

Opportunity Title: Enhanced Raman Microscopy Identification of Biological and Chemical Materials on Solid Samples

Opportunity Reference Code: ICPD-2023-04

Organization Office of the Director of National Intelligence (ODNI)

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How to Apply

Create and release your Profile on Zintellect – Postdoctoral applicants must create an account and complete a profile in the on-line application system. **Please note: your resume/CV may not exceed 2 pages.**

Complete your application – Enter the rest of the information required for the IC Postdoc Program Research Opportunity. The application itself contains detailed instructions for each one of these components: availability, citizenship, transcripts, dissertation abstract, publication and presentation plan, and information about your Research Advisor co-applicant.

Additional information about the IC Postdoctoral Research Fellowship Program is available on the program website located at:
<https://orise.ou.edu/icpostdoc/index.html>.

If you have questions, send an email to ICPostdoc@ou.edu. Please include the reference code for this opportunity in your email.

Application Deadline 2/28/2023 6:00:00 PM Eastern Time Zone

Description **Research Topic Description, including Problem Statement:**

Methods for the non-destructive identification, characterization, and localization of biological and chemical materials on solid samples is lacking for forensic applications. While there are many methods available for the identification of biological and chemical substances on the surface of forensic samples, these methods typically destroy or leave a visible indication that the surface has been modified for analysis.

Example Approaches:

This project involves expansion of current Raman microscopy methods used for the non-destructive identification of biological and chemical materials on the surface of forensic samples. A variety of laser sources will be utilized to identify and localize different types of biological materials, including proteins, nucleic acids and lipids, as well as chemical substances such as petroleum products, powder residues and other relevant materials on the surface of samples. The capability for the non-destructive analysis solid samples has wide applications in forensics.

Relevance to the Intelligence Community (IC):

This appointment is to develop processes for Raman microscopy. Imaging of solid object prior to biological or chemical analysis allows focused analysis of high value items prior to any destructive analysis. Raman microscopy systems have advanced




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in recent years and could be implemented in a variety of facilities.

Key Words: #Raman Microscopy, #Forensics, #Chemicals, #Biological Materials

Qualifications

Postdoc Eligibility

- U.S. citizens only
- Ph.D. in a relevant field must be completed before beginning the appointment and within five years of the application deadline
- Proposal must be associated with an accredited U.S. university, college, or U.S. government laboratory
- Eligible candidates may only receive one award from the IC Postdoctoral Research Fellowship Program

Research Advisor Eligibility

- Must be an employee of an accredited U.S. university, college or U.S. government laboratory
- Are not required to be U.S. citizens

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Doctoral Degree.
- **Discipline(s):**
 - **Chemistry and Materials Sciences** (12 )
 - **Communications and Graphics Design** (3 )
 - **Computer, Information, and Data Sciences** (17 )
 - **Earth and Geosciences** (21 )
 - **Engineering** (27 )
 - **Environmental and Marine Sciences** (14 )
 - **Life Health and Medical Sciences** (48 )
 - **Mathematics and Statistics** (11 )
 - **Other Non-Science & Engineering** (2 )
 - **Physics** (16 )
 - **Science & Engineering-related** (1 )
 - **Social and Behavioral Sciences** (29 )