DATA BULLETIN

elementar
EXCELLENCE IN ELEMENTS

Trace level carbon and nitrogen determination in soil and sediment

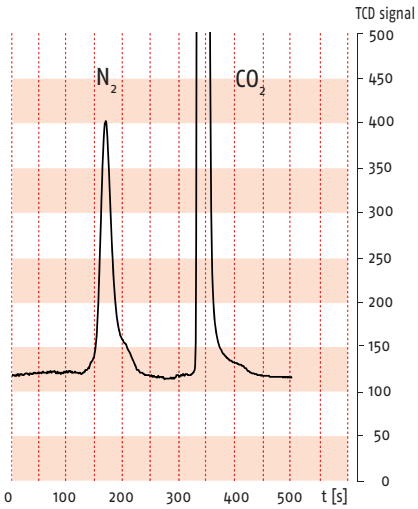
The UNICUBE® trace is equipped with an enhanced thermal conductivity detector (TCD) which makes it capable of reaching a limit of quantification for nitrogen and carbon as low as 10 ppm. This feature makes UNICUBE trace useful in determining low ppm level concentrations of carbon and nitrogen in solids. In combination with an improved purging mechanism for the removal of blanks and a sophisticated peak area integration algorithm, UNICUBE trace reaches unique sensitivity and reproducibility in the analysis of trace concentrations of nitrogen and carbon.

INSTRUMENT:
UNICUBE® trace

DETAILS:
mode: CN
sample: 100–200 mg soil

For the evaluation of the performance of UNICUBE trace, synthetic soil samples were prepared by diluting a soil standard in nitrogen and carbon free quartz sand. All samples were weighed into tin boats and analyzed in five replicate measurements. The average C and N concentrations and absolute standard deviations are given below.

	N [ppm]	abs. SD [ppm]	C [ppm]	abs SD [ppm]
1	23.8	1.0	46.5	2.0
2	39.9	0.8	95.1	2.1
3	58.0	0.8	140.4	2.1



The peak graph on the right shows the nitrogen peak of sample 1 (23.8 ppm N). Note the significant peak height above baseline. The CO_2 peak is even higher than the zoomed area.

Through steady improvement of the detector and gas handling technology, Elementar is proud to present a robust analytical solution for routine analysis of trace concentrations of carbon and nitrogen down to concentrations of no more than 10 ppm. The UNICUBE trace extends the frontiers in trace concentration elemental analysis of solids.

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