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Determination of the ($^{15}\text{N}/^{14}\text{N}$) of Nitrate in Solids: Rsil Lab Code 2894

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 2894 is to determine the ($^{15}\text{N}/^{14}\text{N}$), abbreviated as ^{15}N , of nitrate (NO_3^-) in solids. The nitrate fraction of the nitrogen species is dissolved by water (called leaching) and can be analyzed by the bacterial method covered in RSIL lab code 2899. After leaching, the ^{15}N of dissolved NO_3^- is analyzed by conversion of NO_3^- to nitrous oxide (N_2O), which serves as the analyte for mass spectrometry. A culture of denitrifying bacteria is used in the enzymatic conversion of NO_3^- to N_2O , which follows the pathway shown in equation 1. Because the bacteria *Pseudomonas aureofaciens* lacks N_2O reductive activity, the reaction stops at N_2O , unlike the typical denitrification reaction, which goes to N_2 . After several hours, the conversion is complete, and the N_2O is extracted from the vial, separated from water vapor by Nafion drier and from CO_2 with a layered $\text{Mg}(\text{ClO}_4)_2$ Ascarite trap, and trapped in a small-volume trap immersed in liquid nitrogen. After the N_2O is released, it is further purified by gas chromatography (GC) before introduction to the isotope-ratio mass spectrometer...



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