Opportunity Title: Experimental Shock Physics /Energetic & Explosive Materials
Opportunity Reference Code: ARL-R-WMRD-9153895723

Organization DEVCOM Army Research Laboratory

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Description

About the Research

Located at Aberdeen Proving Ground in Maryland, the U.S. Army Research Laboratory (ARL) is the Army's central laboratory. Its diverse assortment of unique facilities and dedicated workforce of government and private sector partners make up the largest source of world-class integrated research and analysis in the Army.

Extensive experimental studies are needed to develop an understanding of the dynamic response of materials to extreme pressure/temperature conditions for use in model validation. Typical efforts focus on elucidating the relationship between the structure and properties of the materials under extreme conditions as it applies to detonation phenomena. Exceptional post-doctoral candidates are sought in the area of experimental shock physics; relevant diagnostic techniques include high-resolution spectroscopy (e.g., time-resolved emission spectra or ultrafast pump-probe techniques), high-speed imaging, and optical pyrometry. The opportunity will entail doing research as part of a large multi-disciplinary program with close integration of experimental and theoretical teams. The research activities involve the development of experimental techniques for investigating material dynamics under extreme conditions, e.g., laser-launched flyer plate experiments for the initiation of energetic materials, laser-induced shock initiation, and measurements of equations of state for new materials using both static and dynamic experiments.

This research opportunity aligns with the ARL S&T Campaign in the area of Sciences for Lethality and Protection/Ballistics and Blast: Weapons and Energy Projection.

ARL Advisor: Jennifer Gottfried

ARL Advisor Email: jennifer.l.gottfried.civ@mail.mil

About WMRD

The goals of the Weapons and Materials Research Directorate (WMRD) are to enhance the lethality and survivability of weapons systems, and to meet the soldier's technology needs for advanced weaponry and protection. Research is pursued in energetic materials dynamics, propulsion/flight physics, projectile warhead mechanics, terminal effects phenomena, armor/survivability technologies, environmental chemistry, and advanced materials (energetic, metals, ceramics, polymers, composite/hybrids, and mechanics) for armor, armament, missiles, ground vehicles, helicopters, and individual soldier applications necessary for maintaining and ensuring supremacy in future land warfare.

About ARL-RAP

The Army Research Laboratory Research Associateship Program (ARL-RAP) is designed to significantly increase the involvement of creative and

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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 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 (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@orau.org

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):**

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- **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