Opportunity Title: Novel Optoelectronic Devices for Classical Computing and Quantum Sensing
Opportunity Reference Code: ICPD-2025-36

Organization Office of the Director of National Intelligence (ODNI)

Reference Code ICPD-2025-36

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 2/28/2025 6:00:00 PM Eastern Time Zone

Description

Research Topic Description, including Problem Statement:

Problem Statement: The IC requires optoelectronic hardware for future computing and quantum sensing, which is compact, low power, and operational at room temperature. Topic Description: Solid-state systems with strong light-matter interactions display emergent quantum behavior and highly nonlinear responses. This topic aims to advance the use of low-dimensional materials in strongly-coupled optoelectronic devices where electronics are used to tune the coupling and/or transduce changes in the optical cavity with external pertubations.

Example Approaches:

Approaches can include fabrication, characterization, and/or modeling of low-dimensional materials coupled to optical cavities with integrated electrodes.

Relevance to the Intelligence Community:

Develop/enhance high performance computing and sensor capabilities using novel materials.

Key Words: Light-matter interactions, strong coupling, optoelectronics, quantum sensing, neuromorphic computing, quantum emulation, two-dimensional materials, optical cavities, nanotechnology

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

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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

Point of Contact Keri

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** (45)
  - **Mathematics and Statistics** (11)
  - **Other Non-Science & Engineering** (2)
  - **Physics** (16)
  - **Science & Engineering-related** (1)
  - **Social and Behavioral Sciences** (30)