



The Sercon Aqua

A high performance system for water equilibration measurements, headspace and gas analysis

Key features include:

- Temperature programmable heated sample tray optimises reaction rates ($\pm 0.1^\circ\text{C}$)
- Sample tray holds up to 200 6 ml or 12 ml vials which can be analysed in a single, unattended run. Alternative trays can be provided for larger vials
- The hyphenated Aqua-HS2022 system generates high precision isotopic data for water and other aqueous samples. The high sensitivity source in the HS2022 ensures excellent precision
- The flexible system also allows gas analyses such as CO_2 in breath, or carbonate / DIC measurements if acid is injected into the vials manually (the Sercon μCarbs provides an automated alternative)

Sample measurement:

- $\delta^{18}\text{O}$ in aqueous samples via headspace equilibration with CO_2
- $\delta^2\text{H}$ in aqueous samples via headspace equilibration with H_2
- $\delta^{13}\text{C}$ for breath and other gaseous samples, including atmospheric samples
- $\delta^{18}\text{O}$ and ^{13}C in CO_2 from carbonates*
- $\delta^{13}\text{C}$ in dissolved inorganic carbon (DIC)*

*manual acid injection required

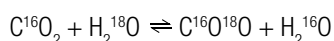


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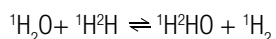
Water and other equilibration measurements

The sample vial is placed inside the heated sample tray set to the required temperature. The headspace of the vial is flushed with a mixture of helium and CO₂ or H₂ (depending upon which isotope is to be measured), in order that the reaction below can take place inside the vial. After the equilibration time has elapsed, the headspace is transferred to the IRMS for isotopic analysis.

Oxygen isotope equilibration



Hydrogen isotope equilibration

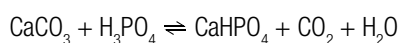


Gas analysis

No sample pre-treatment is required and the sample can be measured directly, the sample is simply transferred from the vial to the IRMS via the sampling needle.

Carbonate and DIC analysis

The sample vial is placed inside the heated sample tray set to the required temperature. The headspace of the vial is flushed with helium then acid is injected manually, in order that CO₂ be generated via the reaction below. After the equilibration time has elapsed, the headspace is transferred to the IRMS for isotopic analysis.



Autosampler

Sercon produce the most elegant autosamplers using advanced engineering technologies. The design is robust, reliable, easy to operate and maintain.

Service and Support

At Sercon we pride ourselves on the support available to customers, and consistently receive good feedback on the service we provide. We offer remote support via telephone, email and remote log on. If an engineer visit is necessary we provide rapid on-site response from our team of specialist, experienced engineers.

All users receive training as part of the installation programme. We can also provide further training on specific applications and tailor your course to your analytical needs.

Power and Gas Requirements

Power	100-240 VAC
Helium	99.998%

Specifications

Sample type	Sample size	Isotope	Precision (1σ)
Water	200 µl	δ ¹⁸ O	0.1 ‰
		δ ² H	2 ‰
Atmospheric CO ₂	12 ml	δ ¹³ C	0.1 ‰
		δ ¹⁸ O	0.2 ‰
Breath CO ₂	12 ml	δ ¹³ C	0.1 ‰
		δ ¹⁸ O	0.2 ‰
Carbonate	500 µg	δ ¹³ C	0.08 ‰
		δ ¹⁸ O	0.08 ‰
	100 µg	δ ¹³ C	0.08 ‰
		δ ¹⁸ O	0.1 ‰
50 µg	δ ¹³ C	0.1 ‰	
	δ ¹⁸ O	0.12 ‰	
DIC	15 ppm	δ ¹³ C	0.15 ‰

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