

# DATA BULLETIN

## *Sulfur isotope analyses in wood using Geovision*

The main challenge for sulfur isotope ratio analyses in wood is the very low abundance of sulfur relative to carbon. With traditional isothermal chromatographic techniques complete baseline separation of carbon and sulfur peaks is difficult. The advanced purge and trap technique (APT) of Geovision guarantees baseline separation, even for extreme element ratios, resulting in high precision stable isotope analysis of these challenging sample types.

Sulfur isotope ratio analyses of six different wood types are performed using Geovision. The sulfur concentration of the samples ranges between 50 and 780 ppm, corresponding to a C/S ratio of up to 10,000. For reliable  $\delta^{34}\text{S}$  analyses of samples with such low sulfur concentrations, the instrument was run in high sensitivity mode. The finely ground wood samples were packed into tin boats with a sample weight of 20–40 mg and analyzed four times with an oxygen dose of 100 ml per sample.

| SAMPLE          | WEIGHT | S (ppm) | C/S RATIO | $\delta^{34}\text{S}(\text{‰})$ | SD (‰) |
|-----------------|--------|---------|-----------|---------------------------------|--------|
| SPRUCE-1        | 40 mg  | 60      | 8300      | 7.66                            | 0.06   |
| OAK             | 40 mg  | 80      | 6000      | -0.83                           | 0.21   |
| BEECH           | 40 mg  | 80      | 6000      | -2.16                           | 0.12   |
| SPRUCE-2        | 40 mg  | 50      | 10,000    | 6.15                            | 0.36   |
| TROPICAL WOOD-1 | 20 mg  | 780     | 600       | 11.39                           | 0.35   |
| TROPICAL WOOD-2 | 40 mg  | 340     | 1350      | 6.76                            | 0.08   |

These results demonstrate that  $\delta^{34}\text{S}$  values can be analyzed with a high precision, even for samples with sulfur content as low as 50 ppm and a C/S ratio of 10,000.

This challenging application is simply solved by exploiting the APT technology delivered by Geovision, opening new research opportunities for understanding sulfur cycling through the lithosphere.

### CONFIGURATION:

Geovision in CNS mode

### SAMPLE:

20–40 mg wood, solid



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