



ID: O3.2-251

Type: Oral

Gamma-Gamma Coincidence Detection System for Radionuclide Aerosol Monitoring

An effort is underway to update the Radionuclide Aerosol Sampler Analyzer that is currently deployed by the International Monitoring System with one of the objectives being to increase the frequency of sample collection while maintaining or improving detection sensitivity. Detection efficiency will be increased using a pair of high purity germanium detectors, which will surround the sample also allowing for the use of coincidence spectroscopic techniques. The design of a prototype detector system is underway, which will be coupled to an electrostatic precipitation collection system. A combination of modelling studies and measurements with a representative prototype are being undertaken to predict detection performance for IMS-relevant radionuclides with different combinations of collection, decay and count times. The status of the prototype design and predicted performance will be presented.

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Session Classification: O3.2 Radionuclide Technologies and Applications

Track Classification: Theme 3. Monitoring and On-Site Inspection Technologies and Techniques: T3.2 Radionuclide Technologies and Applications