

**Project Title:**

Hollow cathode internal physics and kinetics

**Project Reference Code:**

UA-Branam1

**Host Facility:**

The University of Alabama

**Host Facility Location:**

Tuscaloosa, AL 35487

<https://www.ua.edu/>

**Project Description:**

Research into the fundamental physics of hollow cathodes as an electron emitting source is limited by both physical access as well as understanding of how the plasma is produced. The objective of this research is to quantifiably describe the relationship between the ionization events (i.e., singly, doubly) and the self-sustaining mechanism of the low work function insert. The evidence needed to better describe the plasma physical phenomena (ion production, ion-surface impact, electron production at the surface) inside of the hollow cathode is the accurate measurements of individual species' temperatures, plasma composition, ionization states, and surface temperatures.

**Disciplines:**

Plasma Physics

**Is U.S. citizenship required to participate in this project?**

No

**Internship Location and COVID-19 related Backup Plan**

The internship location is at The University of Alabama in Tuscaloosa, AL. We are planning for an in-person internship. However, due to the continuing COVID-19 pandemic, we are preparing additional options to ensure that the internship will take place, such as a hybrid or fully virtual option.

**Name(s) of Mentor(s) and contact information:**

Richard Branam ([rdbranam@eng.ua.edu](mailto:rdbranam@eng.ua.edu))

**Internship Coordinator/ HR manager:**

Amy Lang ([alang@eng.ua.edu](mailto:alang@eng.ua.edu))

The name and contact information of personnel at the host facility is provided for further assistance with questions regarding the host facility or the project.

Interns will not enter into an employee/employer relationship with the host facility. No commitment with regard to later employment is implied or should be inferred.