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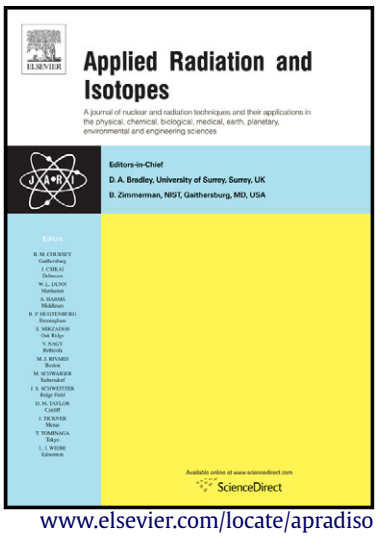

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PII: S0969-8043(13)00356-4
DOI: http://dx.doi.org/10.1016/j.apradiso.2013.08.005
Reference: ARI6333

To appear in: *Applied Radiation and Isotopes*

Received date: 10 December 2012
Revised date: 8 August 2013
Accepted date: 9 August 2013

Cite this article as: P. Sibczynski, J. Kownacki, A. Syntfeld-Kazuch, M. Moszynski, M. Kisielinski, W. Czarnacki, K. Kosinski, M. Matusiak, M. Klimasz, M. Kowalczyk, T. Abraham, J. Mierzejewski, J. Srebrny, Decay chains and photofission investigation based on nuclear spectroscopy of highly enriched uranium sample, *Applied Radiation and Isotopes,* http://dx.doi.org/10.1016/j.apradiso.2013.08.005

Decay chains and photofission investigation based on nuclear spectroscopy of highly enriched uranium sample

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Abstract

Nuclear spectroscopy experiments were performed for 100 g metallic uranium rod enriched to 93% ^{235}U, in order to establish and characterize the most prominent γ-rays in the natural decay series and photofission reaction. Single γ-ray spectra and γ-γ coincidences measurements were conducted before irradiation. The uranium sample was subsequently irradiated with 15 MeV bremsstrahlung photons. Relative intensities of γ-lines and several values of half-lives of the fission fragments decays were determined. The obtained information can be utilized in detection of smuggled nuclear materials and characterization of bulky nuclear waste packages.

Keywords: radioactive chain, gamma ray spectroscopy, photofission, highly enriched uranium, detection of concealed nuclear materials

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