

INSTITUT FÜR ISOTOPENFORSCHUNG UND KERNPHYSIK
DER UNIVERSITÄT WIEN

E I N L A D U N G

zum

I N S T I T U T S S E M I N A R

von

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Dating of glacier ice on the millennium time scale

Whereas Arctic and Antarctic ice shields reach back several 100 000 years and are well investigated, ice from Alpine glaciers is usually only a few hundred years old. Only in favorable cases an age of several 1000 years can be expected. One such case is Colle Gnifetti (4450 m asl), Monte Rosa, Switzerland, where the topography leads to low accumulation and slow ice flow. Whole-year temperatures below 0°C preserve the stratigraphic information.

Dating ice cores from Alpine glaciers via radiocarbon is still an unsolved problem. Only in rare cases enclosed larger objects allow direct dating. Measurements on CO₂ released from air bubbles during melting revealed a substantial contribution of ¹⁴C produced in-situ mainly by spallation of oxygen in the ice with energetic cosmic ray neutrons, which renders CO₂ disadvantageous for dating applications especially at high altitude or low accumulation drill sites. Other promising carbon fractions present in glacial ice are POC (particulate organic carbon) and DOC (dissolved organic carbon).

This talk describes our approach towards extraction and AMS radiocarbon dating of the particulate organic carbon (POC) fraction on ice samples at VERA (Vienna Environmental Research Accelerator). In a collaboration with the Ice Group (Dieter Wagenbach) from the Institut für Umweltphysik der Universität Heidelberg, test measurements were performed on ice and snow samples from Grenzgletscher and Colle Gnifetti in the Monte Rosa Mountain region. The sample masses used were between 300 g and 1000 g ice yielding between 30 µg and 300 µg carbon as POC. First results will be presented and future plans to pursue glacier ice dating will be discussed.

Mittwoch, 10. März 2004, 16:30 Uhr

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