Opportunity Title: Additively Manufactured RF Systems and Ruggedization Fellowship
Opportunity Reference Code: ICPD-2024-01

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 3 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 2/28/2024 6:00:00 PM Eastern Time Zone

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

The proliferation of additive manufacturing has facilitated a surge in radio frequency (RF) structures such as antennas, transmission lines, and radomes that are otherwise unrealizable using conventional manufacturing methods. At the component level, devices shown in the literature typically perform well and are found to match the models' predicted behavior. However, they often lack the practicality required for fielded use. Additionally, incorporating conventional ruggedization techniques can be detrimental to the sensitive RF performance that is customary with these structures.

Example Approaches:

Numerous applications are of interest for RF systems and components operating in the MHz to GHz ranges, whether it be narrowband, multiband, or wideband. Ruggedization can take countless forms and can be addressed in the design, manufacturing, and/or packaging stages of the RF component's development cycle. Robustness in the context of standard or sustained weather and environmental conditions as well as adverse conditions such as extremely high or low pressure, temperature, and impact is of interest. Researchers could take a co-design approach, ensuring both the RF and ruggedization features are considered at the start of the research and development cycle. Applicants are encouraged to present their novel concepts and approaches for the modeling, development, and/or fabrication of high performing and rugged additively manufactured RF systems.

Relevance to the Intelligence Community:

Develop/enhance capabilities for improved communications with sensors (e.g., in high-interference environments).

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Key Words: Antennas, Radio Frequency, Microwave, Filters, Additive Manufacturing, Waveguides, Modeling

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 appointment start date
- 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** (4)
  - **Computer, Information, and Data Sciences** (17)
  - **Earth and Geosciences** (21)
  - **Engineering** (27)
  - **Environmental and Marine Sciences** (14)
  - **Life Health and Medical Sciences** (46)
  - **Mathematics and Statistics** (11)
  - **Other Non-Science & Engineering** (2)
  - **Physics** (16)
  - **Science & Engineering-related** (1)
  - **Social and Behavioral Sciences** (29)