

Opportunity Title: Novel Optoelectronic Photonic Devices

Opportunity Reference Code: ARL-C-SEDD-9050609344-PEQS

Organization DEVCOM Army Research Laboratory

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Description About the Research

We develop innovative optoelectronic devices (e.g., modulators, splitters, switches, amplifiers, and lasers) and radio frequency-photonic devices (e.g., infrared receivers, optical/microwave converters, photodetectors, and photo-receivers). These devices have applications into photonically controlled microwave systems, fiber-optic gyroscopes, collision avoidance systems, and biosensors.

This research and engineering development involves basic device and material physics studies, as well as prototype device design, modeling, fabrication, and characterization. The development program offers great potential for device and material characterization techniques, their maturation, and advancement. Current research includes aspects of design and characterization of novel strained semiconductor quantum well heterostructures to obtain polarization control, epitaxial growth techniques such as selective epitaxy and regrowth for the purpose of bandgap engineering, monolithic integration of high-speed photodetectors with active field-effect transistors, and monolithic integration of passive and active waveguide components.

SEDD has extensive facilities for material growth, fabrication, and optical and electrical characterization.

You must be a U.S. Citizen to be considered for this project.

ARL Advisor: Weimin Zhou

ARL Advisor Email: Weimin.Zhou.civ@army.mil

About Army Research Directorate (ARD)

ARL's Army Research Directorate (ARD) focuses on exploiting concept development, discovery, technology development, and transition of the most promising disruptive science and technology to deliver to the Army fundamentally advantageous science-based capabilities through laboratory's 11 research competencies. This intramural research directorate also manages the laboratory's essential research programs, which are flagship research efforts focused on delivering defined outcomes.

About Photonics, Electronics, & Quantum Sciences (PE&QS)

Materials (and related manufacturing methods) and devices intended for achieving photonic, electronic, and quantum-based effects.

About ARL-RAP

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.



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Scientists and Engineers at the CCDC 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
- 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@orau.org

Point of Contact [ARL](#)

- Eligibility Requirements**
- **Citizenship:** U.S. Citizen Only
 - **Degree:** Doctoral Degree received within the last 60 month(s).
 - **Academic Level(s):** Any academic level.
 - **Discipline(s):**
 - **Chemistry and Materials Sciences** ([12](#))

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- **Computer, Information, and Data Sciences** ([16](#))
- **Engineering** ([27](#))
- **Environmental and Marine Sciences** ([13](#))
- **Life Health and Medical Sciences** ([45](#))
- **Mathematics and Statistics** ([10](#))
- **Physics** ([16](#))
- **Science & Engineering-related** ([1](#))
- **Age:** Must be 18 years of age