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Characterization of Strong ^{241}Am Sources

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Gamma ray spectra of strong ^{241}Am sources may reveal information on the composition of the sources. There may be other radioactive nuclides such as progeny and radioactive impurities present. Furthermore, broadened peaks in the spectrum indicate the presence of nuclear reactions on light elements within the source. These spectral features would be useful information in a national nuclear forensics library (NNFL) in cases when the visual information on the source, e.g. the source number, is destroyed. In this work the possibility to use inherent signatures in an ^{241}Am source to differentiate sources from each other is investigated. The results show that these signatures of the source, i.e. the age and impurities, can be used as unique identifiers of the origin and the nature of a particular orphan source.

Country and/or Institution

Sweden / Swedish Defence Research Agency

Primary author: Ms VESTERLUND, A. (Sweden)

Co-authors: Dr NORDLUND, A. (Chalmers University of Technology, Sweden); Dr EKBERG, C. (Chalmers University of Technology, Sweden); Dr CHERNIKOVA, D. (Chalmers University of Technology, Sweden); Dr SKARNEMARK, G. (Chalmers University of Technology, Sweden); Dr RAMEBÄCK, H. (Swedish Defence Research Agency / Chalmers University of Technology); Dr AXELL, K. (Swedish Defence Research Agency / Chalmers University of Technology); Ms CARTEMO, P. (Chalmers University of Technology, Sweden)

Presenter: Ms VESTERLUND, A. (Sweden)

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