GENERAL INFORMATION
Program sponsor: Princeton Environmental Institute
Position number: E1WHI
Project title: CO2 capture materials
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):

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
Website: white.princeton.edu
Phone: x86263

INTERNSHIP/RESEARCH PROJECT INFORMATION
Internship/project description:
It is becoming increasingly apparent that CO2 capture, utilization and storage will play a role in reducing anthropogenic CO2 emissions. However, most CO2 based storage and/or utilization techniques require a pure CO2 source, and therefore economical and robust capture materials are needed to separate the CO2 from mixed gas sources (i.e., flue gas streams from coal, natural gas, cement plants). In this ongoing project, monolayer Ca(OH)2 is being synthesized via a solvent evaporation process. Characterization of the material is being conducted using key experimental tools (X‐ray reflectometry, ellipsometry, X‐ray diffraction, and Raman spectroscopy). For this internship, the gas sorption properties of the monolayer will be quantified in the laboratory to assess the effectiveness of the material. In particular, the adsorption of CO2, N2, CO, H2 and H2O vapor will be assessed together with the impact of these gases on the integrity of the material.

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.

The student will also learn data reduction and analysis of experimental data.
**Internship/project learning objectives:**
Knowledge on CO2 capture materials, material synthesis, material characterization.

They will be able to independently perform experiments on samples after an initial period of supervision.

**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)**

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<th>Visa(s) required?</th>
<th>Research permit/pass required?</th>
<th>Immunizations required?</th>
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<tbody>
<tr>
<td>Yes</td>
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<td>No</td>
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**INTERNERSHIP/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**

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