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The U.S. Department of Justice, Office of Justice Programs, National Institute of Justice is seeking applications for funding for research and development in the forensic analysis and investigation of fire scenes. This program furthers the Department's mission by sponsoring research to provide objective, independent, evidence-based knowledge and tools to meet the challenges of crime and justice, particularly at the State and local levels.

# **Solicitation: Research and Development in the Forensic Analysis of Fire and Arson Evidence**

## **Eligibility**

(See "Eligibility," page 3)

## **Deadline**

All applications are due **November 14, 2007, 11:59 p.m. eastern time.**

## **Contact Information**

For assistance with the requirements of this solicitation, contact Dr. Peter Cohen, Program Manager, General Forensic R & D Program, Investigative and Forensic Science Division, at 202-305-9053 or [peter.cohen@usdoj.gov](mailto:peter.cohen@usdoj.gov).

This application must be submitted through Grants.gov. For technical assistance with submitting the application, call the Grants.gov Customer Support Hotline at 1-800-518-4726.

**Grants.gov Funding Opportunity No. 2008-NIJ-1699**

**SL# 000806**

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# Research and Development in the Forensic Analysis of Fire and Arson Evidence

## CFDA No. 16.560

### Overview

The National Institute of Justice (NIJ) is the research, development, and evaluation agency of the U.S. Department of Justice and a component of the Office of Justice Programs (OJP). NIJ provides objective, independent, evidence-based knowledge and tools to enhance the administration of justice and public safety. NIJ solicits proposals to inform its search for the knowledge and tools to guide policy and practice.

NIJ is seeking applications for funding for research and development in fire and arson investigation for criminal justice purposes. This solicitation is aimed at improving the ability of forensic analysts and investigators to locate and identify probative evidence from fire scenes and to enhance the ability of crime laboratories to analyze fire evidence. NIJ is particularly interested in the following areas:

1. New or improved tools and technologies to aid in interpreting a fire scene.
2. Improved understanding of chemical signatures found at fire scenes (e.g., burn pattern analysis).
3. Improvements in the laboratory analysis of fire debris.

### Deadline: Registration

Registering with Grants.gov is a one-time process; however, if you are a first-time registrant it could take up to several weeks to have your registration validated and confirmed and to receive your user password. Start the registration process early to prevent delays that may cause you to miss the application deadline. You must complete these three steps before you are able to register: (1) Register with Central Contractor Registry (CCR), (2) Register yourself as an Authorized Organization Representative (AOR), and (3) Be authorized as an AOR by your organization. For more information, visit [www.grants.gov](http://www.grants.gov). **Note: Your CCR Registration must be renewed once a year. Failure to renew your CCR registration may prohibit submission of a grant application through Grants.gov.**

### Deadline: Application

The due date for applying for funding under this announcement is **November 14, 2007, 11:59 p.m. eastern time.**

### Eligibility

In general, NIJ is authorized to make grants to, or enter into contracts or cooperative agreements with, States (including territories), local governments (including federally

recognized Indian tribal governments that perform law enforcement functions), nonprofit and profit organizations (including tribal nonprofit and profit organizations), institutions of higher education (including tribal institutions of higher education), and certain qualified individuals. Foreign governments, foreign organizations, and foreign institutions of higher education are not eligible to apply.

**Faith-Based and Other Community Organizations:** Consistent with President George W. Bush's Executive Order 13279, dated December 12, 2002, and 28 C.F.R. Part 38, it is DOJ policy that faith-based and other community organizations that statutorily qualify as eligible applicants under DOJ programs are invited and encouraged to apply for assistance awards to fund eligible grant activities. Faith-based and other community organizations will be considered for awards on the same basis as other eligible applicants and, if they receive assistance awards, will be treated on an equal basis with all other grantees in the administration of such awards. No eligible applicant or grantee will be discriminated for or against on the basis of its religious character or affiliation, religious name, or the religious composition of its board of directors or persons working in the organization.

