

Opportunity Title: High-Performance Composites Processing, Structure, Property & Performance Engineering Studies

Opportunity Reference Code: ARL-R-SEM-400033-F1

Organization DEVCOM Army Research Laboratory

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Description This position requires hands on research in the area of high-performance fiber composite materials such as carbon-carbon composites and ultrahigh molecular weight (UHMWPE) fiber-reinforced composites. Typically, carbon-carbon or UHMWPE fibers and films will be processed using various process parameters and the structures evolved across length scales will be studied using a multitude of characterization techniques, such as various spectroscopies (FTIR, RAMAN, X-ray diffraction) and thermal analyses (DSC, DMA, TGA). Additionally, micro-to-nano structures can be studied using nanoindentation and atomic force microscopy. Properties at interfaces and across length scales may be employed to understand structure-property relationships. Finally, these relationships will be linked to performance under high-rate impact conditions.

ARL Advisor:

Kenneth Strawhecker
kenneth.e.strawhecker.civ@army.mil
(410) 306-1342

Travis Bogetti
travis.a.bogetti.civ@army.mil
(301) 706-7344

About ARD

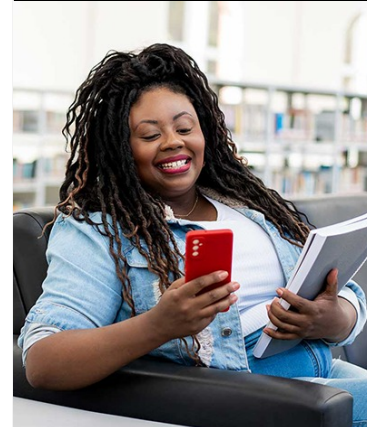
ARL's Army Research Directorate (ARD) focuses on exploiting concept development, discovery, technology development, and transition of the most promising disruptive science and technology to deliver to the Army fundamentally advantageous science-based capabilities through laboratory's 11 research competencies.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

About 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. 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,



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multifunctional technology, combustion processes, propulsion and flight physics, communication and networking, and computational and information sciences.

About SCIENCE OF EXTREME MATERIALS (SEM)

Materials and related manufacturing methods focusing on mechanical response and performance extremes, including active, adaptive, and flexible/soft materials; novel manufacturing science for energetic materials.

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

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

Qualifications The ideal applicant will have knowledge of polymers, composites and characterization techniques for these materials. Additionally, a strong desire to learn, perform research, and grow as a researcher are beneficial.

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Bachelor's Degree, Master's Degree, or Doctoral Degree.
- **Academic Level(s):** Bachelor's Degree (Journeyman Fellow), Master's Degree (Journeyman Fellow), Master's Degree 7+ years (Senior Fellow), or Doctoral Degree (Postdoctoral Fellow).
- **Discipline(s):**

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- **Chemistry and Materials Sciences** ([12](#) )
- **Communications and Graphics Design** ([2](#) )
- **Computer, Information, and Data Sciences** ([17](#) )
- **Earth and Geosciences** ([21](#) )
- **Engineering** ([27](#) )
- **Environmental and Marine Sciences** ([14](#) )
- **Life Health and Medical Sciences** ([51](#) )
- **Mathematics and Statistics** ([11](#) )
- **Physics** ([16](#) )
- **Science & Engineering-related** ([2](#) )
- **Social and Behavioral Sciences** ([29](#) )