

**O. A. Bezshyyko, I. M. Vyshnevskiy, R. V. Denisenko, S. A. Karpenko, I. A. Maliuk,  
E. E. Petrosian, V. M. Pryymak**

**PORTABLE SCINTILLATION GAMMA-SPECTROMETER FOR FIELD MEASUREMENT  
OF RADIOACTIVITY IN EXTENSIVE OBJECTS**

The portable scintillated gamma-spectrometer for field measurement of radioactivity in the volume objects was designed. The crystal  $\text{CdWO}_4$  that has weak dependence of light yield from temperature in combination with PMT was applied as the gamma-rays detector. The design of the device provides the possibility for measuring radioactivity of the extensive objects in  $4\pi$ -geometry without background measurements. In this case the value of the efficiency needed for specific activity calculation in close approximation depends only from crystal geometry and density of measuring object and may be set as the device parameter without efficiency calibration procedure during the operation. The spectrometer does not have an auxiliary radio-active source and connecting cables in the composition. The smartphone operated under Windows Mobile is used as the control module. Bluetooth connection provides data exchange between smartphone and measurement head.

*Keywords:* spectrometer, detector, crystal, PMT, gamma-ray, radioactivity, measurement.