

## **$^{13}\text{C}$ & $^{18}\text{O}$ ANALYSIS OF CARBONATES CALICITE & DOLOMITE**

### *Sample Preparation:*

Powdered samples and standards are weighed into exetainer vials, capped, and evacuated with ultrapure helium. The amount used will depend on the actual purity and type of carbonate mineral. Each batch must include at least three sets of standards and a repeat for every 3<sup>rd</sup> sample. Evacuated samples are placed in the oven until they come to a temperature of 50 °C. Samples are digested through the addition of phosphoric acid (100%), and left in the oven for 24 hours for the analysis of both calcite and dolomite. Additional analysis can take place after 2 hours of digestion to analyze calcite and dolomite separately.

### *Sample Analysis:*

Samples are analyzed by continuous flow isotope ratio mass spectrometry. Once samples have been left in the oven for the appropriate length of time, an aliquot of each sample is injected into the Finnigan Mat, DeltaPlus XL IRMS system and analyzed. The analysis consists of a comparison between the isotopic ratio of the samples against a CO<sub>2</sub> reference gas. Injection volumes are selected to ensure peak height is similar to that of the reference gas. Two international standards, NBS 18 and NBS 19, and one calibrated internal standard, are prepared and run under the same conditions as the samples. Internal standards have been calibrated to VPDB via analysis of NBS-19 and NBS-18. The results are evaluated and corrected against standards that bracket the samples, and then reported against the international reference material.

The analytical precision for analysis is  $\pm 0.3\%$ .