

# Specification

The GammaPRO software enables solution of specific spectrometric problems such as:

- calculation of activity of naturally occurring radionuclides and effective specific activity in situ and in samples
- calculation of conformity factors for food and materials
- calculation of radon flux density and volumetric activity in different conditions
- calculation of radionuclide activity applying methods of physical and radiochemical concentrating
- calculation of radionuclides activity in a human body and its organs as a part of whole body spectrometer measurements

The matrix method enables automatic calculation of activity of a sample provided its radionuclide composition is known. The method is used for routine measurements of food, building materials, water and other substances subject for permanent radiological control.

The superposition method is mainly used for control of correctness of activity calculations in case of hard-to-analyse (multiple peak) low-resolution spectra (acquired by scintillation detectors). Such a tool enables visual estimate of the degree of similarity between an acquired and calculated spectrum. Additionally, calculation data can be adjusted until the spectra completely coincide.

The Software features an integrated system for report generation which provides automatic creation of measurement results. The settings for report generation can be adjusted by user.

## GammaPRO software package

### Features

GammaPRO provides all the tools necessary for separate peak analysis, namely:

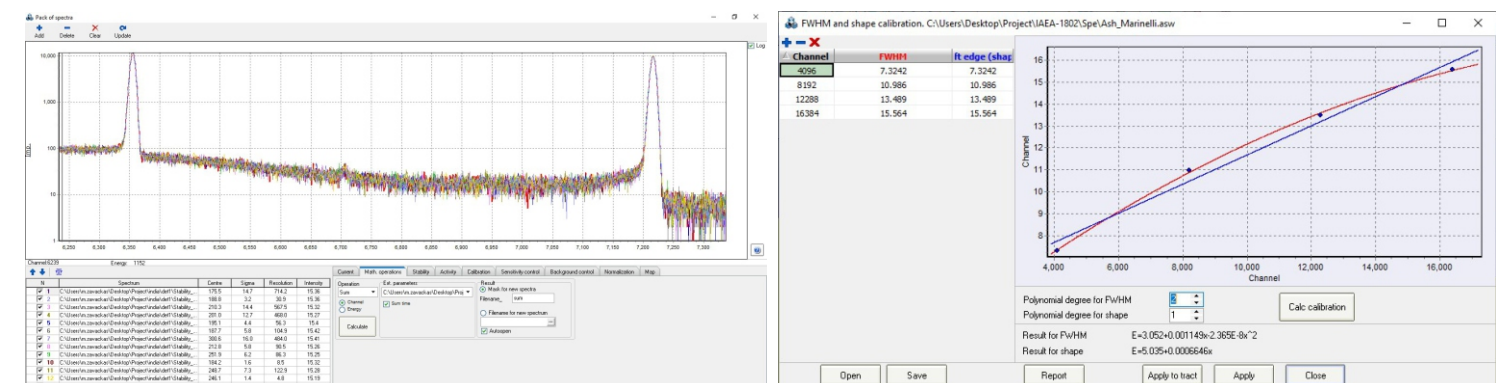
- energy calibration;
- direct peak search in spectrum and peak search considering the radionuclides and their peak energies specified in the library;
- peak and multiplet fit by Gaussian and other functions;
- automatic identification of peaks;
- considering count sample density as a calculation parameter; considering background as a calculation parameter;
- calculation of efficiency curves (efficiency calibration), FWHM calibration, peak shape calibration.

The GammaPRO software features multiple window interface and enables a number of opportunities for spectrum analysis such as:

- visualization of spectra and spectrum acquisition progress;
- peak search and identification of radionuclides;
- calculation of efficiency curves and sensitivities;
- mathematical operations (sum, subtraction, normalization etc);
- processing of set of spectra;
- calculation of integral nonlinearity;
- conversion into other formats and translation into other applications such as MS Word, Excel, MS Access, MatLab;
- calculation of ambient dose equivalent rate in auto mode.

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The GammaPRO software provides the following additional service options for optimization of routine measurements:

- auto adjustment (quality assurance), that is, control and adjustment of a spectrometric tract without user's involvement;
- database which provides transfer and storage of measurement results in a database (MS Access etc);
- log which provides automatic registration and storage of measurement and quality assurance results; radionuclides library editor. This module is necessary for creation of library files used for calculation of activity of radionuclides;
- TRIOMAP is a module for performing measurements in field and mapping;
- barcoding is an integrated system of barcode identification which enables input of sample data in the software by means of a barcode scanner;
- sample loader is a module for automatic measurements using various types of count sample loaders.