

Opportunity Title: Bioinspired Devices and Sensors
Opportunity Reference Code: ARL-C-SEDD-3176113731

Organization DEVCOM Army Research Laboratory

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Description About the Research

The objective of our research is to investigate biologically-inspired routes and advanced biotechnology for improved performance and fabrication ability of photonic/electronic devices and sensors. Natural evolution could be considered the pinnacle of engineering science. Mimicking or understanding the unique processes, structures, and phenomena generated by this natural engineering could shed new insight into physical limitation imposed by classical methodologies. The combination of modern biotechnology, which imparts us with the ability to manipulate organisms, cells, and DNA and bioengineering, could provide researchers a new paradigm for development of revolutionary photonics, electronics, organic-electronic hybrids, and sensors. In an effort to capitalize on these advances, targeted investigations will be conducted on the following areas: biosensors to either sense biology or sense with biology, biomimetic sensors, photonic and electronics devices which replicate/mimic or harness biology, and bioelectronics built from biological structures or assembled/enabled by biological structures. These efforts include the development of new characterization methods (spectroscopy and metrology) geared specifically to organic or organic-inorganic hybrid materials. Practical use of advanced biotechnology for electro-optic devices and sensors is inherently a cross-disciplinary pursuit. Large effort must be applied to find advantageous biological-inspired routes for the respective technology areas and will include input from classical technical disciplines (biology, chemistry, physics, and engineering).

ARL Advisor: Paul M. Pellegrino


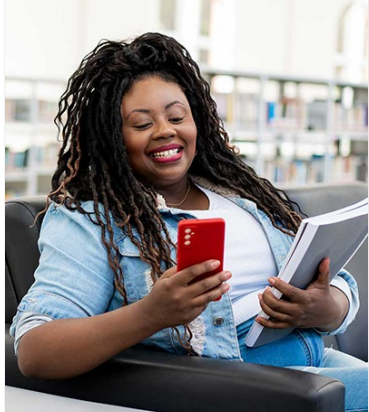
ARL Advisor Email: paul.m.pellegrino.civ@mail.mil

About SEDD

The Sensors and Electron Devices Directorate (SEDD) is the Army's principal center for research and development in the exploration and exploitation of the electromagnetic spectrum, which includes radio frequency, microwave, millimeter-wave, infrared (IR), visible, and audio regions. SEDD is responsible for advances in laser sources, RF sources, IR sensors, signature detection and decoding, target imaging and its interpretation, fusion of data derived from several sensors, and electromagnetic protection.

In addition, SEDD is responsible for improving the technology base for electron devices and materials related to sensors and power devices. Research is conducted in related aspects of physics, electrical engineering, computer science, solid-state physics, chemical engineering, material sciences, and electrochemistry.

About ARL-RAP

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The [Army Research Laboratory Research Associateship Program](#) (ARL-RAP) is designed to significantly increase the involvement of creative and highly trained scientists and engineers from academia and industry in scientific and technical areas of interest and relevance to the Army. Scientists and Engineers at the CDC Army Research Laboratory (ARL) help shape and execute the Army's program for meeting the challenge of developing technologies that will support Army forces in meeting future operational needs by pursuing scientific research and technological developments in diverse fields such as: applied mathematics, atmospheric characterization, simulation and human modeling, digital/optical signal processing, nanotechnology, material science and technology, multifunctional technology, combustion processes, propulsion and flight physics, communication and networking, and computational and information sciences.

A complete application includes:

- **Curriculum Vitae or Resume**
- **Three References Forms**
 - An email with a link to the reference form will be available in Zintellect to the applicant upon completion of the on-line application. Please send this email to persons you have selected to complete a reference.
 - References should be from persons familiar with your educational and professional qualifications (include your thesis or dissertation advisor, if applicable)
- **Transcripts**
 - Transcript verifying receipt of degree must be submitted with the application. Student/unofficial copy is acceptable

If selected by an advisor the participant will also be required to write a **research proposal** to submit to the ARL-RAP review panel for :

- Research topic should relate to a specific opportunity at ARL (see [Research Areas](#))
- The objective of the research topic should be clear and have a defined outcome
- Explain the direction you plan to pursue
- Include expected period for completing the study
- Include a brief background such as preparation and motivation for the research
- References of published efforts may be used to improve the proposal

A link to upload the proposal will be provided to the applicant once the advisor has made their selection.

Questions about this opportunity? Please email ARLFellowship@ora.u.org

- Eligibility Requirements**
- **Degree:** Doctoral Degree received within the last 60 month(s).
 - **Academic Level(s):** Any academic level.

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- **Discipline(s):**
 - **Chemistry and Materials Sciences** ([12](#))
 - **Computer, Information, and Data Sciences** ([16](#))
 - **Engineering** ([27](#))
 - **Mathematics and Statistics** ([10](#))
 - **Physics** ([16](#))
 - **Science & Engineering-related** ([1](#))
- **Age:** Must be 18 years of age