

**Opportunity Title:** LIBS Process Monitoring for Low Active Waste Vitrification

**Opportunity Reference Code:** DOE-MSIPP-21-5-LANL

**Organization** U.S. Department of Energy (DOE)

**Reference Code** DOE-MSIPP-21-5-LANL

- How to Apply**
- Completion of all required fields in the application and successful application submission
  - Undergraduate or graduate transcripts as appropriate
  - Two recommendations

If you have questions, send an email at [MSIPPInternships@orau.org](mailto:MSIPPInternships@orau.org). Please include the reference code for this opportunity in your email.

For Technical information, contact Cassandra Casperson at [Casperson@lanl.gov](mailto:Casperson@lanl.gov).

**Certification:**

I certify that I am at least 18 years of age and a US citizen, and am currently enrolled as a student in a degree seeking graduate or doctoral program or have received my Master's degree within the last six months in a STEM field at an accredited Minority Serving Institution (MSI).

**Application Deadline** 1/29/2021 11:59:00 PM Eastern Time Zone

**Description** The Minority Serving Institutions Partnership Program (MSIPP) Internships is a new program to promote the education and development of the next generation workforce in critical science, engineering, technology, and math (STEM) related disciplines that complement current and future missions of DOE national laboratories. The MSIPP Internship program is designed to provide an enhanced training environment for next generation scientists and engineers by exposing them to research challenges unique to our industry.

MSIPP Interns will be given the opportunity to complete Summer Internships aligned with ongoing U.S. Department of Energy Office of Environmental Management (DOE-EM) research under the direction of a host national laboratory. The internship will be performed at the host national laboratory, utilizing their facilities and equipment under the guidance of a research staff member.

Minority Serving Institutions are institutions of higher education enrolling populations with significant percentages of undergraduate minority students.

**Project:** Laser induced breakdown spectroscopy (LIBS) is a versatile tool for elemental analysis. It was developed at Los Alamos and is in the news as an important instrument on the Mars Curiosity Rover and the Mars 2020 Rover. This project will use LIBS technology to develop an industrial process monitor to measure the composition of glass forming compounds fed into the Low Active Waste Vitrification Plant at Hanford Washington. We are working with Savannah River National Lab and an industrial partner to build a demonstration system capable of monitoring the composition of glass forming compounds inside a powder blender in real time. When successful, the method improves the efficiency of facility operation by reducing the number of samples for analysis in an analytical lab and by providing real time data for continuous material processing. The assignment will include support of design modifications to LANL facilities in order to accommodate the experiment, collaboration with the industrial



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partner in analyzing exploratory LIBS data, and collaboration with LANL scientists to create specifications for Hanford qualification testing as well as computational simulations needed for the calibration process. The work may also include domestic travel for meetings and experiments in support of the program that would be fully reimbursed by the program.

**Salary:** Selected candidate will be compensated by either a stipend or salary, and may include one round trip domestic travel to and from the host laboratory. Stipends and salaries will be commensurate with cost of living at the location of the host laboratory. Housing information will be provided to interns prior to arrival at the host laboratory, and will vary from lab to lab.

**Qualifications Required Knowledge, Skills, Work Experience, and Education**

**Successful candidates will:**

- Self-motivated, open-minded, enthusiastic, hands-on, team worker
- Interested to work on a multi-disciplinary project in a diverse technical team
- Willing to work under the rules and requirements of a nuclear laboratory

**Desired Knowledge, Skills, Work Experience, and Education**

**It is desirable for the candidate to have:**

- Academic background or interest in chemistry and spectroscopy
- Interest in International nuclear safeguards and nuclear fuel cycle processes
- Computer experience that includes data analysis, interpretation and presentation (Python)

**Eligibility Requirements**

- **Citizenship:** U.S. Citizen Only
- **Degree:** Master's Degree or Doctoral Degree received within the last 6 months or currently pursuing.
- **Overall GPA:** 3.20
- **Discipline(s):**
  - **Chemistry and Materials Sciences** ([12](#)👁)
  - **Computer, Information, and Data Sciences** ([1](#)👁)
  - **Earth and Geosciences** ([2](#)👁)
  - **Engineering** ([11](#)👁)
  - **Mathematics and Statistics** ([3](#)👁)
  - **Physics** ([16](#)👁)

**Affirmation Certification:**

I certify that I am at least 18 years of age, a US citizen, and have received a Master's Degree within the last 6 months or am currently pursuing a Master's Degree or Doctoral Degree in a STEM field at an accredited Minority Serving Institution (MSI). Click [here](#) to verify that you are enrolled at a current MSI.