Faith-based organizations receiving DOJ assistance awards retain their independence and do not lose or have to modify their religious identity (e.g., removing religious symbols) to receive assistance awards. DOJ grant funds, however, may not be used to fund any inherently religious activity, such as prayer or worship. Inherently religious activity is permissible, although it cannot occur during an activity funded with DOJ grant funds; rather, such religious activity must be separate in time or place from the DOJ-funded program. Further, participation in such activity by individuals receiving services must be voluntary. Programs funded by DOJ are not permitted to discriminate in the provision of services on the basis of a beneficiary's religion.

Applicants are encouraged to review the Civil Rights Compliance section under "Additional Requirements" in this announcement.

**American Indian Tribes and Alaska Native Tribes and/or Tribal Organizations:** If a grant application is being submitted on behalf of a tribe or tribal organization, a letter or similar document authorizing the inclusion of the tribe or tribal organization named in the application must be included.

## **Specific Information—Research and Development in the Forensic Analysis of Fire and Arson Evidence**

At fire scenes, interpreting the physical attributes of the scene, locating and identifying physical evidence, and analyzing this evidence are crucial in determining whether a fire was intentionally set or accidental. The result of this analysis or interpretation has far-reaching consequences, as it can be used to help determine the guilt or innocence of a suspect. Though there are fire research organizations around the world that investigate fire phenomena, not all of the specific needs of the arson investigation community have been addressed.

As a result, NIJ is soliciting applications for funding for research in the forensic analysis and investigation of fire scenes. Arson investigators would benefit greatly from new or

improved tools and innovations that can be validated, quality controlled, quality assured, and implemented. NIJ's goal is to improve upon the current methods for interpreting, identifying, and analyzing evidence at fire scenes for criminal justice purposes.

Applicants to this solicitation must demonstrate a familiarity with fire scene examination procedures and knowledge of the costs of implementing and maintaining the proposed technology and training required. NIJ strongly encourages researchers to seek guidance from, or partner with, appropriate State or local crime laboratories. Such association fosters a greater understanding of the issues and may strengthen the scope of the proposed research plan. Additional information can be found in the NIJ report "Status and Needs of Forensic Science Service Providers: A Report to Congress," available at [www.ncjrs.gov/pdffiles1/nij/213420.pdf](http://www.ncjrs.gov/pdffiles1/nij/213420.pdf).

### **Areas of Research:**

1. New or improved tools and technologies to aid in interpreting a fire scene include, but are not limited to, the following areas:
  - Fire incident reconstruction.
  - Validation of existing mathematical fire models and the development of new models.
  - Identification of potential evidence in a nondestructive and noninvasive manner.
  - Small and rugged analytical instruments or equipment for onsite presumptive and/or confirmatory analysis of forensic evidence at the scene.
  - Sample location, identification, capture, and stabilization technology "in a kit," suitable for recovery of trace particulate, liquid, chemical, and biological evidence, with immediate partitioning of samples for secondary testing.
  
2. Research that improves the basic and fundamental understanding of fire dynamics/behavior, and of chemical signatures present at fire scenes. Specifically:
  - Ignition studies (e.g., spontaneous ignition and self-heating, transition from smoldering to flaming combustion, ability of electrical sources to ignite exposed fuel, item-to-item ignitability and flame spread) that better characterize ignition sources and their ability to ignite combustible materials.
  - The effects of ventilation (natural and forced) on fire development, fire growth, and determination of origin.
  - The effects of fire (heat, exhaust, ventilation, gas buildup, etc.) on glass.
  - Failure modes and discovery of evidence of failure in gas, electric, oil, coal, and other appliances.
  - Impact of time and exposure since the incident on evidence.
  - Validation of scaling laws and procedures for the use of scale models in fire investigations and analysis.
  - The effects of limited compartment ventilation on burning duration, smoke production, and toxic gas production.
  - Accurate calculation of visibility through smoke.
  - The ability to characterize smoke/soot stains and deposits to identify the source of the soot deposit.

