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Prompt γ ; activation analysis as performed in Budapest

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Institute of Isotopes has been a major center in further development of Prompt Gamma Activation Analysis (PGAA). The paper describes the analytical procedure followed at Budapest. The analysis is based on the careful calibration of the detector system. The counting efficiency and non-linearity of the Compton-suppressed high-purity germanium detector is determined regularly, and enables the accurate determination of activities and peak positions. Partial gamma-ray production cross-sections have been determined for the most important prompt-gamma lines of every naturally occurring chemical element using stoichiometric compounds and homogeneous mixtures. A method for qualitative and quantitative analysis has also been developed at our laboratory for the determination of the chemical composition of samples from the peak areas obtained from the prompt-gamma spectra using the spectroscopic data library. The data library and the method have been used for the analysis of a large variety of samples at Budapest and at other PGAA laboratories.

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