

NEW
FOR 2019



horizon 2

**Isotope Ratio
Mass Spectrometry**

Horizon 2 - Isotope Ratio Mass Spectrometer

Horizon 2: Stable Isotope Ratio Mass Spectrometry



Introduction

2019 is the 10 year anniversary of the launch of the innovative Horizon IRMS unit so Nu Instruments is pleased to announce the further development of this small radius IRMS and introduce the Horizon 2 system

The Horizon 2 IRMS instrument continues the Horizon's reputation for flexibility, reliability and high performance, with user friendly instrument control and data analysis software.

This new instrument possesses unique features for both Dual Inlet-IRMS and Continuous Flow-IRMS analysis, interfacing with a wide and expanding range of sample preparation peripherals. The collector array uses the patented Variable Dispersion Zoom Optics to monitor masses from 1 to 100 with exact coincidence

Operation Mode - Dual Inlet IRMS

The Dual Inlet System is in a separate floor standing cabinet to the Horizon 2 IRMS instrument, allowing for easy access for all users.

The changeover valve block is mounted close to the sample inlet valve on the ion source housing, minimizing dead volume and gas path lengths.

Sample introduction/preparation options for the dual inlet include a 50 sample carbonate/phosphoric acid sample preparation unit (the Nu Carb), and a 20 port manifold (or optional 10 port with crackers). All the sample preparation units are located on the dual inlet module.

For more information go online: www.nu-ins.com

Application Areas



Geochemistry



Planetary Science



Environmental Science



Life Science

find out more www.nu-ins.com

Key features:

NEW for 2019: All masses measured at increased accelerating potential

NEW for 2019: Mini ESA in front of the mass 3 collector to remove low energy He⁺ ions from the HD⁺ ion beam

NEW for 2019: Fully bakeable analyser (up to 100°C)

NEW for 2019: Heated reference gas injector for SO₂

NEW for 2019: Redesigned GC interface

NEW for 2019: Evacuated preamplifier housing for high stability

NEW for 2019: Increased CO₂ sensitivity for Dual Inlet & Continuous Flow whilst maintaining outstanding linearity

Simultaneous ion beam collection using two to five Faraday collectors

Large mass dispersion radius -30cm effective magnetic deflection radius for CO₂

Mass resolution CNOS and H (m/Δm) >110 (10% valley)

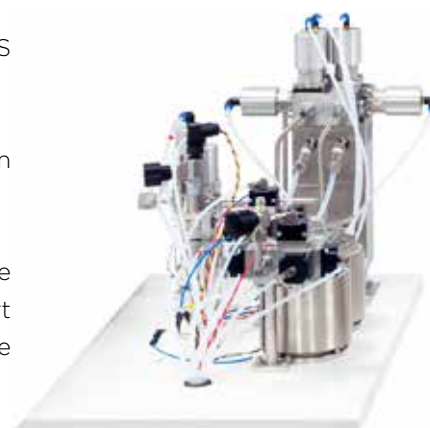
High efficiency ion source with integral focusing lenses

Electromagnet stabilised with Hall probe control

High efficiency, narrow entrance, deep Faraday collectors

Amplifiers capable of measuring signals above 50V

Integral ion source heater (temperature up to 250°C)





Operation Mode - Continuous Flow IRMS

The Horizon 2 instrument is designed to be easily interfaced to an expanding range of Continuous Flow-IRMS sample preparation systems, via the automatic isolation valve located on the ion source housing.

