

Opportunity Title: USDA-ARS Postdoctoral Fellowship in Thermal Biomass

Conversion

Opportunity Reference Code: USDA-ARS-NE-2023-0459

Organization U.S. Department of Agriculture (USDA)

Reference Code USDA-ARS-NE-2023-0459

How to Apply *Connect with ORISE...on the GO!* Download the new ORISE GO mobile app in the [Apple App Store](#) or [Google Play Store](#) to help you stay engaged, connected, and informed during your ORISE experience and beyond!

A complete application consists of:

- An application
- Transcripts – [Click here for detailed information about acceptable transcripts](#)
- A current resume/CV, including academic history, employment history, relevant experiences, and publication list
- Two educational or professional recommendations

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

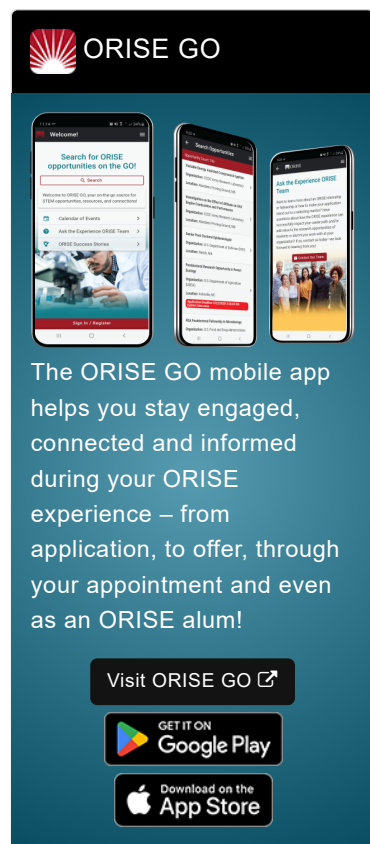
Application Deadline 2/2/2024 3:00:00 PM Eastern Time Zone

Description *Applications are reviewed on a rolling-basis.

ARS Office/Lab and Location: A research opportunity is currently available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), located in Wyndmoor, Pennsylvania.

The Agricultural Research Service (ARS) is the U.S. Department of Agriculture's chief scientific in-house research agency with a mission to find solutions to agricultural problems that affect Americans every day from field to table. ARS will deliver cutting-edge, scientific tools and innovative solutions for American farmers, producers, industry, and communities to support the nourishment and well-being of all people; sustain our nation's agroecosystems and natural resources; and ensure the economic competitiveness and excellence of our agriculture. The vision of the agency is to provide global leadership in agricultural discoveries through scientific excellence. At ARS's Eastern Regional Research Center (ERRC), the Sustainable Biofuels and CoProducts Research Unit develops chemical, catalytic, thermal, enzymatic and fermentative technologies to convert low value agricultural materials into novel high value sustainable renewable bioproducts.

Research Project: The PI's research primarily focuses on developing technologies for the thermal and catalytic conversion of lignocellulosic biomass (crop residues, grasses, forestry waste, etc.) into bio-fuels and chemical coproducts. The participant will be mentored directly by the PI and other senior members of the project team. The research participant will be involved in the conversion of biomass, lignin, waste plastics and other agricultural residues via thermal decomposition processes into bio-crude oil. These processes include fast pyrolysis and solvent liquefaction. The participant will be able to research methods to separate the bio-oil into fractions to be characterized for their chemical composition and considered for their potential to be used as a feedstock for isolation of valuable renewable chemical products. Possible methods for separation of chemical



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components from bio-crude oil include molecular distillation, liquid-liquid extraction and preparative high performance liquid chromatography. The participant can also research upgrading techniques to convert the bio-crude to hydrocarbons suitable for fuels use including use in sustainable aviation fuel. Here, the participant will use catalytic methods to determine the usefulness of the bio-crude as a feedstock for SAF or as a blendstock for other fuels.

Learning Objectives: Through this fellowship, the participant will gain experience in operating laboratory and pilot scale high temperature equipment, developing knowledge in analytical chemistry methods in gas and liquid chromatography, and gain experience in catalytic chemistry. Through collaboration with other scientists in the unit the participant will also learn about development of biobased materials such as bioplastics, bio-carbon materials, and biolubricants.

Mentor(s): The mentor for this opportunity is Charles Mullen (charles.mullen@usda.gov). If you have questions about the nature of the research, please contact the mentor(s).

Anticipated Appointment Start Date: Jan 2, 2024. Start date is flexible and will depend on a variety of factors.

Appointment Length: The appointment will initially be for one year, but may be renewed upon recommendation of ARS and is contingent on the availability of funds.

Level of Participation: The appointment is full time.

Participant Stipend: The participant will receive a stipend of **\$75,000/year**.

Citizenship Requirements: This opportunity is available to U.S. citizens, Lawful Permanent Residents (LPR), and foreign nationals. Non-U.S. citizen applicants should refer to the [Guidelines for Non-U.S. Citizens Details page](#) of the program website for information about the valid immigration statuses that are acceptable for program participation.

ORISE Information: This program, administered by ORAU through its contract with the U.S. Department of Energy (DOE) to manage the Oak Ridge Institute for Science and Education (ORISE), was established through an interagency agreement between DOE and ARS. Participants do not become employees of USDA, ARS, DOE or the program administrator, and there are no employment-related benefits. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE.

Questions: Please visit our [Program Website](#). After reading, if you have additional questions about the application process, please email ORISE.ARS.Northeast@ornl.gov and include the reference code for this opportunity.

Qualifications The qualified candidate should have received a doctoral degree in one of the relevant fields OR a closely related discipline.

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- Candidate with experience operating high temperature or high pressure chemical reactor systems is a plus.
- Candidate familiar with use of analytical instrumentation such as GC, GC/MS, HPLC is also a plus.

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| Eligibility | • Degree: Doctoral Degree. |
| Requirements | • Discipline(s): <ul style="list-style-type: none">◦ Chemistry and Materials Sciences (12👁)◦ Engineering (11👁)◦ Environmental and Marine Sciences (1👁) |