Alpha Spectrometer Amber

Alpha Spectrometer is intended for the amplification, analogue filtration of the electric pulses coming from alpha radiation detectors. The complete spectrometer consists of vacuum chamber from stainless steel, power supply, preamplifier, pulse generator, discriminator, counter. Vacuum chamber allows to put in the majority types of detectors, including Ion Implanted Silicon Alpha Particle Detectors SIID with high resolution and up to 1200 mm^2 square. Samlpe holder inside vacuum chamber allows to adjust the distance between sample and the detector from 4 to 48 mm with 4 mm step.

Features

- Device management with external PC software
- Vacuum gauge with pressure display and control via software
- Detector current meter from 1 nA to 10 μA
- High Voltage inhibit in case of vacuum breaking
- Reverse bias on the sample holder
- Integrated Multichannel Analyzer
- Calibration pulser
- Vacuum chamber from stainless steel
- Fits up to 50 mm (2 inches) diameter samples
- Possibility to use alpha detectors up to 1200 mm^2
- Adjustable sample-detector distance from 4 to 48 mm (with 4 mm step)

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Specification

Parameter	Value
Registration energy range, keV	up to 10000
Shaping time constants, us	1
Integral nonlinearity, %	< 0.04
Maximum value of High Voltage, V	+150
Operation temperature range, ^0C	+5...+35
Temperature instability, %/C	< 0.01
Time of continuous operation, hour	> 24
Consumed power, Wt	< 10
Supply voltage, V	+/-12 +/-24
Energy resolution at 5.49 MeV for 450 mm^2 detector, keV	< 20
Absolute detection efficiency, %	> 20

Analytical software package AlphaPRO allows to:

- Execute spectra acquisition for the set time,
- Mark and select regions of interest and examine them on a separate plane,
- Increasing or reducing scale on horizontal and vertical axeis,
- Perform energy calibration of spectra on two known energies;
- Determine centroids and area of peaks with background deduction and without background deduction;
- Make an estimation of energy resolution at one second and one tenth height of full absorption peak;
- Carry out an automatic serial spectra acquisition with automatic record on a disk;
- Print out spectrum window;
- Compare different spectra in one window simultaneously reducing or decreasing scale;
- Calculation of activities of alpha emitting radionuclides.