



EINLADUNG

zum

VERA - SEMINAR

von

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**Measurement technique and
first applications of ^{236}U**

^{236}U is one of the most abundant anthropogenic radionuclides. It had not been explored because of the difficulties involved in the measurement. The major technical challenge is the required abundance sensitivity, i.e. the possibility to detect ^{236}U among the abundant neighbouring isotopes ^{235}U and ^{238}U . During the last years we have developed suitable methods that make ^{236}U -measurements an outstanding feature of VERA.

In several national and international collaborations we have performed measurements in various compartments of the environment. The results are evolving into a consistent picture of the dispersion of anthropogenic ^{236}U . While previous measurements could identify ^{236}U only in the vicinity of known contaminated sites (Sellafield, Chernobyl, etc.), we detected ^{236}U in the general environment in South Italy, in Austrian surface waters, and in soils from Austria, LaPalma island (Spain), New Zealand, and Japan. This led to the insight that ^{236}U is a component of the global fallout from nuclear weapons testing, produced via the $^{238}\text{U}(n,3n)^{236}\text{U}$ reaction. ^{236}U global fallout allowed us to pursue a first oceanographic application as a tracer for water circulation in the Japan Sea. Depth profiles down to 3800 m were measured at seven different sites, together with measurements on the bottom sediment. The results show that uranium behaves conservative in seawater and is thus suitable for the study of ocean dynamics. The concentration on the surface agree with measurements on waters from other oceans and with results from corals.

This work was carried out partly in the framework of FWF project FWF P21403 (Gabriele Wallner) and in collaboration with the 2nd University of Naples, the Institute for Inorganic Chemistry at the University of Vienna, the Hiroshima University, the Australian National University, and the ITU Karlsruhe.

Donnerstag, 07. April 2011, 16:30 Uhr

**1090 Wien, Währinger Str. 17, "Kavalierstrakt",
1. Stock, Victor-Franz-Hess Hörsaal**