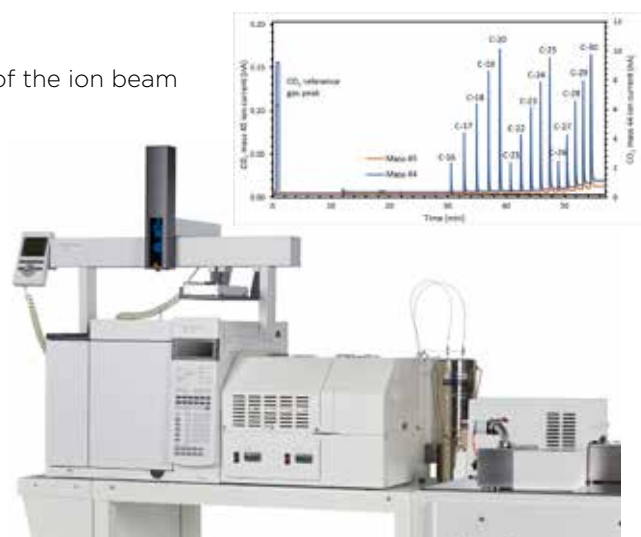
Up to 5 variable reference gas injector units and a dilutor are contained within the instrument enclosure and all effluent gas is safely vented. The reference gas signals are under electronic control with automatic pressure monitoring allowing automated selection of beam heights and unattended H_3^+ or linearity determination before sample runs, giving added confidence in data integrity.

The high linearity for ratios is obtained over the full 50V range of the ion beam amplifiers.

Gas Chromatography

The Agilent 7890 GC is used for separation of complex mixtures before conversion to gases via the Nu GC-IRMS interface unit.

The interface can be used for quantitative conversion to CO_2 , N_2 , H_2 , and CO for $\delta^{13}C$, $\delta^{15}N$, δD , and $\delta^{18}O$ analyses. A wide range of sample preparation and introduction options are available from Agilent and third-party vendors.

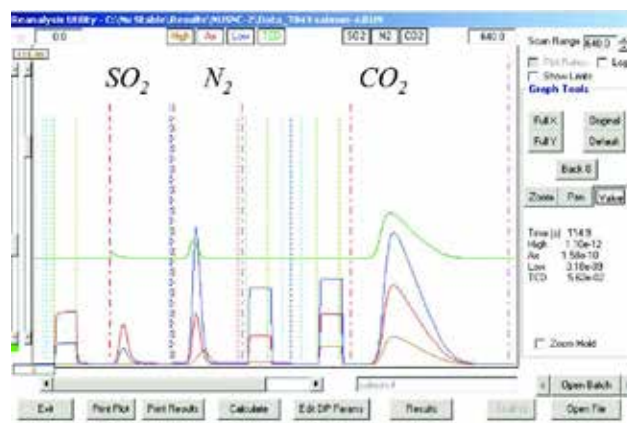


Elemental Analysers

The continuous flow interfacing of standard commercially available CNS (OH) elemental analysers to the Horizon 2 IRMS instrument allows the unattended analysis of a wide range of sample types. The use of a programmable dilutor together with the $>50V$ ion beam amplifiers offers a large dynamic range allowing for wide variations in C:N ratios. SNC triple stable isotope analysis is performed in under 11 minutes with typically $<0.1\%$ precision for all 3 isotopes.



EuroVector EuroEA3000DF-IRMS



High temperature carbon reduction furnace

The interfacing of a high temperature ($\leq 1700^\circ C$) carbon reduction furnace to the Horizon 2 IRMS allows the reduction of many organic and inorganic compounds to CO and/or H_2 gases for $\delta^{18}O$ and δD determinations. Autosamplers are available for both solid and liquid samples and are easily interchangeable.

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Innovators in Mass Spectrometry



Isotope Ratio Mass Spectrometry



environmental



planetary



life science



geochemistry

Nu Instruments Limited

Corporate Headquarters
Unit 74, Clywedog Road South,
Wrexham Industrial Estate,
Wrexham,
LL13 9XS - UK.

Tel: +44 (0)1978 661304
nu.info@ametek.com

Innovators in Mass Spectrometry. We deliver cutting-edge science and technology solutions, and offer our customers unparalleled support and maintenance service through the comprehensive **AMECARE** PERFORMANCE SERVICES program.

Corporate Headquarters

Nu Instruments UK

• nu.sales@ametek.com

Regional Contacts

Nu Instruments Europe
Nu Instruments Americas
Nu Instruments Asia

• europe-sales.nu@ametek.com
• americas-sales.nu@ametek.com
• asia-sales.nu@ametek.com

visit us online:
www.nu-ins.com

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