γ Spectroscopy System for Teaching and Research

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Collaborators: NA

Program: General Scientific Infrastructure

ABSTRACT:

The project objective is to improve the technical capability of the Washington State University (WSU) Department of Chemistry in the field of radiochemistry, allowing for enhancement of WSU's capacity to attract and teach high quality students interested in nuclear energy-related studies. *The specific aim of this project is to purchase and setup the equipment pieces necessary for a new up-to-date γ spectroscopy system.*

One of the flagship academic programs at WSU is radiochemistry, administratively located in the Chemistry Department. Six (6) faculty members of the Department of Chemistry are involved in different aspects of nuclear sciences, including environmental radiochemistry, separation, nuclear forensics, radiopharmacology, and computational chemistry. In addition to academic radiochemistry program, WSU is home to the Nuclear Radiation Center (WSU-NRC), which includes a 1 MW TRIGA-fueled research reactor and associated radiochemistry laboratory space. WSU nuclear science program at the Department of Chemistry has shown a considerable growth in the last decade. Out of the 48 students currently integrated in the program (only 5 graduate students were enrolled in this program in 2000), 36 are currently conducting experimental work requiring radioanalytical equipment.

Although the program currently features adequate counting systems and α spectroscopy, there is a lack of an up-to-date γ spectroscopy system that is readily available for both R&D work and laboratory instruction. The only γ spectroscopy system owned by the radiochemistry faculty in the chemistry department is a 17 years-old HPGe detector currently used for low-level and long term (months) measurements, rendering its application to other projects nearly impossible. However, a series of newly funded research projects aiming at the study of fission product chemistries require frequent γ spectroscopy analyses. Additionally, there is currently no γ spectroscopy system dedicated for the current WSU graduate radiochemistry laboratory course. The acquisition of a new up-to-date γ spectroscopy system will allow for superior training of students for R&D work and laboratory course, with state-of-the art technology, similar to that found in institutions that constitute potential future employers.

Upon completion of the project, WSU will have acquired equipment to conduct R&D work and educate students, supporting NE's goal of facilitate the transfer of knowledge from an aging nuclear workforce to the next generation of workers.

Overall Budget: $135,000