Geophysical Research Abstracts
Vol. 19, EGU2017-14859, 2017
EGU General Assembly 2017

Laser based water equilibration method for d18O determination of water samples

Magda Mandic, Danijela Smajgl, and Nils Stoebener
Thermo Fisher Scientific, Bremen, Germany

Determination of d18O with water equilibration method using mass spectrometers equipped with equilibration unit or Gas Bench is known already for many years. Now, with development of laser spectrometers this extends methods and possibilities to apply different technologies in laboratory but also in the field.
The Thermo Scientific™ Delta Ray™ Isotope Ratio Infrared Spectrometer (IRIS) analyzer with the Universal Reference Interface (URI) Connect and Teledyne Cetac ASX-7100 offers high precision and throughput of samples. It employs optical spectroscopy for continuous measurement of isotope ratio values and concentration of carbon dioxide in ambient air, and also for analysis of discrete samples from vials, syringes, bags, or other user-provided sample containers.
Test measurements and conformation of precision and accuracy of method determination d18O in water samples were done in Thermo Fisher application laboratory with three lab standards, namely ANST, Ocean II and HBW. All laboratory standards were previously calibrated with international reference material VSMOW2 and SLAP2 to assure accuracy of the isotopic values of the water.
With method that we present in this work achieved repeatability and accuracy are 0.16‰ and 0.71‰ respectively, which fulfill requirements of regulatory method for wine and must after equilibration with CO_2.