



EINLADUNG

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VERA - SEMINAR

von

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**Actinide mass spectrometry:  
A story of accuracy & precision, of identification &  
attribution, and of traceability**

Mass spectrometers are well established and essential analytical tools for the analysis of isotopes of uranium, thorium, plutonium, and other actinides. They are “microscopes” for probing the isotopic world and quantifying elemental compositions. As such, they are employed in many fields of research and scientific endeavors including nuclear fuel cycle research, isotope geochemistry and geochronology, study of ancient nuclear reactors, environmental monitoring, or understanding geological and biological cycles. It also includes the study of atomic and nuclear properties as well as metrology. More recent applications are nuclear safeguards and forensics analysis. Pushing the limits of analytical methods is pushing the limits of analytical knowledge. Using mass spectrometers to count isotopes and reveal isotopic and elemental ratios involves exploring the limits of detection, accuracy, and precision. With a focus on thermal ionization mass spectrometry (TIMS) and inductively coupled plasma mass spectrometry (ICP-MS), this presentation will discuss some of the analytical methods that are considered state-of-the-art in metrology of isotope ratios of actinides as well as being used and developed for nuclear safeguards and forensics analysis. Present limits of accuracy, precision, and detection will be reviewed as well as ongoing research efforts in identification and attribution of nuclear samples. The role of traceability (to SI units) and uncertainty statements (e.g., ISO GUM) will be pointed out.

**Donnerstag, 21. Januar 2010, 16:30 Uhr**

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