3. Improvements in the forensic laboratory analysis of fire debris. Specifically:

- Methods to identify new analytes of forensic importance.
- Tools to improve the resolution and sensitivity of forensic analysis.
- Tools that provide a quantitative measure/statistical evaluation of forensic comparisons.

**What will *not* be funded:**

1. Provision of training or direct service.
2. Proposals primarily to purchase equipment, materials, or supplies. (Your budget may include these items if they are necessary to conduct applied research, development, demonstration, evaluation, or analysis, but NIJ does not fund proposals that are primarily to purchase these items.)
3. Work that will be funded under another specific solicitation.

**Cost of proposed work:** Total funding for this solicitation and the number of awards made will depend on the availability of funds and the quality of the applications. All awards are subject to the availability of appropriated funds and to any modifications or additional requirements that may be imposed by law. Approximately 8 percent of applications to NIJ's annual Science and Technology solicitations are funded. NIJ funding for an individual research and development project rarely exceeds \$500,000 annually, though total funding for projects requiring several years to complete has exceeded \$1 million or more. If feasible, NIJ recommends that applicants divide the proposed work into discrete phases, with each phase resulting in the delivery of a measurable deliverable. Applicants should try to structure the phases so that the funding required in any fiscal year will not exceed \$500,000. This will enable NIJ to fund the proposed work incrementally, depending on: the quality of the deliverable at the end of each phase, emerging priorities, and the availability of funds. However, applicants should not divide their work if it is not feasible to do so without impairing the technical and programmatic soundness of their approach. Note: Deliverables (e.g., technical reports, proof-of-concept demonstrations, prototypes, etc.) will be required at the end of each phase to enable NIJ to assess the progress of the work and make reasoned determinations as to the suitability of funding the next phase of the work.

A grant made by NIJ under this solicitation may account for up to 100 percent of the total cost of the project. See "Cofunding" under "What an Application Must Include."

**Limitation on use of award funds for employee compensation; waiver:** No portion of any award of more than \$250,000 made under this solicitation may be used to pay any portion of the total cash compensation (salary plus bonuses) of any employee of the award recipient whose total cash compensation exceeds 110% of the maximum annual salary payable to a member of the Federal government's Senior Executive Service (SES) at an agency with a Certified SES Performance Appraisal System for that year. (The salary table for SES employees is available at [opm.gov](http://opm.gov).)

This prohibition may be waived at the discretion of the Assistant Attorney General for the Office of Justice Programs. An applicant that wishes to request a waiver should include a detailed justification in the budget narrative for the application.

## Performance Measures

To assist in fulfilling the Department's responsibilities under the Government Performance and Results Act (GPRA), P.L. 103-62, applicants who receive funding under this solicitation must provide data that measure the results of their work. Performance measures for this solicitation are as follows:

Objective	Performance Measures	Data Grantee Provides
<p>Increasing the basic and fundamental understanding of chemical and/or biological signatures found at fire scenes, and the development of tools and technologies that will allow faster, more reliable, more robust, more informative, less costly or less labor-intensive identification, collection, preservation, and/or analysis of fire evidence for criminal justice purposes.</p>	<ol style="list-style-type: none"> <li>1. Relevance to the needs of the field as measured by whether the grantee's substantive scope did not deviate from the funded proposal or any subsequent agency modifications to the scope.</li> <li>2. Quality of the research as assessed by peer reviewers.</li> <li>3. Quality of management as measured by whether significant interim project milestones were achieved, final deadlines were met, and costs remained within approved limits.</li> </ol>	<ol style="list-style-type: none"> <li>1. A final report providing a comprehensive overview of the project and a detailed description of the project design, data, and methods; a full presentation of scientific findings; and a thorough discussion of the implications of the project findings for criminal justice practice and policy.</li> <li>2. Quarterly financial reports, semi-annual progress reports, and a final progress report.</li> </ol>

## How to Apply

DOJ is participating in the e-Government initiative, one of 25 initiatives included in the President's Management Agenda. Part of this initiative—Grants.gov—is a "one-stop storefront" that provides a unified process for all customers of Federal grants to find funding opportunities and apply for funding.

