Engineering PhD position on Ice Crystal Nucleation and Attrition

The Lab for Multiscale Cloud Modeling and Experimentation at the University of Arizona is recruiting a highly motivated engineering PhD student to begin work in Fall 2023. The lab is broadly interested in how the effect of small-scale atmospheric processes propagates to larger-scale phenomena of social relevance (https://sylviasullivan.github.io/). As a specific instance of this general question, the current, fully-funded PhD position will be focused on ice nucleation and processing experiments. In the first half of the thesis, the student will characterize temperature and supersaturation gradients and model flow through a seed crystal nucleation chamber (*Figure 1*). Nucleation and sizing experiments will be run on various stabilized, burned, and control soil samples in collaboration with the lab of Dr. Tejo Bheemasetti in Civil Engineering at the UofA. In the second half of the thesis, the student will help in building a secondary flow and imaging chamber for attachment to the seed crystal nucleation chamber and measurement of fragment size distributions after crystal collisions.

Interested applicants should send a letter of motivation, curriculum vitae, and contact information of three references to Sylvia Sullivan at sylvia@arizona.edu by 15th April 2023. The position begins from 15th August 2023.

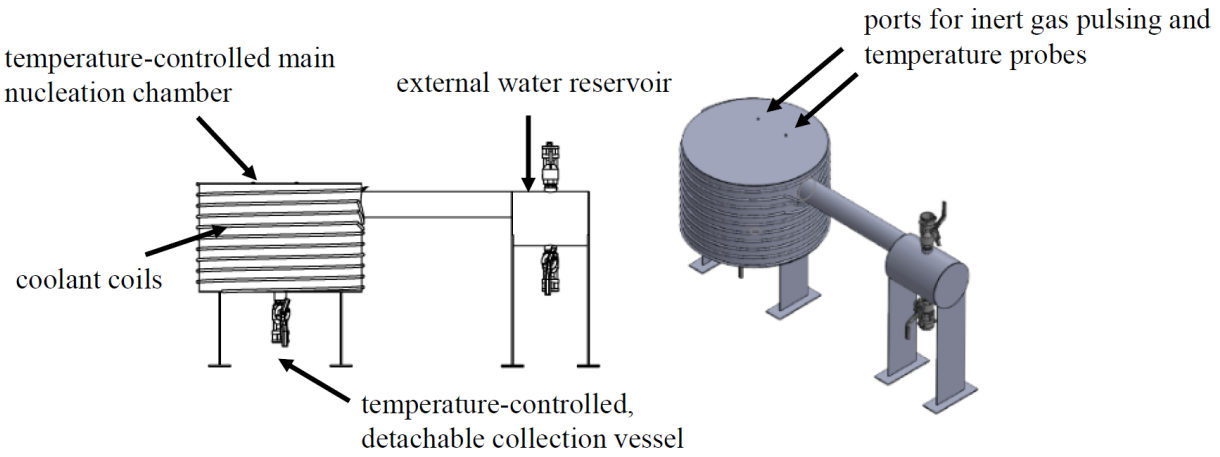

Figure 1 Engineering drawing of our seed crystal nucleation chamber. The apparatus consists of a main chamber temperature-controlled via coolant coils and a water reservoir from which vapor is fed into the main chamber. Inert gas is pulsed into the chamber, and temperature monitored, through top inlets of the main chamber.

Qualifications

Applicants should have either a Bachelor's or Master's degree in some kind of engineering, with preference for chemical or environmental engineering. Applicants with background in atmospheric or environmental sciences will also be considered if they are interested in completing their graduate degree in engineering. Advanced English in written and oral form is required, and programming experience, particularly in Python or MATLAB, is an advantage. A collaborative and communicative working style is preferred, and existing scientific publications are an asset.

About the University of Arizona

The University of Arizona is a Research I university, ranked in the top 20 among public universities and 35th among all universities in the US in research expenditures by the National Science Foundation. It is a proud member of the University Climate Change Coalition (UC3), consisting of 18 leading North American research institutions dedicated to finding practical solution to climate challenges.

Outstanding UA benefits include health, dental, vision, and life insurance; paid vacation, sick leave, and holidays; UA/ASU/NAU tuition reduction for the employee and qualified family members; and access to UA recreation and cultural activities. The University of Arizona has been recognized for innovative work-life programs.

At the University of Arizona, we value our inclusive climate because we know that diversity in experiences and perspectives is vital to advancing innovation, critical thinking, solving complex problems, and creating an inclusive academic community. As an Hispanic-serving institution, we translate these values into action by seeking individuals who have experience and expertise working with diverse students, colleagues, and constituencies. Because we seek a workforce with a wide range of perspectives and experiences, we provide equal employment opportunities to applicants and employees without regard to race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, gender identity, or genetic information.

About Tucson

The City of Tucson enjoys upwards of 350 sunny days each year and boasts a myriad of outdoor activities, from hiking, climbing, and cycling throughout the region to snowboarding and skiing on nearby Mount Lemmon in winter. The cost of living is below the national average and is well-below most comparable cities in the western states. More information on living in Tucson is available here: https://grad.arizona.edu/futurestudents/life-tucson