

Radioanalytical Facility

ANSTO's radioanalytical facilities are recognised internationally and the Minerals' team has extensive experience in the measurement of radioactivity in many different matrices, including uranium mill samples, copper concentrates, smelter by-products (dust, slag), mineral sands (monazite, zircon, ilmenite and rutile), rare earth process streams and concentrates, aluminium and phosphate processing and products, and process scales (oil/gas, water treatment).

Our key radioanalytical facilities include:

- Gamma Spectrometry – The activities of ^{235}U and decay progeny in the ^{238}U , ^{235}U and ^{232}Th decay chains are determined by gamma spectrometry using methods developed in-house for matrix correction.
- Ac-227 (rare earth processing) is determined from its gamma-emitting daughter, ^{227}Th .
- Parent ^{238}U and ^{232}Th and ^{210}Po are all alpha emitters and are determined by other radioanalytical techniques.
- Delayed Neutron Activation Analysis (DNAA) and Neutron Activation Analysis (NAA) – Parent ^{238}U and ^{232}Th concentrations are measured by DNAA and NAA, respectively. Both are selective and sensitive nuclear techniques and are the most accurate methods for determining these elements at ppm levels.
- Alpha Spectrometry – Po-210 only emits alpha particles and must be measured using alpha spectrometry. Po-210 is selectively extracted prior to source preparation and alpha counting. Typical detection limits are mBq levels.



About ANSTO's minerals experience

ANSTO has a 40-year track record of providing practical solutions and innovative technology to the mining and minerals processing industries. We have a team of 60+ dedicated professionals and technicians with expertise covering chemical engineering, metallurgy, mineralogy, chemistry, geology and radiation safety working within the Minerals business unit.

We provide process development services, technical review and consulting services, as well as collaborative and contract research on uranium, rare earth and specialty metals processing, radioactivity control and management, novel flowsheet design and modelling, and scoping level engineering / cost estimates.

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