**Grants.gov Instructions:** Complete instructions can be found at [http://www.grants.gov/applicants/get\\_registered.jsp](http://www.grants.gov/applicants/get_registered.jsp). If you experience difficulties at any point during this process, please call the Grants.gov Customer Support Hotline at **1-800-518-4726**.

**Note: Grants.gov does not support the Microsoft Vista Operating system.** The PureEdge software used by Grants.gov for forms is not compatible with Vista. Also, Grants.gov cannot yet process Microsoft Word 2007 documents saved in the new default format with the extension ".DOCX." Please ensure the document is saved using "Word 97-2003 Document (\*.doc)" format.

**Please also note: OJP's Grants Management System (GMS) does not accept executable file types as application attachments.** OJP's Grants Management System (GMS) downloads applications from Grants.gov and is the system in which OJP reviews applications and manages awarded grants. These disallowed file types include, but are

not limited to, the following extensions: ".com", ".bat", ".exe", ".vbs", ".cfg", ".dat", ".db", ".dbf", ".dll", ".ini", ".log", ".ora", ".sys", and ".zip".

**CFDA Number:** The Catalog of Federal Domestic Assistance (CFDA) number for this solicitation is 16.560, titled "Research and Development in the Forensic Analysis of Fire and Arson Evidence," and the Grants.gov funding opportunity number is **2008–NIJ–1699**.

**A DUNS number is required:** The Office of Management and Budget requires that all businesses and nonprofit applicants for Federal funds include a DUNS (Data Universal Numeric System) number in their application for a new award or renewal of an award. Applications without a DUNS number are incomplete. A DUNS number is a unique nine-digit sequence recognized as the universal standard for identifying and keeping track of entities receiving Federal funds. The identifier is used for tracking purposes and to validate address and point-of-contact information. The DUNS number will be used throughout the grant life cycle. Obtaining a DUNS number is a free, simple, one-time activity. Obtain one by calling 1–866–705–5711 or by applying online at <http://www.dnb.com/us>. Individuals are exempt from this requirement.

## What an Application Must Include

Responding to this solicitation involves a two-step process. The first step involves submitting a concept paper, which will be reviewed by a panel comprising both expert practitioners and technologists. The deadline for the concept paper is **November 14, 2007, 11:59 eastern time**. If the concept paper is recommended and approved, the applicant will be contacted, invited to submit a full proposal, and given a proposal deadline. Extensions to deadlines are generally not granted.

### Concept Paper

A concept paper should capture the essence of the full proposal following the same format (see Full Proposal below). The main difference between the concept paper and the full proposal is that the concept papers are much shorter and do not contain detailed budgets. Though the concept paper should not include a detailed budget or management plan, the program narrative should include a staffing plan and an estimate of the funding required, summarized by phase (if applicable), and a general timeframe for completion of those phases and the project as a whole.

The program narrative section of your concept paper must not exceed 7 double-spaced pages in 12-point font with 1-inch margins. Abstract, table of contents, charts, figures, or appendixes do not count toward the 7-page limit for the narrative section, but should not increase the total past 10 pages.

