

INVESTIGATION OF FACTORS INFLUENCING THE ACCURACY OF URANIUM ENRICHMENT LEVEL DETERMINATION BY MULTI- ANALYSIS METHOD (MGAU)

A.N. Berlizov, V.V. Tryshyn

Statistical characteristics of multi-group analysis technique for isotopic composition determination of uranium samples, realised in the form of portable "U-Pu InSpector" spectrometry system and MGAU V.1.0 code, have been studied with the help of uranium isotopic standard reference materials in the range 0.32 - 4.5 % of ^{235}U and 0.004 - 0.036 % of ^{234}U concentration. The influence of a number of factors that can cause systematic bias of measured values are also studied. Obtained results reveal dependence of measured ^{235}U enrichment level upon isotopic composition of uranium sample and geometry of the measurement. Systematic underestimation of measured ^{234}U content turned out to be of about 23 % in the concentration range. Possible sources of revealed systematic biases are discussed as well as some recommendations for improving of MGAU code are given.