Contribution ID: **76** Type: **oral**

Recommendations for Determining Uranium Isotopic Composition by MGAU

Thursday, 23 October 2014 12:00 (20 minutes)

The study deals with testing the versions 4.0 and 4.2 of the Multi-Group Analysis for Uranium (MGAU) software. MGAU is used for determining uranium isotopic composition by gamma spectrometry. The aim of the study was to determine the optimal measurement conditions needed to get the MGAU results as accurate as possible. The optimal number of total counts and the optimal count rate were determined. The study also shows how the accuracy of MGAU depends on the 235U-enrichment for various total numbers of counts.
The testing procedure is based on using simulated spectra generated from real spectra of certified reference materials and well characterized fuel pellets. The simulated spectra are generated by randomly sampling data from real ones by Cambio software. This approach allows producing a large number of spectra having different number of total counts to obtain statistically relevant data. More than 7000 spectra have been used in the study. The results of this work can help to appropriately set up a gamma-spectrometric measurement of the uranium isotopic composition.

Country or International Organization

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Session Classification: NDA Measurements I: Gamma Spectrometry