### Full Proposal

Proposals should include the following:

#### Standard Form 424



## **Program Narrative**

The Program Narrative includes:

- a. Abstract (not to exceed 400 words).
- b. Table of contents.
- c. Main body, which includes:
  - Purpose, goals, and objectives.
  - Review of relevant literature.
  - Research design and methods.
  - Implications for criminal justice policy and practice.
  - Management plan and organization.
  - Dissemination strategy.
- d. Appendixes (not counted against program narrative page limit) include:
  - Bibliography/References (if applicable).
  - List of key personnel (required).
  - Résumés of key personnel (required).
  - List of previous and current NIJ awards (required).
  - Letters of cooperation/support or administrative agreements from organizations collaborating in the project (if applicable).
  - Chart for timeline, research calendar, or milestones (required).
  - Other materials required by the solicitation.

## **Budget Detail Worksheet**

The estimate of funding required in the concept paper and the Budget Narrative (see below) of the Full Proposal should address the full scope, duration and cost of the project. However, the Budget Detail Worksheet submitted with the Full Proposal should address **only** the costs associated with completing the first phase of the proposed project.

Templates for filling out the Budget Detail Worksheet may be found online at [www.ojp.usdoj.gov/Forms/budget\\_fillable.pdf](http://www.ojp.usdoj.gov/Forms/budget_fillable.pdf), OJP Standard Forms & Instructions. If you have any questions, please contact the Office of the Chief Financial Officer's Customer Service Center at 1-800-458-0786.

## **Budget Narrative**

### **Indirect Rate Agreement (if applicable)**

Applicants that do not have a federally negotiated indirect cost rate and wish to establish one can submit a proposal to their "cognizant" Federal agency. Generally, the cognizant Federal agency is the agency that provides the preponderance of direct Federal funding. This can be determined by reviewing an organization's schedule of Federal financial assistance. If DOJ is your cognizant Federal agency, obtain information needed to submit an indirect cost rate proposal at <http://www.ojp.usdoj.gov/oc/indirectcosts.htm>.

### **Other Program Attachments**

These include several forms, available on OJP's funding page at [www.ojp.usdoj.gov/forms.htm](http://www.ojp.usdoj.gov/forms.htm).

**Page limit:** The program narrative section of invited full proposals must not exceed 10 double-spaced pages in 12-point font with 1-inch margins. Abstract, table of contents,

charts, figures, appendixes, and government forms do not count toward the 10-page limit for the narrative section.

**Cofunding:** A grant made by NIJ under this solicitation may account for up to 100 percent of the total cost of the project. You must indicate whether you believe it is feasible for you to contribute cash, facilities, or services as non-Federal support for the project. Your proposal should identify generally any such contributions that you expect to make and your proposed budget should indicate in detail which items, if any, will be supported with non-Federal contributions.

## **Selection Criteria**

Successful applicants must demonstrate the following:

### **Understanding of the problem and its importance.**

Applicants should include appropriate scientific and legal citations to demonstrate awareness of the problem and the potential contribution of the proposed research to the forensic community.

### **Quality and technical merit.**

1. Awareness of the state of current research or technology.
2. Soundness of methodology and analytic and technical approach.
3. Feasibility of proposed project and awareness of pitfalls.
4. Innovation and creativity (when appropriate).

### **Impact of the proposed project.**

1. Potential for significant advances in scientific or technical understanding of the problem.
2. Potential for significant advances in the field.
3. Relevance for improving the policy and practice of criminal justice and related agencies and improving public safety, security, and quality of life.
4. Affordability and cost-effectiveness of proposed end products, when applicable (e.g., purchase price and maintenance costs for a new technology or cost of training to use the technology).
5. Perceived potential for commercialization and/or implementation of a new technology (when applicable).

### **Capabilities, demonstrated productivity, and experience of applicants.**

1. Qualifications and experience of proposed staff.
2. Demonstrated ability of proposed staff and organization to manage the effort.
3. Adequacy of the plan to manage the project, including how various tasks are subdivided and resources are used.
4. Successful past performance on NIJ grants and contracts (when applicable).

### **Budget.**

1. Total cost of the project relative to the perceived benefit.
2. Appropriateness of the budget relative to the level of effort.
3. Use of existing resources to conserve costs.

