



Laboratory and radiation analysis

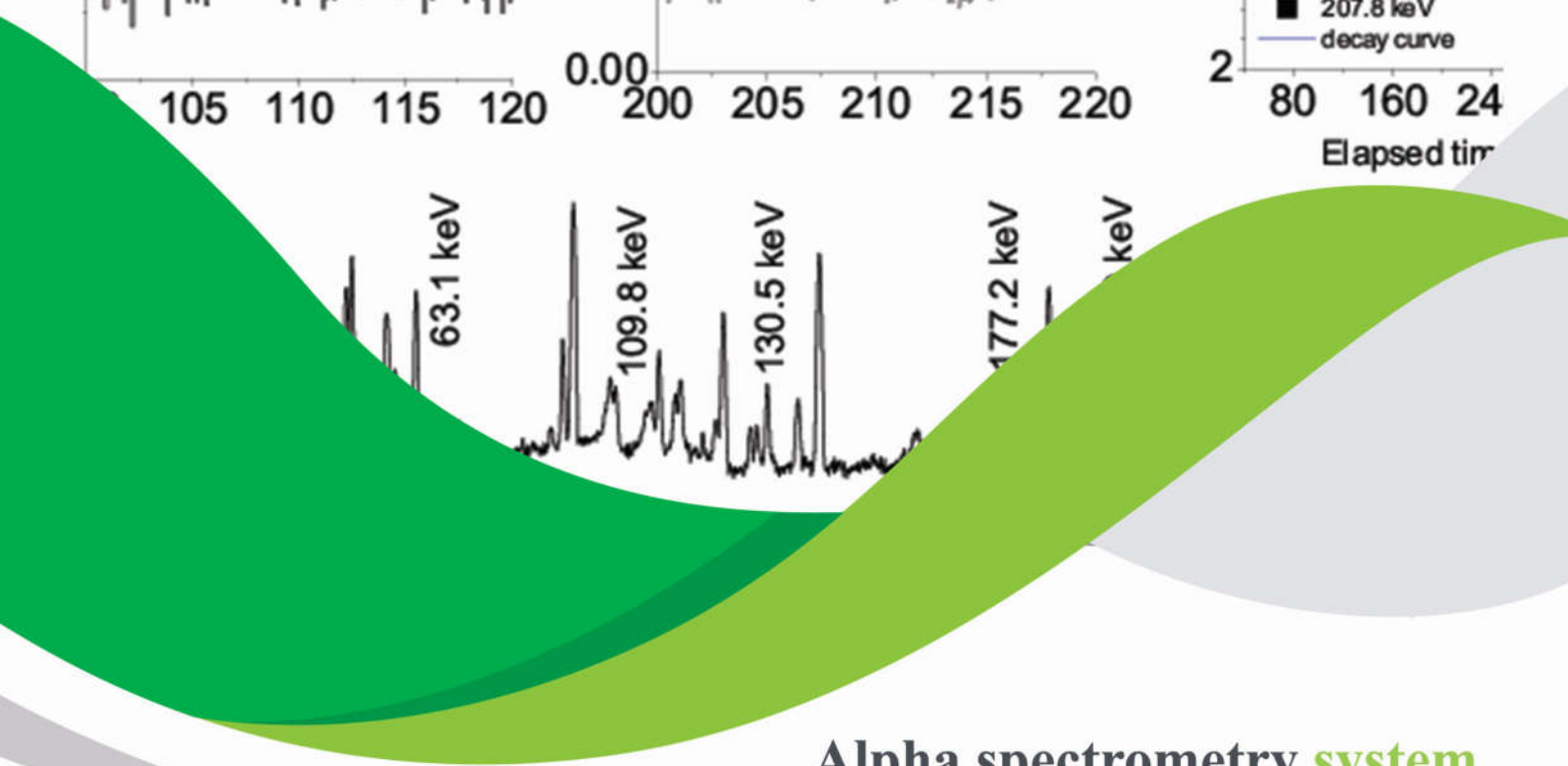
Environmental monitoring unit within IRWA measures and determines the concentration of radionuclides in different environmental samples.

High resolution Gamma spectrometry system

This system is used to detect (qualitative measurements) and determine the quantities (quantitative measurements) of gamma emitters in different environmental samples including water samples (surface and groundwater), soil and sediment, plants, living beings and air (filters) samples. This system is equipped with HPGe detector and is able to highly precisely detect and measure almost all of gamma emitters in the sample. Moreover, the layer shield (lead, copper and tin) makes this system able to count the samples with very low activity.

Gross alpha/beta radiation measurement system

This system is able to report the gross alpha/beta radiation of different samples (air filters, water, and smear test) in very low background based on the gas flow proportional counter and using its shielding system. Preparation and sampling methods for this system are relatively simple and fast. Time-saving and economical properties have made this counter system useful for samples screening and if necessary, the other radiation analysis methods which are more costly and usually need more counting time will be used to detect and determine radionuclides.



Alpha spectrometry system

Alpha spectrometry is an instrument used for very accurate measurement of alpha emitters including actinides (Thorium, Uranium, Plutonium, Americium and Curium), Polonium-210 and Radium-226 in different environmental samples.



The most common countable samples are:

- Drinking water, surface water, mineral water, sea water
- Environmental samples from sites with high concentration NORM
- Phosphate depositions samples for uranium and radium detection

In-situ measurements

Environmental radioactivity monitoring program usually includes in-situ measurements .

In-situ measurements are performed for:

- Qualitative and quantitative measurements of potential radiological contamination
- Characterization of places and materials
- Primary estimation of in-situ radioactivity





Radon gas concentration measurements

Radon-222 is a natural radioactive gas which is known as the main source of exposure to radiation. Its radioactive decay products with short half-life and alpha particles increase the risk of lung cancer.

Radon concentration and consequently the dose changes from region to region and even from building to building in the same area. Radon is a colorless, odorless and inactive gas. Outdoors its concentrations are low as it disperses in the air. Radon gas is penetrating to the indoor atmosphere mainly through the floor from the ground and through building cracks. The indoor radon concentration depends on various factors, such as the geology of the area, the flow rate from ground, the building materials, the existing ventilation system, and the kind of substructure and the height of the building.

Radon concentration measurement device and its lateral equipment are able to measure the concentration of Rn-220 in the air, water and soil. This device is able as well to measure the rate of arising radon gas in different samples such as stone, soil and construction materials.

