Opportunity Title: Additive Manufacturing of Refractory Metal Alloys Internship
Opportunity Reference Code: AFIT-2021-0057

Organization U.S. Department of Defense (DOD)

Reference Code AFIT-2021-0057

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. Click here for detailed information about acceptable transcripts.
- 1 Recommendation(s)

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 **AIRFOROCE@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 project involves additive manufacturing of refractory metal alloys by the laser powder bed fusion process, which is also called selective laser melting. Under the guidance of a mentor, the selected participants will gain experience operating different additive manufacturing machines, characterizing printed materials, and studying novel alloy compositions. In addition, participants will utilize data collection methods on a variety of materials and analyze the effects of alloying on printability, mechanical properties, and oxidation behavior. The research experience may include the following materials characterization techniques based upon the needs of the project: metallographic preparation, electron and optical microscopy, elemental analysis by energy-dispersive X-ray spectroscopy (EDS), microstructure analysis by various optical and electron techniques, and mechanical testing. Participants will be expected to collaborate, develop their technical writing skills, and present project results publicly at technical conferences.

The Air Force Institute of Technology, or AFIT, located at Wright-Patterson

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Air Force Base, Ohio, is the Air Force's graduate school of engineering and management as well as its institution for technical professional continuing education. A component of Air University and Air Education and Training Command, AFIT is committed to providing defense-focused graduate and professional continuing education and research to sustain the technological supremacy of America's air, space and cyber forces.

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 AFIT. 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

- Ability to study and aggregate information on scientific topics independently

- Strong written and verbal communication skills

- Familiarity with MATLAB or Python

- Familiarity with topics in materials science and/or metallurgy

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Bachelor's Degree or Master's Degree received within the last 60 month(s).
- **Overall GPA:** 3.00
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12 👁)
  - **Computer, Information, and Data Sciences** (17 👁)
  - **Earth and Geosciences** (8 👁)

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- **Engineering** (27 👁)
- **Environmental and Marine Sciences** (14 👁)
- **Life Health and Medical Sciences** (46 👁)
- **Mathematics and Statistics** (10 👁)
- **Physics** (16 👁)
- **Science & Engineering-related** (1 👁)

- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).