Opportunity Title: Self-Healing Paint Research and Technology - Faculty
Opportunity Reference Code: AFCEC-2021-0008

Organization U.S. Department of Defense (DOD)

Reference Code AFCEC-2021-0008

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)

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 **AIRFORCE@orise.orau.gov**. Please list the reference code of this opportunity in the subject line of the email.

Description The Air Force Civil Engineer Center (AFCEC) focuses on technologies applied to the civil engineer mission encompassing, among others, corrosion control, pavements, materials, soils, matting systems, infrastructure protection, cathodic protection, protective coatings, and energy. To find out more, visit https://www.afcec.af.mil/.

This research opportunity offers a chance for the participant to collaborate with AFCEC on research and technology focused on a new coating strategy for self-healing paint. This technology uses micro-capsule thickened oil barrier coatings filled with graphene-based material, a healing agent, through an oxidation process. When reducing the oxygen, a reduced graphene oxide (r-GO) is developed. This dynamic network of colloidal capsules is lightweight, oil absorbing, and wettable; therefore, a model oil thickener. It enables length-scaled dependent viscosity oil that is stable, insulates metal from corrosive environment, and has underwater applicability.

The participant will collaborate with student participants and assist them with their project design, experimental approach, collection and analysis of data, and critical interpretation of results to provide meaningful conclusions relevant to the understanding of self healing paint. Participant will also assist AFCEC with potential self-healing paint field testing at some Air Force base(s) as research progresses toward better product transferability and manufacturing capability.

Appointment Length

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 **AFCEC.** 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

Faculty participant shall be tenure-track (or full tenure) faculty member of Northwestern University and have access to university resources and facilities..

Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Any degree .
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12 👁)
  - **Communications and Graphics Design** (2 👁)
  - **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 👁)
  - **Other Non-Science & Engineering** (2 👁)
  - **Physics** (16 👁)
  - **Science & Engineering-related** (1 👁)
  - **Social and Behavioral Sciences** (27 👁)