

Opportunity Title: Improved understanding of composite material properties, with the aim of increased blast resistance

Opportunity Reference Code: IC-18-45

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://orau.org/icpostdoc/>.

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

Application Deadline 3/12/2018 11:59:00 PM Eastern Time Zone

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

- Significant effort is directed towards prevention of terrorism related attacks on aircraft through intelligence and screening. However, we must still be prepared to mitigate the impact of any attacks that cannot be prevented.
- As the aviation industry moves towards composite construction materials, significant benefits are being realized in weight and cost. There is a need to simultaneously improve our understanding of the mechanical properties of composites at high temperatures, pressures and loading, to better understand their failure mechanism when subject to blast effects.
- Presented with an understanding of the blast response of composite materials, both the aviation and defense industries will be better placed to improve the mitigation of blast events using these materials, without losing the cost and weight benefits that they offer.

Example Approaches:

A suggested approach could involve some or all of the following steps.

1. Develop suitable testing and modelling approaches which replicate blast conditions.
2. Test and model materials to understand the limits and failure mechanisms of composites.



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3. Assess and recommend innovative solutions which could improve the mechanical properties of composites to improve blast resistance, either through process change, adding new materials, or developing new materials.
4. Test any new materials and compare their performance with previous ones.

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** ([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](#))