rate of stopped negative muons $I_{\mu^-}(z)$, the chemical compound factor f_C, the probability of nuclear capture f_D and the probability f* of the reaction channel after nuclear μ^- capture to the investigated nuclide. The production due to fast muons is given by $P_{\mu,fast}(z) = \Phi_{\mu,fast} \cdot \sigma$ with the flux of fast muons $\Phi_{\mu,fast}$. The energy-dependent cross section σ is given by $\sigma = \sigma_0 \cdot E_{mean}^{0.7}$ according to the Wolfendale rule with the mean muon energy E_{mean} in GeV at the considered depth.

With the PSI irradiations, the following probabilities f* of particle emission channels after μ^- capture have been measured: $f^* = (5.2 \pm 0.6) \cdot 10^{-3}$ for $O(\mu^-,\nu_\mu \alpha pxn)^{10}Be$ [x = 1–3], and $f^* = (1.4 \pm 0.4) \cdot 10^{-3}$ for $S(\mu^-,\nu_\mu \alpha xn)^{26}Al$ [x = 2–4,6]. From the result of the oxygen irradiation and the earlier result obtained for ^{26}Al from the irradiation of quartz (Strack *et al.* 1994), the production ratio of ^{26}Al to ^{10}Be after μ^- capture in quartz has been deduced to be $P(^{26}Al)/P(^{10}Be) = 7.3 \pm 1.5$ (Heisinger *et al.* in preparation). In another experiment, the channel probability from Ca to ^{36}Cl was measured.

For the determination of the fast muon cross section σ_0 of ^{10}Be (from O), ^{14}C (from O), ^{26}Al (from Si, S and Al), ^{36}Cl (from Ca), ^{53}Mn (from Fe) and ^{250}Pb (from Tl), several targets have been irradiated at CERN. This work is still in progress.

Depth profiles of ^{10}Be and ^{26}Al in natural quartz samples were measured in northern Bavaria up to depths of 260 m and were compared with calculated profiles taking into account erosion. From this comparison, the erosion rate in the last million years was determined to be *ca.* 5 μm yr^{-1} (Heisinger *et al.* in preparation).

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[1]Faculty of Physics, Technical University of München, D-85747 Garching, Germany
[2]Institute of Applied Mineralogy and Geochemistry, Technical University of München, D-85747 Garching, Germany
[3]Paul Scherrer Institute, CH-5232 Villigen PSI, Switzerland
[4]ETH-Hönggerberg, CH-8093 Zürich, Switzerland

USING COSMOGENIC RADIONUCLIDE CONCENTRATIONS TO DETERMINE GLACIAL EROSION ACROSS ALPINE VALLEYS

LINDA L. HORN,[1] JON HARBOR,[1] DAVID ELMORE,[2] PANKAJ SHARMA,[2] ADAM DUNNE,[2] and ANDREW ELMORE[3]

Recent work has shown the value of cosmogenic radionuclide techniques in addressing substantive questions in geomorphic processes and landscape histories. In addition to exposure ages, the ^{36}Cl technique can be used to determine erosion rates and the extent of soil/snow/tree cover since initial exposure of a rock surface. Recent advances at PRIME Lab have focused on isolating the neutron-activation production component from the spallation component using mineral separates. This new technique provides data that can be used to determine both the erosion rate and exposure age of surface samples.

A field sampling program has been designed with the aim of using this new ^{36}Cl-^{36}Cl AMS method to yield insight into rates and patterns of glacial erosion. As part of this we have calculated distribu-