

# FT-ICR

## MASS SPECTROMETER

Ultra-High Resolution. Portable Deployment.

High-resolution isotopic measurements for the world's most demanding scientific and industrial challenges.



**Unmatched Resolution**  
Resolve isotopes with sub-ppb precision.



**Compact & Simple**  
Minifridge form-factor. No cryogenics required.



**Broad Utility**  
From fundamental research to process monitoring.



ONE PLATFORM.  
TWO CRITICAL APPLICATIONS.



## FUSION DIAGNOSTICS

Powering the Future of Fusion Energy

Measure the lightest ions and trace impurities with  $R \sim 10,000$  at mass-3 and mass-4, enabling insights that drive fusion performance and plasma purity.



### Trace & Impurity Analysis

Distinguish between all hydrogen and helium species at sub-ppb quantities.



### Fusion Plasma Insight

Monitor fast-evolving plasma conditions and isotopic ratios with confidence.



### Support for Next-Gen Devices

Deliver critical data for ITER, DEMO, and emerging fusion research programs.



## NATURAL GAS / HELIUM ISOTOPE DIAGNOSTICS

Just 50 ppb  $^3\text{He}$  in Your Well Will Double Your Profit

Precise helium isotope analysis for natural gas and helium streams for improving resource valuation and U.S. critical mineral security.



### Isotope Ratio Precision

Accurate  $^3\text{He} / ^4\text{He}$  measurements for exploration, production, and reservoir characterization.



### Stream Characterization

Identify valuable helium streams. A 15 ppb  $^3\text{He}$  finding in Minnesota demonstrates the importance of sensitive stream characterization.



### Expanding Market

Helium is currently \$2,500 per liter with a market growing at 37% CAGR thanks to expanding quantum computing and fusion fuel demands.



ENGINEERED FOR DISCOVERY.

From fusion plasmas to natural resources.



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[blankslateinnovation.com](http://blankslateinnovation.com)





**R > 10,000**  
Resolution at Mass 3



**R ≈ 10,000**  
Resolution at Mass 4



**1–500 amu**  
Mass Range

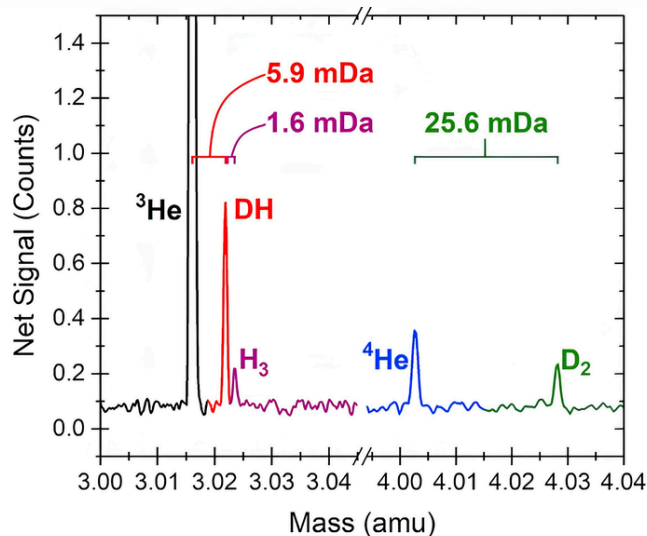


**Room Temperature**  
Operation



**Compact**  
Form Factor

### MEASURED MASS SPECTRUM



R. Thorn et al., A quantitative light-isotope measurement system for climate and energy applications, International Journal of Mass Spectrometry, Volume 464, 2021, <https://doi.org/10.1016/j.ijms.2021.116574>.

### INSTRUMENT SPECIFICATIONS

	Resolution (m3)	>10,000
	Resolution (m4)	≈10,000
	Sensitivity	Sub-picomole quantification
	Linearity	0.5–50 pmol calibrated
	Mass Range	1–500 amu (sweep mode)
	Key Species	He-3, He-4, HD, D <sub>2</sub> , H <sub>2</sub> , DT, HT, T <sub>2</sub>
	Modes	Broadband Sweep & Precision Burst
	Form Factor	Compact, modular
	Cooling	Room temperature (no cryogenes)
	R Scaling	B/m — highest at lowest masses
	Advantage	<b>Only Field-Deployable High-Resolution Mass Spectrometer</b>

### COMPETITIVE LANDSCAPE

Instrument	Manufacturer	Type	R @ m/z 4	R @ m/z 3	Price	HD/He-3?	Sub-pmol?
<b>BSI FT-ICR</b>	<b>BlankSlate Innovation</b>	<b>FT-ICR</b>	<b>≈10,000</b>	<b>&gt;10,000</b>	<b>\$180k</b>	<b>✓</b>	<b>✓</b>
DLS-20	Hidden Analytical	Quadrupole	~1,000–1,500	~500	\$80–150k	✗	✗
VeraSpec HRQ	Extrel / Process Insights	Quadrupole	>3,000	~1,500	\$100–200k	✓	✗
RGA 100/200/300	Stanford Research Systems	Quadrupole	~4–10	~4–10	\$5–15k	✗	✗
Helix SFT	Thermo Fisher	Magnetic Sector	High	High	\$400–600k	✓	✗
NGX	Isotopx	Magnetic Sector	High	High	\$400–600k	✓	✗

### FOUNDER PROGRAM OFFER



#### \$180k Founder Program

**Includes:**

- BSI FT-ICR Mass Spectrometer instrument
- Software license with all analysis modes
- On-site installation support
- Initial calibration & validation
- Custom gas manifold
- 1-year full warranty

### WHAT WE ASK



- Signed Letter of Intent with deposit
- Agreement to provide case study / testimonial after 90 days of operation
- Willingness to serve as a reference customer for future prospects



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