Opportunity Title: Convergent Manufacturing Design for Printed Hybrid Electronics
Opportunity Reference Code: ARL-C-WMRD-300142-SEM

Organization DEVCOM Army Research Laboratory

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Description **About the Research**

Convergent Manufacturing (CM) is the term used to describe fabrication of multifunctional devices and structures, and can incorporate any number of manufacturing technologies and materials to produce these products. CM is expected to revolutionized the design, fabrication and application of electronic packaging and antenna structures. An objective of this project to establish process-material-design relationships for convergent manufacturing of conformal electronics embedded into Army munitions, weapons, and platforms. The researcher will develop feedstock materials, including conductors, dielectrics, insulators, and manufacturing processes, such as aerosol deposition, inkjet printing, SLA, FFF, injection molding, robotic milling and drilling, and plasma modification, and manufacturing parameters to prepare the materials/parts. The researcher will characterize the resulting materials using electronics characterization methodologies, such as conductivity measurements, mechanical characterization, such as tensile testing, thermal testing, such as dynamic mechanical characterization, Applicants should have received a B.S. Degree in Electrical Engineering, Material Science, Mechanical Engineering or a closely related discipline. Candidates should demonstrate a strong academic background with experience in the following areas: electrical and mechanical CAD designs; Arduino circuit design and programming or similar electronic prototyping platform; 3D printings; bread-boarding.

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KEYWORDS: 3D printing; Additive Manufacturing; Circuit design

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

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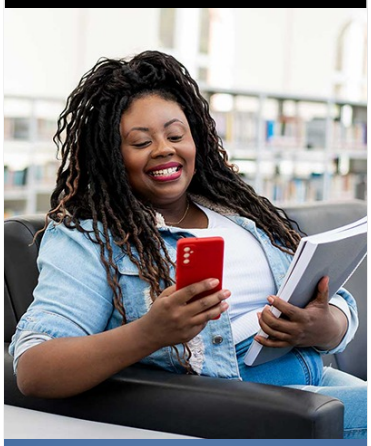

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scientific and technical areas of interest and relevance to the Army. Scientists and Engineers at the CCDC Army Research Laboratory (ARL) help shape and execute the Army's program for meeting the challenge of developing technologies that will support 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.

About Science of Extreme Materials Division (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

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.

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Point of Contact ARL-RAP

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Bachelor's Degree.
- **Academic Level(s):** Any academic level.
- **Discipline(s):**
  - **Engineering** (3 👁)