



Determination of the (15n14n) and (18o16o) Nitrate in Water: Rsil Lab Code 2900

By -

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 38 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. The purpose of Reston Stable Isotope Laboratory (RSIL) lab code 2900 is to determine the (15N14N), abbreviated as 15N, and (18O16O), abbreviated as 18O, of nitrate (NO₃⁻) in water. The 15N and 18N of dissolved NO₃⁻ are analyzed by conversion of NO₃⁻ to nitrous oxide (N₂O), which serves as the analyte for mass spectrometry. A culture of denitrifying bacteria is used in the enzymatic conversion of NO₃⁻ to N₂O, which follows the pathway shown in equation 1. Because the bacteria *Pseudomonas aureofaciens* and *P. aureofaciens* lack N₂O reductive activity, the reaction stops at N₂O, unlike the typical denitrification reaction, that goes to N₂. After several hours, the conversion is complete, and the N₂O is extracted from the vial, separated from water vapor by Nafion drier and from CO₂ with a layered Mg(ClO₄)₂Ascarite trap, and trapped in a small-volume trap immersed in liquid nitrogen. After the N₂O is released, it is further purified by gas chromatography (GC) before introduction to the isotope-ratio mass spectrometer (IRMS). The IRMS is a Finnigan DeltaPlus continuous flow isotope-ratio mass spectrometer (CF-IRMS). It has a universal triple...



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