



Contribution ID: 228

Type: **Panelist (Panel Session)**

R&D on NDA techniques for nuclear safeguards and security in JAEA-JRC partnership in Ispra

Development of new non-destructive assay (NDA) techniques for characterizing nuclear or other radioactive materials for both nuclear safeguards and security is challenging for many research organizations. In this regard, the Integrated Support Center for Nuclear Security and Nuclear Nonproliferation of the Japan Atomic Energy Agency (ISCN JAEA) and the Nuclear Security Unit of the Joint Research Center of the European Commission (EC JRC) have undertaken a research collaboration in this field. Recently their efforts have intensified for developing the delayed gamma-ray spectrometry technique (DGS) based on measurements of gamma-ray spectra of relatively short-lived fission products of neutron irradiated nuclear material (NM) samples under analysis. After successful experimentation of this technique carried out with the PUNITA D-T neutron generator (https://www.epj-conferences.org/articles/epjconf/abs/2017/15/epjconf-nd2016_09018/epjconf-nd2016_09018.html) and in view of further fine-tune the applicability of this technique in nuclear safeguards, new MC models based theoretical simulations were developed (to be published of a separate contribution to the symposium) and intensive experiments are being performed using an ISCN JAEA DGS experiment system operated in JRC PERLA laboratory in Ispra (Italy). Promising experimental results will be presented including investigations on other testing configurations for higher sensitivity of the technique from the standpoints of high efficiency gamma-ray detection or medium energy-resolution and possible enhancing fission yields of interrogated NM under analysis. Beside the validation of a new NDA technique, this work will contribute not only for validation of the theoretical model but also to gather new nuclear data specially at high gamma energy in the range 3-6 MeV and will open new research opportunities such as enhancing high energy detection systems.

Which "Key Question" does your Abstract address?

CHA1.1

Which alternative "Key Question" does your Abstract address? (if any)

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Topics

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Session Classification: [TEC] Improving Coordination of Safeguards R&D

Track Classification: Leveraging technological advancements for safeguards applications (TEC)