ing results on different chemical fractions from a number of different (medieval) buildings have shown promising internal consistency. Some of these have been reported in Heinemeier et al. (1995).

The separation techniques and examples of mineralogical analysis will be presented along with series of dating results on medieval churches from Åland, Finland and, as a curiosity, the Newport Tower, Rhode Island, USA.

REFERENCES


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THE AMS FACILITY AT THE UNIVERSITY OF AARHUS, DENMARK

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The accelerator mass spectrometry (AMS) system based on the 6 MV EN tandem accelerator at the Institute of Physics, Aarhus is described. The current sample preparation methods, measurement procedures and system capacity for 14C measurements are discussed. Information will be given on precision, accuracy and background level for different sample sizes and preparation techniques.

IN-SITU PRODUCTION OF COSMOGENIC NUCLIDES: ACCELERATOR SIMULATION EXPERIMENTS WITH MUONS AND MEASUREMENT OF DEPTH PROFILES

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The in-situ production of cosmogenic nuclides is important for the determination of background events in all low-level detection experiments (e.g., the experiment 208Tl (νe, e–) 250Pb (Neumaier, Nolte and Morinaga 1991), for many geophysical applications (e.g., the determination of erosion rates or dating of old groundwaters) and for industrial applications. In the present paper, the in-situ production of cosmogenic radionuclides was investigated by performing accelerator simulation experiments with slow negative muons at PSI Villigen and with 200 GeV muons at CERN and by measuring concentrations of 10Be and 26Al in natural quartz samples up to depths of 260 m.

The in-situ production rate was calculated as a function of depth z taking into account spalation reactions, reactions with stopped negative muons, reactions with fast muons and background reactions. The production rate due to μ– capture can be expressed by \( P_\mu(z) = I_\mu(z) \cdot f_C \cdot f_D \cdot f^* \) with the