Opportunity Title: Next Generation Emissions Measurement Cross-Discipline Research
Opportunity Reference Code: EPA-ORD-NRMRL-AEMD-2019-03

Organization	U.S. Environmental Protection Agency (EPA)
Reference Code	EPA-ORD-NRMRL-AEMD-2019-03
How to Apply	A complete application consists of:

- An application
- Transcript(s) – 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. All transcripts must be in English or include an official English translation. 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.

If you have questions, send an email to EPArpp@orau.org. Please include the reference code for this opportunity in your email.

Application Deadline	11/1/2019 3:00:00 PM Eastern Time Zone
Description	*Applications will be reviewed on a rolling-basis.**

Energy production operations, refineries, chemical plants, and other industries and waste facilities can emit air pollutants and odorous compounds from fugitive leaks, process malfunctions, and non-point sources that are hard to detect, locate, model, and manage. These stochastic sources can create significant impacts on near-by populations. Enabled by the emergence of lower cost sensor/model hybrids and advanced informatics, a revolution in source understanding and management is on the horizon. Early detection and mitigation of stochastic sources by Next Generation Emissions Measurement (NGEM) will create safer working environments, cost savings through reduced product loss, lower air shed pollutant impacts, and improved transparency and community relations. In the future, higher quality information from inside the facility and at the fence line will couple with community sensor and crowd-sourced data, to produce a complete and responsive picture of emissions and air quality impacts

This research training opportunity will include evaluation of advanced air monitoring approaches using next generation emissions measurement (NGEM) systems and development of data analytical strategies to understand source emissions. The research participant will collaborate with a multidisciplinary research team that is developing, evaluating, and applying NGEM systems in field and laboratory studies, developing a mobile app, and conducting citizen science. This research has a variety of stakeholders including EPA researchers/policymakers, EPA regional staff, state/local air quality agencies, industry, sensor manufacturers, academics, communities, citizens, and others.

With guidance from the mentor, the the research participant may be involved in the following training activities:

- developing and conducting laboratory and field evaluations of NGEM systems
- performing laboratory analysis of whole air canister samples
- reviewing literature related to NGEM systems
- analyzing large data sets
- developing programming scripts to process and visualize data (e.g., utilizing R, MATLAB, or

other software programs)
- developing and applying data fusion approaches
- developing app code
- presenting findings through scientific presentations and/or publications

The research participant will learn about the following: 1) emerging measurement technologies for emission source characterization with a focus on volatile organic compounds (VOCs) and hazardous air pollutants (HAPs), 2) field deployment of air quality monitoring equipment, 3) data fusion approaches, 4) mobile apps, 5) citizen science, and 6) quality assurance procedures that support field and laboratory studies.

The objective of this research training opportunity will be to provide the research participant with knowledge, skills, and experience related to emission source measurements, laboratory and field evaluations, data analysis, app development, citizen science, data fusion approaches, and collaboration on multidisciplinary research teams.

Anticipated Appointment Start Date: December 2, 2019

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 EPA. The initial appointment is for one year, but may be renewed upon recommendation of EPA and is contingent on the availability of funds. The participant will receive a monthly stipend commensurate with educational level and experience. Proof of health insurance is required for participation in this program. The appointment is full-time in the Research Triangle Park, North Carolina, area. Participants do not become employees of EPA, DOE or the program administrator, and there are no employment-related benefits.

Completion of a successful background investigation by the Office of Personnel Management (OPM) is required for an applicant to be on-boarded at EPA. OPM can complete a background investigation only for individuals, including non-US Citizens, who have resided in the US for the past three years.

Qualifications   The qualified candidate should have received a bachelor's, master's or doctoral degree in one of the related fields, or be currently pursuing one of the degrees and will reach completion by the start date of the appointment. Degree must have been received within five years of the appointment start date.

Preferred skills:

- Direct laboratory experience in gas chromatography and/or field experience in the use of air monitoring equipment
- Management and analysis of large data sets
- Familiarity with programming scripts and data analysis tools (e.g., R, Matlab, SAS, JMP, python, Excel macros, etc.) to process, review, analyze, and visualize data
- Experience in inverse modeling and/or app coding
- Strong verbal and written communication skills

Eligibility Requirements
- **Citizenship:** U.S. Citizen Only
- **Degree:** Bachelor's Degree, Master's Degree, or Doctoral Degree received within the last 60 months or anticipated to be received by 12/2/2019 11:59:00 PM.

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- **Discipline(s):**
  - **Chemistry and Materials Sciences** (3 👁)
  - **Communications and Graphics Design** (1 👁)
  - **Computer, Information, and Data Sciences** (5 👁)
  - **Earth and Geosciences** (2 👁)
  - **Engineering** (3 👁)
  - **Environmental and Marine Sciences** (2 👁)
  - **Mathematics and Statistics** (4 👁)
  - **Physics** (2 👁)
  - **Social and Behavioral Sciences** (1 👁)

Affirmation I certify that I have lived in the United States for the past three years.