Opportunity Title: Design, Synthesis and Characterization
Opportunity Reference Code: CCDC-SC-2020-0002R

Organization U.S. Department of Defense (DOD)

Reference Code CCDC-SC-2020-0002R

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 - For this opportunity, an unofficial transcript or copy of the student academic records printed by the applicant or by academic advisors from internal institution systems may be submitted.
- 1 Recommendation

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 Army-RDECOM@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 The U.S. Army Combat Capabilities Development Command Soldier Center (CCDC-SC) is located at the U.S. Army Natick Soldier Research Center in Natick, Massachusetts, under the Army Futures Command. CCDC-SC supports Soldier-related research, development, testing and evaluation efforts. CCDC-SC's highly skilled team of scientist perform a variety of research that includes, Soldier's uniforms, meals ready to eat (MREs), tents, sleeping bags, to parachutes and airdrop capabilities. If the Soldiers wear it, eat it, sleep under it, or have it airdropped to them, the product research and development can be traced back to the mission of CCDC-SC. This Army laboratory is focused on all aspects of the Soldier and small squad performance encompassing combat rations, personal and collective protection, aerial delivery of supplies, Soldier training and human performance optimization.

CCDC-SC is offering a novel research opportunity focusing to treat nanoparticles as giant atoms and construct new "molecules" out of them. The goal of this project is to translate this atomic level reality to nanoparticles by viewing them as atoms and generating nanoparticle "molecules" that will show new optical, electronic, mechanical, and catalytic properties. The project will involve the controlled synthesis and characterization of nanoparticles, surface modifying the nanoparticles to add reactive moieties that can link with one another, thereby combining multiple nanoparticles in a predetermined manner, characterizing the nanoparticle based molecules using microscopic and spectroscopic techniques, and exploring optical and catalytic applications derived from these molecules.

As a participant, you will collect and analyze data as it pertains to the research. Under the guidance of a mentor, you will collaborate with the CCDC-SC research team to develop solutions to the interpreted data. In addition, your mentor will develop learning objectives to fit your personal career development goals, while providing guidance and education that will prepare you for the labor force.

Appointment Length

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This appointment is a twelve month research appointment, with the possibility to be renewed for additional research periods. 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 CCDC Soldier Center. 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

The candidate should hold a doctoral degree in one of the areas of chemical/material sciences. Experience with the synthesis of nanoparticles and advanced characterization methods such as microscopy techniques including TEM, spectroscopy techniques including UV-Vis-NIR, XPS and Raman is highly preferred. Some experience with wet chemical laboratory techniques will be critical.

Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** 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** (3 👁)
  - **Life Health and Medical Sciences** (45 👁)
  - **Mathematics and Statistics** (10 👁)
  - **Physics** (16 👁)
  - **Science & Engineering-related** (1 👁)
- **Age:** Must be 18 years of age