INSTITUT FÜR ISOTOPENFORSCHUNG UND KERNPHYSIK
DER UNIVERSITÄT WIEN

E I N L A D U N G

zum

S E M I N A R V O R T R A G

von

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Examinations to authenticate a metallic natural uranium cube from the Heisenberg "uranium machine"

The discovery of fission in 1938 was the beginning of research how to utilise the energy released during this process. In Germany Werner Heisenberg was the leading scientist in the development of the "uranium machine", a reactor consisting of cubes of metallic natural uranium and heavy water as a moderator. Some of the cubes still exist and one of them was brought to the Institute for Transuranium Elements (ITU) for sampling and analysis, in order to confirm the authenticity of the cube from the "uranium machine".
The isotope composition of the uranium and the age of the cube were determined by mass spectrometry (TIMS and ICP-MS) and by radiometry (alpha spectrometry), respectively. Comparisons of the experimental results with related literature and comparative samples may also give additional information on the geographical origin of the uranium, the production process of the metal and the reactor conditions.
The analytical techniques and methods described here are also used for nuclear safeguards and for other kind of nuclear forensic samples, e.g. seized smuggled nuclear materials.

Mittwoch, **30. April 2003, 16:30 Uhr**

1090 Wien, Währingerstr. 17, "Kavalierstrakt",
1. Stock, Seminarraum von VERA

P. Hille W. Kutschera