### **Dissemination strategy.**

1. Well-defined plan for the grant recipient to disseminate results to appropriate audiences, including researchers, practitioners, and policymakers.
2. Suggestions for print and electronic products NIJ might develop for practitioners and policymakers.

### **Relevance of the project for policy and practice.**

Higher quality proposals clearly explain the practical implications of the project. They connect technical expertise with criminal justice policy and practice. To ensure that the project has strong relevance for policy and practice, some researchers and technologists collaborate with practitioners and policymakers. You may include letters showing support from practitioners, but they carry less weight than clear evidence that you understand why policymakers and practitioners would benefit from your work and how they would use it. While a partnership may affect State or local activities, it should also have broader implications for others across the country.

## **Review Process**

NIJ is firmly committed to the competitive process in awarding grants. All proposals under this solicitation will be subjected to independent peer-review panel evaluations. External peer-review panelists consider both technical and programmatic merits. Panelists are selected based on their expertise in subject areas pertinent to the proposals.

Peer-review panelists will evaluate proposals using the criteria listed above. NIJ staff then make recommendations to the NIJ Director. The Director makes award decisions.

**Reasons for rejection:** NIJ may reject applications that are incomplete, do not respond to the scope of the solicitation, do not comply with format requirements, or are submitted after the deadline. No additions to the original submission are allowed.

**When awards will be made:** All applicants, whether they are accepted or rejected, will be notified. The review and approval process takes about 10 months. You should not propose to begin work until at least 10 months after the proposal deadline on the cover of this solicitation. Also, you should not expect to receive notification of a decision for at least 10 months after that date. Lists of awards are updated regularly on NIJ's Web site at [www.ojp.usdoj.gov/nij/funding.htm](http://www.ojp.usdoj.gov/nij/funding.htm).

## **Additional Requirements**

- Civil Rights Compliance
- Confidentiality and Human Subjects Protections Compliance
- Anti-Lobbying Act
- Financial and Government Audit Requirements

- National Environmental Policy Act (NEPA) Compliance
- DOJ Information Technology Standards
- Single Point of Contact Review
- Nonsupplanting of State or Local Funds
- Criminal Penalty for False Statements
- Compliance with Office of the Comptroller Financial Guide
- Suspension or Termination of Funding
- Nonprofit Organizations
- Government Performance and Results Act (GPRA)
- Rights in Intellectual Property

We strongly encourage you to review the information pertaining to these additional requirements prior to submitting your application. Additional information for each can be found at [www.ojp.usdoj.gov/funding/otherrequirements.htm](http://www.ojp.usdoj.gov/funding/otherrequirements.htm).

If your proposal is funded, you will be required to submit several reports and other materials, including:

**Final substantive report:** The final report should be a comprehensive overview of the project and should include a detailed description of the project design, data, and methods; a full presentation of scientific findings; and a thorough discussion of the implications of the project findings for criminal justice practice and policy. It must contain an abstract of no more than 400 words and an executive summary of no more than 2,500 words.

A draft of the final report, abstract, and executive summary must be submitted 90 days before the end date of the grant. The draft final report will be peer reviewed upon submission. The reviews will be forwarded to the principal investigator with suggestions for revisions. The author must then submit the revised final report, abstract, and executive summary by the end date of the grant. The abstract, executive summary, and final report must be submitted in both paper and electronic formats.

For program evaluation studies, the final report should include a section on measuring program performance. This section should outline the measures used to evaluate program effectiveness, modifications made to those measures as a result of the evaluation, and recommendations regarding these and other potential performance measures for similar programs. (This information will be particularly valuable to NIJ and other Federal program agencies in implementing performance measures for federally funded criminal justice programs.)

**Interim reports:** Grantees must submit quarterly financial reports, semi-annual progress reports, a final progress report, and, if applicable, an annual audit report in accordance with Office of Management and Budget Circular A-133. Future awards and fund drawdowns may be withheld if reports are delinquent.