ml), using reduction with hydrogen and Fe as catalyst. With this setup we can handle samples from 150 mg C and up. Finally, the graphite produced is pressed in a target holder, and stored in nitrogen until the measurement.

We have studied various fractionation effects occurring during the graphite production, possible methane production and isotope fractionation (13d, 14d) as a function of amount of CO2 left. We will also report on various contamination studies.

**PERFORMANCE OF 14C DATING WITH AMS AT UTRECHT**

*C. ALDERLIESTEN, K. VAN DER BORG, A. F. M. DE JONG and J. E. M. J. RAAYMAKERS*

Department of Subatomic Physics, R. J. Van de Graaff Laboratorium, Utrecht University, P.O. Box 80.000, 3508 TA Utrecht, The Netherlands

Since 1985, more than 5000 samples have been 14C dated with the Utrecht AMS facility. In this paper the present status of preparation, measurement and data analysis is discussed. A routine procedure is followed for samples of at least 0.5 mg carbon. The 14C/12C and the 13C/12C ratio are measured and normalized on those of the NOX standard. The AMS-measured δ13C value is used to monitor the measurement and must agree within 1–2 σ with that from conventional mass-spectrometry. Contamination in preparation and measurement is corrected for on the basis of the average value observed for the blanks (0.18–0.06 pMC). In routine 14C measurements on (sub)recent materials, the overall precision is ca. 0.4%. Measurements on samples containing <200 µg carbon reveal mass dependence in two respects: 1) the 14C/12C of a blank increases with decreasing amount of carbon, and 2) fractionation occurs in the measured 13C/12C and 14C/12C ratios with defects of 2% and 5%, respectively, for samples of 20 µg carbon. This mass-dependent fractionation is ascribed partly to the sample preparation, partly to the AMS measurement. For this reason, “small” samples are compared with a set of standards and blanks with a similar mass range to correct for the mass-effects. In this way, we find uncertainties up to ca. 3% for samples of 20 µg carbon.

**AMS PROGRAM AT THE TANDAR ACCELERATOR**


Departamento de Física, Comisión Nacional de Energía Atómica, Avenida del Libertador 8250, 1429 Buenos Aires, Argentina

In this work we present the AMS program that is under development using the 20 UD electrostatic accelerator of the TANDAR laboratory at Buenos Aires. The preliminary measurements were done by tuning 14C beams. The detection system used for this test was a ΔE–Eα telescope placed at 0°. For the detection of heavier isotopes some developments are being currently implemented in the Quadrupole Dipole Dipole (QDD) magnetic spectrometer at the TANDAR laboratory. A mylar window placed at the entrance of the quadrupole piece defines a volume filled with N2 inside the spectrometer, where different isobars are expected to follow different trajectories, i.e., reaching the multiwire detector of the spectrometer at different positions. Furthermore, work is also in progress to construct a time-of-flight facility with two microchannel plates prior to the entrance to the QDD spectrometer to distinguish ions with different mass numbers.