

# DATA BULLETIN

## *Determination of the nitrogen and carbon isotopic ratio in soil, sand and sediments using Geovision*

Stable isotope analyses in soil are of interest for soil ecology studies. Typically, soil and especially sandy soils contain only little carbon and nitrogen. In order to get a proper signal to noise ratio high sample weights have to be used. The Geovision is predestinated for the analysis of soil samples because of its high possible sample weight of up to 1 g for mineral samples.

The elemental and isotopic composition of different sand and soil samples are analysed using the Geovision.

The finely ground samples were weighed into tin boats and pressed with a manual pressing tool in order to remove ambient air from the sample. Each sample was analysed four times. The elemental and isotopic compositions are presented in the table below.

SAMPLE	mg	N [%]	C [%]	$\delta^{15}\text{N}$ [‰]	$\delta^{13}\text{C}$ [‰]
soil	25	0.16	1.68	$6.79 \pm 0.11$	$-26.85 \pm 0.05$
sediment	10	0.51	5.23	$10.8 \pm 0.12$	$-24.03 \pm 0.07$
sand	300	0.004	0.03	$8.0 \pm 0.21$	$-23.22 \pm 0.05$

The results show that the isotope ratios of soil samples could be determined with a very high precision, even for sand samples with an extremely low nitrogen content (< 0.01 %). Due to the large dynamic range of the Geovision, up to 1 gram mineral sample can be analysed without problems, which enhances the signal to noise ratio and consequently the precision of the analyses.

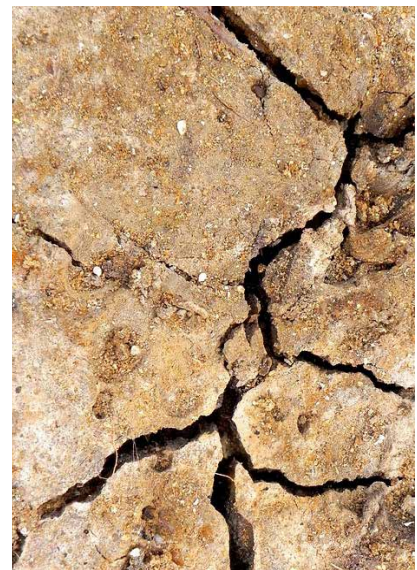
For samples with an extremely low nitrogen content special attention has to be paid to the sample preparation. Air inclusion in the sample package can cause erroneous results. To avoid this, the samples have to be packed in a nitrogen free atmosphere (see also AB-I-230511-E-01).

### CONFIGURATION:

Geovision in CN mode

### SAMPLE:

10-300 mg soil and sand, solid



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