

Iridium coincidence spectrometry in Vienna, Austria: application for impact stratigraphic studies

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A recently constructed multiparameter γ - γ coincidence spectrometer at the University of Vienna was used for detailed studies of the Ir content of samples from geological boundaries. This sensitive instrument is tailored to the determination of iridium at very low abundance levels with a detection limit of less than about 20 ng/g in carbonate rocks. So far, our studies have concentrated on the determination of Ir in impact related rocks. As this is a purely instrumental analytical method, it avoids any possible contamination during dissolution or chemical treatments. The instrument uses low-energy planar detectors and specially adopted fast nuclear electronic components, e.g., a multiparameter coincidence system. Good sensitivity and precision in the sub-ppb range characterize this nondestructive instrumental neutron activation method. Another advantage is the possibility to analyze small amounts of sample (50-500 mg). As standards, either synthetic iridium standards loaded on high-purity quartz powder, or well characterized geological reference materials, are used. Measurements were done on samples from various geological boundaries. High resolution iridium scanning was performed across impactoclastic layers from the Cretaceous-Tertiary and the Triassic-Jurassic boundary, as well as from the Late Eocene impact layer. Disturbances of the iridium profile caused by bioturbation was studied by microdrilling of cut slabs from the Late Eocene section in Massignano, Italy.