Opportunity Title: Chemometrics and Laser Spectroscopy Fellowship
Opportunity Reference Code: ERDC-CRREL-2020-0002

Organization U.S. Department of Defense (DOD)

Reference Code ERDC-CRREL-2020-0002

How to Apply Components of the online application are as follows:

- Profile Information
- Educational and Employment History
- Essay Questions (goals, experiences, and skills relevant to the opportunity)
- Resume (PDF)
- Transcripts/Academic Records -Click here for detailed information about acceptable transcripts
- References

Submitted documents must have all social security numbers, student identification numbers, and/or dates of birth removed (blanked out, blackened out, made illegible, etc.) prior to uploading into the application system.

If you have questions, send an email to usace@orise.orau.gov. Please list the reference code of this opportunity in the subject line of the email.

All documents must be in English or include an official English translation.

Description U.S. Army Corps of Engineers (USACE), Engineer Research and Development Center (ERDC), Cold Regions Research and Engineering Laboratory (CRREL), located in Hanover, New Hampshire, builds innovative products that support the warfighter, water resources, environment, infrastructure and homeland security. CRREL uses a multi-disciplinary research approach that solves the most difficult environmental physics and cold region engineering problems. With recognized international expertise, CRREL fosters partnerships across government agencies, academia and industry to solve complex problems.

The participant will participate in one or two projects at the CRREL's Biogeochemical Sciences Branch.

- Participation with the development of an understanding of the environmental conditions affecting the performance of a variety of sensor modalities for mine/Improvised Explosive Device detection. As part of a team, the participant will assist to transition Laser Induced Breakdown Spectroscopy (LiBS) technology to lightweight, handheld, commercial sensors to enable real-time in-situ chemical analysis of soil and auxiliary mediums under ambient meteorological conditions. Participant will have the opportunity to assist with experimental design, chemometrics, chemistry, statistics (multivariate), laser spectroscopy physics, software management, and multiple sensor technologies.

- Participation with the development of new models in signal and image reconstruction / restoration (i.e., multimodality image registration, tracking, detection, and classification), adaptive filtering, distributed sensing / processing, compressive sampling / sensing (i.e., image compression,

parameter estimation, image registration) and/or automated feature / pattern analysis. Signal processing for sensing and sensor networks in data fusion and sensor management with vastly different data types (e.g., electro-optical, infrared, hyperspectral) will also be investigated.

This opportunity will provide the candidate with the opportunity to participate with hands-on research aligned with candidate's area of interest and will have the opportunity to assist with the development of the research proposals, peer review publications, and scientific presentations.

Appointment Length

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

Participant Benefits

Participants will receive a stipend to be determined by ERDC-CRREL. 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

Nature of Appointment

The participant will not enter into an employee/employer relationship with ORISE, ORAU, DOD, or any other office or agency. Instead, the participant will be affiliated with ORISE for the administration of the appointment through the ORISE appointment letter and Terms of Appointment.

Qualifications

MS or PhD - physicist, mathematician or equivalent specializing in signal and image processing that encompasses algorithms and hardware that convert sensor data produced by artificial or natural means and/OR specializing in chemometrics and laser spectroscopy physics.

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Master's Degree or Doctoral Degree received within the last 60 months or currently pursuing.
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12 👁)
  - **Computer, Information, and Data Sciences** (16 👁)
  - **Earth and Geosciences** (21 👁)
  - **Engineering** (27 👁)
  - **Environmental and Marine Sciences** (14 👁)
  - **Life Health and Medical Sciences** (45 👁)
  - **Mathematics and Statistics** (10 👁)
  - **Physics** (16 👁)

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- **Age:** Must be 18 years of age