NSSC Summer School 2019

Neutron Activation Analysis activity – Sample preparation

Each group will consist of 4 students.
Two samples will be prepared per group:

- A piece of metal foil, called “control sample” in the following
- A sample of liquid, called “liquid sample” in the following

During the NAA3 activity, students will have determine the reactor flux using the control sample. Then they will have to determine what the contaminant in the liquid sample is and measure its concentration.

- Before entering the clean room, the instructor will explain to the students the cleanliness levels we want to achieve in the clean room (put on a coverall, shoe covers, safety glasses and gloves).

- The instructor will enter first followed by the students

- The instructor will explain how the samples should be prepared: small vial in medium vial that fits in a rabbit, etc..

- Student 1 will prepare the vials. Each vial should be quickly washed with alcohol and DI water.

- Student 2 will cut a piece of the metal foil and weigh it. The current foil should be big enough to be cut in 4 roughly equal pieces. Each piece should weight about 20 mg (or it'll cause dead time in the HPGe once out of the reactor).

- Student 2 will put the foil in the small vial and close it (no need to seal it with the soldering iron). This vial will be labeled “Ctrl”

- The instructor will then explain how the pipette works using DI water in a jar

- Student 3 will then take a sample of 50 microliters of the liquid, put it in a vial and close it. This vial will be labeled “Liq”

- The instructor will then show the students how to seal a vial with the soldering iron using a dummy vial that will be used as a spacer in the medium vial

- Student 4 will then seal the vial, surround it with plastic wrap and seal the wrap as well.

- Each sample will be put in a medium vial along with a blank small vial. Each medium vial will be cleaned with alcohol and then labeled with the group number

- The two medium vials will be put in a ziplock bag with the group number written on it

- The instructor will ask for questions

- The activity is now finished. The students will leave the clean room first followed by the instructor