

Spectrometric detection unit based on scintillation SrI2(Eu) detector

Thursday, October 15, 2020 6:55 PM (20 minutes)

Energy resolution of spectrometric instruments for radiation control systems today should be below 4.5% as required by international standards. Example, the American national standard ANSI N42.34-2015 introduces a requirement for the resolution of RID spectrometer channel to be not above 4%.

Developed a spectrometric detection unit based on scintillation SrI2(Eu) detector. According to the results of spectrometric test the typical resolution for the 662 keV line of the ¹³⁷Cs radionuclide was 3.3% at maximum count rate 150 000 cps [1].

Based on the SrI2 (Eu) scintillation crystal also a detection unit with a nonlinear channel - energy conversion scale from 15 keV to 8 MeV was developed. The capabilities of this measuring instrument were tested in the field of capture gamma radiation from targets at the AT140 Neutron Calibration Facility [2].

The developed spectrometric detection unit can be widely used both in installed radiation control systems and in mobile devices with a function of radionuclide identification.

1. Yulia Verhusha et al. // 2019. Gamma-radiation detection unit based on SrI2(Eu) crystal. LXIX International conference «Nucleus-2019» on nuclear spectroscopy and nuclear structure «Fundamental Problems of Nuclear at Borders of Nucleon Stability, High Technologies», Book of Abstracts. 372.
2. Damian Komar et al. // 2019. Study the applicability of neutron calibration facility for spectrometer calibration as a source of gamma rays with energies to 10 MeV. Springer Proceedings Physics. 227, 299-304.

Primary authors: VERHUSHA, Yulia (SPE ATOMTEX); ANTONOV, Andrey (SPE ATOMTEX); KOZHEMYAKIN, Valery (SPE ATOMTEX); KOMAR, Damian (SPE ATOMTEX)

Presenter: VERHUSHA, Yulia (SPE ATOMTEX)

Session Classification: Poster session 3 (part 3)

Track Classification: Section 3. Modern nuclear physics methods and technologies.