



An accelerated NH_4^+ extraction technique from water samples for the analysis of ^{15}N at enriched and natural abundance levels.

N. Brion, C. Diaconu, M. Elskens, and W. Baeyens

Analytical and Environmental Chemistry, Vrije Universiteit Brussel, Belgium
(nnbrion@vub.ac.be)

A new accelerated diffusion method for extracting ammonium from both marine/freshwater samples for $^{15}\text{N}/^{14}\text{N}$ isotopic ratio determinations was developed. The method employs the conversion of NH_4^+ to NH_3 gas under strong basic conditions, diffusion of NH_3 out of the solution to the headspace, followed by the NH_3 trapping on an acidified (2.5 M KHSO_4) GF/D glass fiber filter and its subsequent isotope ratio mass-spectrometric analysis. The diffusion period necessary to extract sufficient N in order to accurately measure the ^{15}N ratio was reduced to 5-24 hours by dynamically bubbling the sample with pure Air (carrier gas), at room temperature. The technique uses for extraction small volumes of sample (250 mL) and allows accurate ^{15}N measurements in NH_4^+ pools as small as 2.5 μM . The method was tested successfully on fresh and marine water samples with natural and enriched abundances.