

البحث الثالث (3)

Title: “The re-evaluation of the ^{234m}Pa 's 1001.03 keV gamma emission absolute intensity for the precise assessment of ^{238}U .”

Journal

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الملخص باللغة الإنجليزية

In this study the commonly used f-value for the 1001.03 keV ($0.835 \pm 0.004\%$) energy transition of the ^{234m}Pa was re-evaluated due to an obvious consistent overestimation of the ^{238}U activity concentration. Different calibration protocols, samples' matrices and geometries, and gamma-ray spectrometers were exploited in order to assure the accuracy of the derived data. An average positive relative bias of about 24% from the currently used f-value was estimating leading to newly adopted f-value of $1.037 \pm 0.052\%$. This newly suggested f-value will lead to an improvement in the accurate assessment process of the ^{238}U using gamma-ray spectrometry in both environmental and nuclear safeguard fields.