Hiden DLS-20 QMS

Ultra High Resolution
Quadrupole Mass Spectrometer
Specifically for the Analysis of
Hydrogen, Hydrogen Isotopes and Light gases.

Introduction

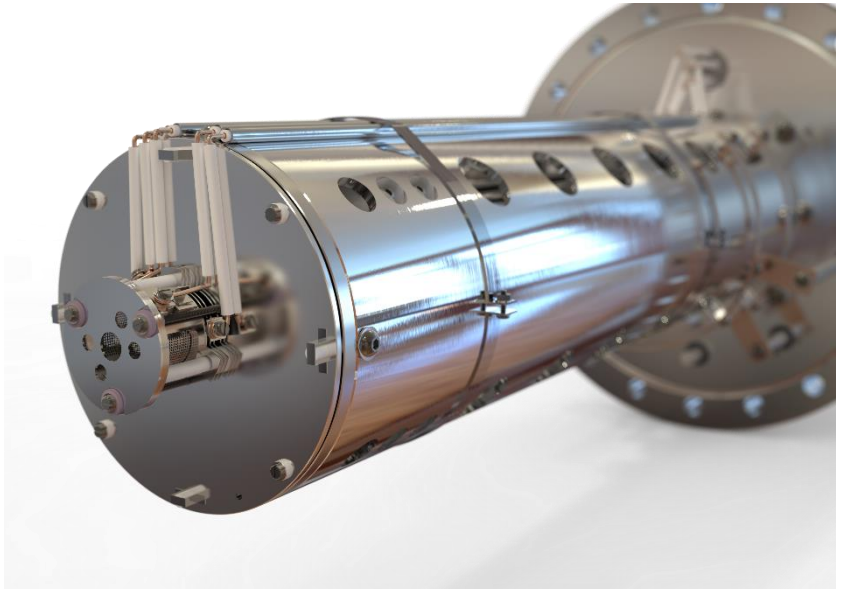
The Hiden DLS-20 QMS is a quadrupole mass spectrometer specifically designed for the analysis of Hydrogen, Hydrogen Isotopes and light gases.

The DLS-20 QMS includes a new Hiden mass filter designed for ultra high resolution.

The new mass filter design is a micron precision assembly using the finest precision machined components.

The DLS-20 QMS has a pole diameter of 20mm.

A high stability, high frequency RF supply provides the power.



DLS-20 Mass Filter – 20mm pole diameter

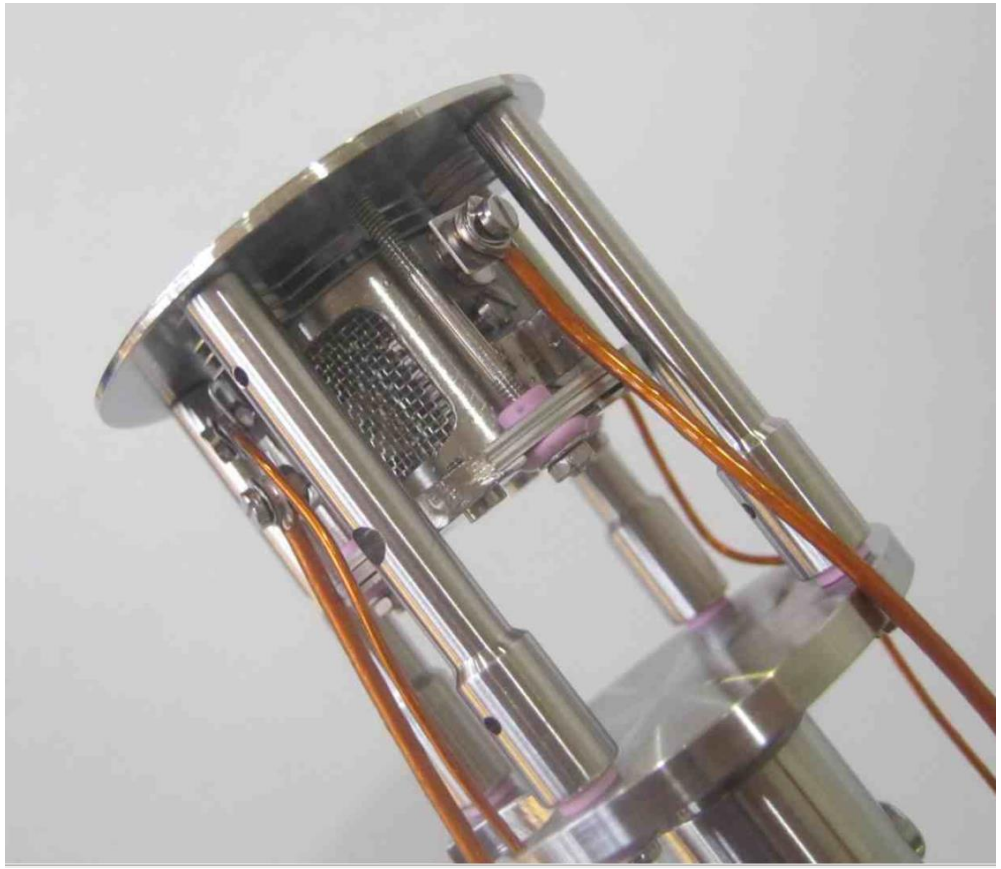
DLS-20 QMS
20mm pole diameter quadrupole mass filter in comparison to, 9mm and 6mm filters

