

A COMPARISON OF CONTINUOUS FLOW AND DUAL INLET IRMS TECHNOLOGIES FOR CARBONATE ANALYSES

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Recent advances in analytical techniques, enabling high-throughput analyses of small (< 5 µg) carbonate samples have significantly expanded the potential for utilising variations in the stable isotope ratios of C and O in geological, mineralogical, hydrological, oceanographic and medical studies, to name a few. Traditionally, analyses have been carried out using dedicated on-line preparation systems or a mix of off-line preparation followed by automated analysis, however, carbonate analyses can now be carried out routinely using fully automated on-line sample preparation devices with MS configured in both Continuous Flow (CF) and Dual Inlet (DI) mode. Significantly, technological developments are such that using CF analysis we are now able to measure carbonate samples of < 50 µg, and with multiple injections of <300 mg, can attain precision close to that obtainable in DI mode.

This paper will describe the different techniques and compare the simplicity and versatility of the dual inlet device with the high throughput and shorter analysis times obtained using the continuous flow technique. A discussion of the importance of speed *versus* accuracy in IRMS analysis will be based on a number of environmental applications.
