### GENERAL INFORMATION

**Program sponsor:** Princeton Environmental Institute  
**Position number:** U1WHI  
**Project title:** Fate of Heavy Metals in Valorization of Municipal Solid Waste Incineration Ash  
**Organization/research group:** Prof. Claire White, CEE/ACEE, Princeton University  
**Primary location(s) of internship:** E‐Quad/ACEE buildings, on campus  
**Additional cities and/or countries to be visited (if applicable):** N/A

**Note:** If this internship is located in a country with an International SOS risk rating of High or Extreme, final candidates must participate in a travel review process overseen by the Travel Oversight Group (TOG), and obtain safety guidance prior to departure. The University reserves the right to revoke support and funding for travel at any time there has been a significant deterioration in the safety and security conditions surrounding travel arrangements, or in the sector of the country, or countries, where travel is to occur.

### FACULTY SPONSOR(s)/HOST INFORMATION

**Name(s):** Claire White  
**University Department(s):** CEE/ACEE  
**E-mail:** whitece@princeton.edu  
**Phone:** x86263  
**Website:** white.princeton.edu

### INTERNSHIP/RESEARCH PROJECT INFORMATION

**Internship/project description:**  
As the world's population becomes more and more concentrated in urban settings, the need for innovative and environmentally-friendly waste disposal methods is becoming increasingly important. Municipal solid waste is mainly landfilled in the US, with a limited amount being incinerated for electricity generation. As the levels of incineration continue to increase, there is the potential to beneficially utilize the incineration ash in value-added construction materials, however, the existence of elevated levels of heavy metals in the ash (and original waste) severely complicate the situation. In this project local sources of ash collected from PA and NJ will be investigated for their valorization potential in a novel construction material. The summer undergraduate project will include working in a wet lab with graduate students to synthesize materials together with learning and using various experimental characterization equipment, such as X-ray diffraction and Fourier transform infrared spectroscopy.

**Student's role and responsibilities:**  
The summer undergraduate project will include working in a wet lab with graduate students to synthesize materials together with learning and using various experimental characterization equipment, such as X-ray diffraction and Fourier transform infrared spectroscopy.

The student will also learn data reduction and analysis of experimental data.
**Internship/project learning objectives:**
Knowledge on alternative cements, heavy metals in bottom ash, sustainability issues surrounding construction materials.

They will be able to independently perform experiments on samples containing no heavy metals, but any work with heavy metals will involve supervision from a graduate student.

**PROGRAM REQUIREMENTS**

**Academic background and any course pre-requisites:**
None

**Technical skills:**
Wants to work in a wet lab and perform experiments.

**Additional training(s):**
Selected student(s) will be required to perform EHS laboratory safety training, and lab-specific training provided by professor at start of internship.

**Equipment (if applicable):**
Laptop would be helpful but not required.

**Physical demands:**
None

**Language abilities/competencies (if applicable):** N/A

**Additional information about the internship/project:** N/A

**INTERNATIONAL TRAVEL REQUIREMENTS (if applicable)**

Visa(s) required? Yes ☐ No ✅
Research permit/pass required? Yes ☐ No ✅
Immunizations required? Yes ☐ No ✅

**INTERNESHIP/PROJECT SUPERVISOR(S)**

Name and title of primary supervisor: Claire White
Email: whitece@princeton.edu
Phone: 

Name and title of additional supervisor, if applicable: N/A
E-mail: Phone: 

**PROGRAM DATES AND FUNDING INFORMATION**

Weekly Stipend: $500
Number of Positions Available: 2
Tentative Start Date (mm/dd/yyyy): 06/17/2019
Number of Weeks: 8 or more
Tentative End Date (mm/dd/yyyy): 08/16/2019

Note: PEI funding is for full-time work, 35 hours per week minimum, and for a period of at least 8 continuous weeks.

Application Deadline: January 11, 2019