



Salt Removal Approach for Isotopic Seawater Analysis Using Cavity Ring-Down Spectroscopy

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Isotopic seawater analysis poses a challenge to the heated sample introduction system coupled to a cavity ring-down spectroscopy analyzer due to salt accumulation and carry-over contamination at the port of injection. In its current status, isotopic seawater analysis is drastically limited in throughput due to the frequent clean up procedure that is implemented in order to overcome the issues of clogging and sample contamination. In our current efforts, we have designed a metal liner that can be inserted in the injection port to capture any salt deposit without compromising the sample isotopic integrity. The new liner can be easily and swiftly replaced on daily basis without altering the high throughput feature of the isotopic water CRDS analyzer while extending the life of the syringe used by the autosampler. We have tested three types of metal liner material with two different approaches to constrict their bottom end inserted in the injection port. The drift, precision, accuracy and memory performance of each type of liner has been thoroughly evaluated with Kona deep water as a control vs. seawater to select the liner design that adheres best to the system specifications.