



---

## Inductively Coupled Plasma Optical Emission Spectrometer for Nuclear Energy-Related Teaching and Research

**PI:** Nathalie Wall,  
Washington State University

**Collaborators:** Jeremy Lessmann, Washington State  
University

**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 nuclear science, allowing for enhancement of WSU's capacity to attract and teach high quality students. *The specific aim of this project is to purchase and setup a new up-to-date ICP-OES.*

Radiochemistry is one of the flagship academic programs at WSU, 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 both analytical and radioanalytical equipment.

Although the program currently features adequate radioanalytical instrumentation, there is a lack of instrumentation for the quantification of stable elements at trace levels. The only ICP-OES owned by the Chemistry Department is a ca. 20 years-old instrument, used for both undergraduate laboratory teaching and research. The new ICP-OES will be used for nuclear-related R&D projects, for the support of a series of newly funded nuclear-related research projects at WSU as well as future ones. The new instrument will also be used for instruction of the newly restructured radiochemistry laboratory course, targeting nuclear forensics in particular. The acquisition of a new up-to-date ICP-OES 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 nuclear-related 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.