submitted under this BAA are evaluated through a peer or scientific review process, and selected for award on a competitive basis according to Public Law 98-369, Competition in Contracting Act of 1984, 10 USC 2361, and 10 USC 2374. Proposals may be evaluated by program managers at EOARD/AOARD and the appropriate AFRL Technology Directorates. Additionally, proposals may be evaluated by outside evaluators retained by AFOSR which may include support contractor personnel.

1. Evaluation Criteria

Full proposals responding to this BAA will be evaluated using the following criteria. The first two evaluation factors are of equal importance:

- (1) The scientific and technical excellence of nanosat plans and objectives;
- (2) Relevant experience of the Principal Investigator and major associates; and
- (3) Educational impact (both undergraduate and graduate) of the project;

The following four evaluation criteria are each of lesser importance than any of the above three, but are equal to each other:

- (4) Quality, relevance (to AFRL and NASA) of plans for space operations;
- (5) The realism and reasonableness of cost (cost sharing is not a factor in the evaluation).

No further evaluation criteria will be used in source selection. The technical and cost information will be analyzed simultaneously during the evaluation process.

2. Review Process

Full proposals will be evaluated by a scientific review process involving personnel at the appropriate AFRL technology Directorates and by outside evaluators retained by AFOSR.

3. Selection Process

Full proposals will be selected on a competitive basis by a panel of experts from AFRL after consideration of the recommendation of the scientific reviews.

VI. Award Administration Information

1. Award Notices.

Should your proposal be selected for award, the principal investigator will receive a letter from the Technical Directorate stating this information. This is not an authorization to begin work.

Your business office will be contacted by the grant or contracting officer to negotiate the terms of your award.

2. Reporting Requirements.

Grants typically require annual and final technical reports, financial reports, and final patent reports. Copies of publications and presentations should be submitted.

Additional deliverables may be required based on the research being conducted.

VII. Agency Contacts

Should you have questions about a technical research area, contact the program manager Dr. Kent Miller at (703-696-8573) or kent.miller@afosr.af.mil. Should you have questions about the BAA or procedures for submission of a proposal, contact Ricky Christie at (703) 696-9728 or ricky.christie@afosr.af.mil.

VIII. Other Information

1. The cost of proposal preparation in response to this Announcement is not considered an allowable direct charge to any resulting award. Such cost is, however, an allowable expense to the normal bid and proposal indirect cost specified in FAR 31.205-18, or OMB Circular A-21, Cost Principles for Educational Institutions or OMB Circular A-122, Cost Principles for Nonprofit Organizations.
2. Every effort will be made to protect the confidentiality of the proposal and any evaluations. However, under the Freedom of Information Act (FOIA) requirements, such information (or portions thereof) may potentially be subject to release. Offerors should apply the restrictive notice prescribed in the provision of FAR 52.215-1(e) Instructions to Offerors-Competitive Acquisition.
3. Only contracting or grants officers are legally authorized to bind the government.
4. Intellectual Property
 - a. Proposers shall identify all aspects of the intellectual property; technical data, hardware, and software that they plan to develop under this award for which the Government will acquire less than unlimited rights and to list specifically what the restrictions are. In the event that proposers do not submit such a list, the Government will assume that it automatically has unlimited rights to all intellectual property, technical data, hardware, and software developed under this award. Furthermore, the Government will assume that it has unlimited rights to all intellectual property, technical data, hardware, and software developed under this award that is not listed.

b. Proposers are advised that proposals containing restrictions on intellectual property are by nature less favorable and valuable to the government. Restrictions will be considered in the evaluation process. If no restrictions are intended, then the proposer should state this fact.

5. The AFOSR website is available at <http://www.wpafb.af.mil/AFRL/afosr/>.

6. Responses should reference Broad Agency Announcement AFOSR BAA 2008-6.

7. Prospective awardee shall be registered in the CCR database prior to award, during performance, and through final payment of any award resulting from this announcement. Offerors may obtain information on registration and annual confirmation requirements via the Internet at <http://www.ccr.gov> or by calling 1-888-227-2423, or 269-961-5757.