sercon
innovators in isotopes

Innovative trapping loop technology

Cylinder gases are often used during IRMS measurements to tune the source, and in the calculation of delta values. However a gas is not always needed, and in some cases unwanted due to health and safety legislation preventing laboratories from holding e.g. CO or SO_2 cylinders in their laboratories.

Using Sercon's innovative trapping loop technology, a gas is not needed for either source tuning or the calculation of delta values. Instead, a reference material is first combusted and held in a trapping loop. The gas from this loop is bled slowly into the source for tuning.

During the analysis, standard sample bracketing is used, i.e. reference materials are used throughout the run, and the delta values for samples are calculated from the known ratio in the reference material, as shown in equation 1.

$$\delta_x = \left(\frac{R_x - R_{iRM}}{R_{iRM}} \right)$$

Equation 1, where *R* is the ratio of the heavy to light isotope (D/H or $^{2}H/^{1}H$, $^{13}C/^{12}C$, $^{15}N/^{14}N$, $^{18}O/^{16}O$ and $^{34}S/^{32}S$), iRM denotes the isotopic reference material and x denotes the sample

A multipoint calibration should always be carried out with matrix matched reference materials, a range of these are available from Sercon and can be found at
serconlimited.com/standards-search/

Our interactive table displays many commercially available reference materials, which may be filtered via the delta value of each element.

For more information about Sercon's innovative systems contact sales@sercongroup.com