

**Opportunity Title:** Engineering: Polymer Composites Research

**Opportunity Reference Code:** ERDC-CERL-2023-0002

**Organization** U.S. Department of Defense (DOD)

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**How to Apply** *Click on APPLY now to start your application.*

**Description** The U.S. Army Corps of Engineers (USACE) Engineer Research and Development Center (ERDC) Construction Engineering Research Laboratory (CERL) develops and infuses innovative technologies to provide excellent facilities and realistic training lands for the Department of Defense, the U.S. Army and many other customers while also supporting ERDC's research and development mission in geospatial research and engineering, military engineering, and civil works.

ERDC-CERL directs its research efforts toward increasing the Army's ability to more efficiently design, construct, operate and maintain its installations and contingency bases and to ensure environmental quality and safety at a reduced life-cycle cost. Excellent facilities support the Army's training, readiness, mobilization and sustainability missions. Adequate infrastructure and realistic training lands are critical assets to installations in carrying out their military missions. Efficient contingency bases, which minimize the use of external resources and the generation of waste and enhance relations with local communities, are critical for successful deployments in all situations—from disaster response and humanitarian assistance to stability operations and conflicts.

#### What will I be doing?

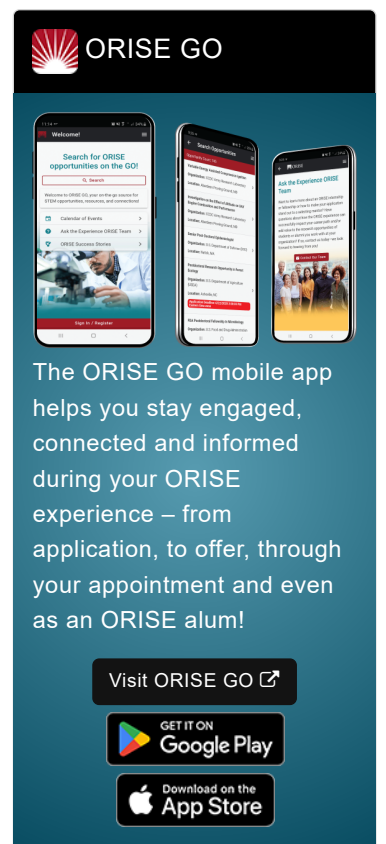
Under the guidance of a mentor, your research will focus on the development, design, specification, production, and testing of Fiber Reinforced Polymer (FRP) composite hydraulic structures. The USACE has 8 demonstration projects validating the efficacy and resiliency of FRP materials in navigation structure applications. Each hydraulic structure converted from steel to FRP has potential to save the Nation tens of millions of dollars in maintenance and repair costs over a 100-year design life. Tests in our laboratory validate materials and structural designs by utilizing multiple instruments and targeting various end state goals, typically including non-destructive evaluation techniques. Design and development research will include documentation of inspection and repair techniques.

Research includes planning and execution of material testing but not limited to:

- Preparing and conditioning specimens for testing.
- Conducting laboratory tests to determine physical, mechanical, and chemical properties.
- Adherence to all applicable safety standards and good laboratory practice.
- Collecting and analyzing laboratory experiment data.
- Drawing conclusions and documenting results.
- Preparing reports and presentation materials using word processing, photo processing, computer generated graphics, and spreadsheet software.
- Performing literature review to help plan new tests and prepare guidance documents.
- Setting up and operating material science instruments, which may include ultrasonic probes, Scanning Electron Microscope, X-ray Fluorescence Spectrometer, Fourier Transform Infrared Spectrometer, Thermogravimetric Analyzer, Dynamic Scanning Calorimeter, or other similar scientific instruments.
- Performing field research such as instrumentation setup, data collection and analysis, and evaluation of results at military installations and Corps of Engineers sites.

#### Why should I apply?

This fellowship provides the opportunity to independently utilize your skills and engage with



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experts in innovative ideas to move the proposed research forward. There are multiple opportunities available to engage in your applied research and evaluation interests.

**Where will I be located?** Champaign, Illinois

**What is the anticipated start date?**

ERDC-CERL is ready to make appointments immediately. Exact start date will be determined at the time of selection and in coordination with the selected candidate.

**What is the length of the appointment?**

This ORISE appointment is a twelve-month, full-time appointment. Appointments may be extended depending on funding availability, project assignment, program rules, and availability of the participant.

**What are the benefits?**

You will receive a stipend to be determined by ERDC-CERL. Stipends are typically based on the participant's academic standing, discipline, experience, and research facility location. Other benefits may include the following:

- Health Insurance Supplement. Participants are eligible to purchase health insurance through ORISE.
- Relocation Allowance
- Training and Travel Allowance

**About ORISE**

This program, administered by Oak Ridge Associated Universities (ORAU) through its contract with the U.S. Department of Energy (DOE) to manage the Oak Ridge Institute for Science and Education (ORISE), was established through an interagency agreement between DOE and DoD. Participants do not enter into an employee/employer relationship with ORISE, ORAU, DoD or any other office or agency. Instead, you will be affiliated with ORISE for the administration of the appointment through the ORISE appointment letter and Terms of Appointment. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE. For more information, visit the [ORISE Research Participation Program at the U.S. Department of Defense](#).

**Qualifications** Bachelor's or master's degree in Materials/Science Engineering, Polymer/Science Engineering, Civil Engineering, or Structural Engineering, or related field.

Prefer skills in material science and testing, ideally with polymer composite materials testing or research experience.

A complete application consists of:

- Zintellect Profile
- Educational and Employment History

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- Essay Questions (goals, experiences, and skills relevant to the opportunity)
- Resume (PDF)
- Transcripts/Academic Records - For this opportunity, an official transcript or copy of the student academic records printed by the applicant or by academic advisors from internal institution systems may be submitted. [Click here for detailed information about acceptable transcripts.](#)
- One recommendation. Your application will be considered incomplete and will not be reviewed until one recommendation is submitted. We encourage you to contact your recommender(s) as soon as you start your application to ensure they are able to complete the recommendation form and to let them know to expect a message from Zintellect. Recommenders will be asked to rate your scientific capabilities, personal characteristics, and describe how they know you. You can always log back in to your Zintellect account and check the status of your application.

Submitted documents must have all social security numbers, student identification numbers, and/or dates of birth removed (blacked out, blackened out, made illegible, etc.) prior to uploading into the application system. All documents must be in English or include an official English translation. If you have questions, send an email to [USACE@orise.orau.gov](mailto:USACE@orise.orau.gov). Please list the reference code of this opportunity in the subject line of the email. Please understand that ORISE does not review applications or select applicants; selections are made by the sponsoring agency identified on this opportunity. All application materials should be submitted via the "Apply" button at the bottom of this opportunity listing. Please do not send application materials to the email address above.

***Connect with ORISE...on the GO! Download the new ORISE GO mobile app in the Apple App Store or Google Play Store to help you stay engaged, connected, and informed during your ORISE experience and beyond!***

- Eligibility Requirements**
- **Citizenship:** U.S. Citizen Only
  - **Degree:** Bachelor's Degree, Master's Degree, or Doctoral Degree received within the last 60 months or currently pursuing.
  - **Discipline(s):**
    - **Chemistry and Materials Sciences** ([12](#))
    - **Earth and Geosciences** ([4](#))
    - **Engineering** ([27](#))
    - **Environmental and Marine Sciences** ([1](#))
    - **Mathematics and Statistics** ([11](#))
    - **Physics** ([16](#))
  - **Age:** Must be 18 years of age
  - **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).