

AGEP-T Project Descriptions

**Brookhaven National Laboratory
Collider-Accelerator Department
Renewable Energy Group**

Project Title: The development of an innovative new control platform for micro-grids.

This document describes the work exploring the development of new reactor and accelerator production processes of copper and arsenic radioisotopes for applications in biomedicine, environmental sciences, engineering and national security in requesting applications from science post docs for the Stony Brook University – Brookhaven National Laboratory AGEp-T Program.

Project Description

- BNL in collaboration with the University of Missouri are exploring the development of new accelerator and reactor production processes for Arsenic and Copper radioisotopes. These radioisotopes have important roles to play in biomedical and environmental sciences, engineering and national security. Through this research program we will develop comprehensive “on the job” training programs for the next generation of scientists, post doctorate fellow and graduate in radioisotopes production. The radioisotopes under investigation have a range of half-lives which make them ideal for use in the medical applications such as theranostic imaging. Specifically, ^{72}As a positron emitter, that can be used for Positron Emission Tomography (PET) imaging and to assist in the radiotherapeutic application for ^{77}As . In addition, ^{67}Cu can be used for both SPECT imaging and radiotherapy. Technologies developed for the production of these radioisotopes will be applicable for isolating other valuable As and Cu radioisotopes, and provide a comprehensive suite of tools for research and clinicians. Involved in the handling of hazardous chemicals and/or radionuclides and will be expected to demonstrate good laboratory practice.

Qualifications of Ideal Candidate

Post Doc: Ph.D. in Chemistry, Radiochemistry and/or Physics with sound knowledge in inorganic chemistry, analytical techniques or nuclear chemistry. Experience working with radioactivity is important. The successful candidate will work in a highly collaborative way, building and maintaining productive working relationship with University Missouri. Keeping up to date with literature and best laboratory practices. The ability to communicate effectively, coupled with advanced technical and scientific writing is required for this role. They will also be required to conduct work that fully complies with the quality and environmental frameworks, safety procedures and standards, regulatory requirements and management principles of the C-AD. Experience in handling of radioisotopes and gamma counting techniques. Experience in separations synthesis of organic and/or inorganic compounds. Experience in developing computational programs for complex calculations, such as radionuclide production yields.

In use of various analytical tools including HPLC, HPLC-MS, HPLC-OES, GC, FT-IR, Fluorescence and/or UV/Vis spectrometry. Experience in operation of a safe and effective operation of a chemistry laboratory.

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