

Opportunity Title: Controllable and quantifiable methods for real-time explosive vapor generation

Opportunity Reference Code: ICPD-2019-25

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.orau.gov/icpostdoc/index.html>.

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

Application Deadline 3/1/2019 6:00:00 PM Eastern Time Zone

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

- Explosive vapor detection systems provide a capability for detecting the presence of concealed explosives. However, before they can be used in the operational environment, there is a requirement to test their detection capability. Current testing processes are time consuming owing to the nature of generating reliable explosive vapor concentrations for range of materials of interest (high to low vapor pressure materials). Reliable and quantifiable means of producing explosive vapor samples, within short time-frames, are required to accurately determine limits of detection, and to better understand fundamental detection performance of devices. An additional requirement is to develop concepts that are able to generate vapor outputs suitable to test detection systems that sample different volumes, for example low volume, low sampling rate (< 1 litre/min) to high volume, high sampling rate (1 to 100s of litres/min).

Example Approaches:

- There are expected to be many potential approaches to this challenge, including the vaporisation of liquid samples on heated surfaces and thermal desorption.
- Any means of generating low concentrations of explosive vapor (parts per million to parts per quadrillion) could be a valid approach to this problem, or fundamental work exploring the issues around reliable generation of vapor.

Key Words:

Trace detection, explosives; vapor generation.

Qualifications **Postdoc Eligibility**

- U.S. citizens only
- Ph.D. in a relevant field must be completed before beginning the appointment and within five



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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** ([6](#) )
 - **Computer, Information, and Data Sciences** ([16](#) )
 - **Earth and Geosciences** ([21](#) )
 - **Engineering** ([27](#) )
 - **Environmental and Marine Sciences** ([14](#) )
 - **Life Health and Medical Sciences** ([45](#) )
 - **Mathematics and Statistics** ([10](#) )
 - **Other Non-Science & Engineering** ([5](#) )
 - **Physics** ([16](#) )
 - **Science & Engineering-related** ([1](#) )
 - **Social and Behavioral Sciences** ([28](#) )