# CALIBRATION OF GAMMA SPECTROMETRIC MEASUREMENTS, DETECTION OF RADIOACTIVE NUCLIDES ON AEROSOL FILTERS

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A widely used method in the assessment of environmental radioactivity is the scintillation detector. Calibration is indispensable for an accurate measurement. The parts of our measuring system were a lead tower, a NaI(Tl) scintillation crystal and a signal processing unit. We did the spectrum's evaluation by software.
For the detector calibration we used 137Cs, 241Am, 60Co, 54Mn benchmark radiation sources. Full widht at half maximum, channel energy and efficiency calibrations are included in the process. Before calibration, the software could not recognize any peaks, but after that we were able to detect radioactive nuclides even from evironmental samples. This proves that the calibration was successful.
We examined the efficiency's realitionship with the filter geometry and the measuring time. We did this with mixed-ray-source benchmarks that comply with the so-called Hunter- and small aerosol filter geometries. The measuring times were 600 s 1200 s and 1800 s. Within the software we tried to optimize the parameters for a more accurate full energy peak.
Our results have shown that there was no clear correlation between filter geometry and efficiency. The minimum measuring time during which all of the mixed-ray-source benchmark's full energy peaks were detected was 1200 s. The calibration of the scintillation detector may support further measurements and research.