DLS-20 RF supply head in comparison to the RF supply head for the 6mm filter

Reactive Power Rating.

DLS-20 RF Head = 10.8 kVA
6mm RF Head = 0.21 kVA

DLS-20 option of Modular Source



Side Entry, Low Profile, Epic/PIC

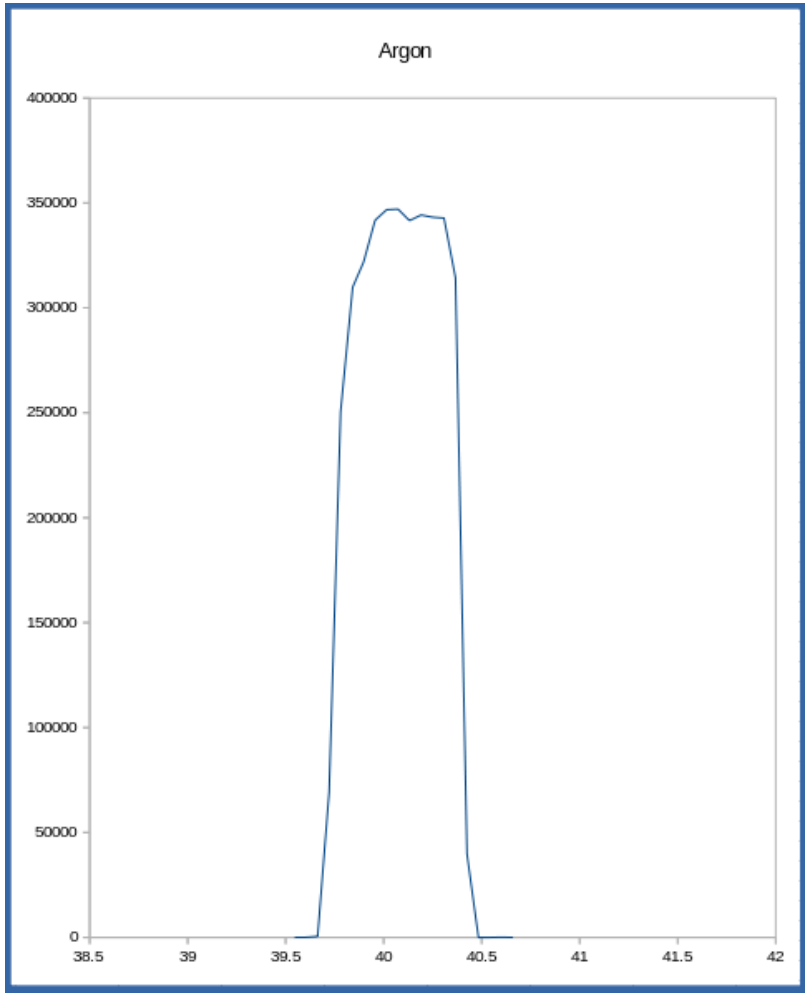
DLS-20, showing Peak Shape Profile at Argon

DLS-20 QMS

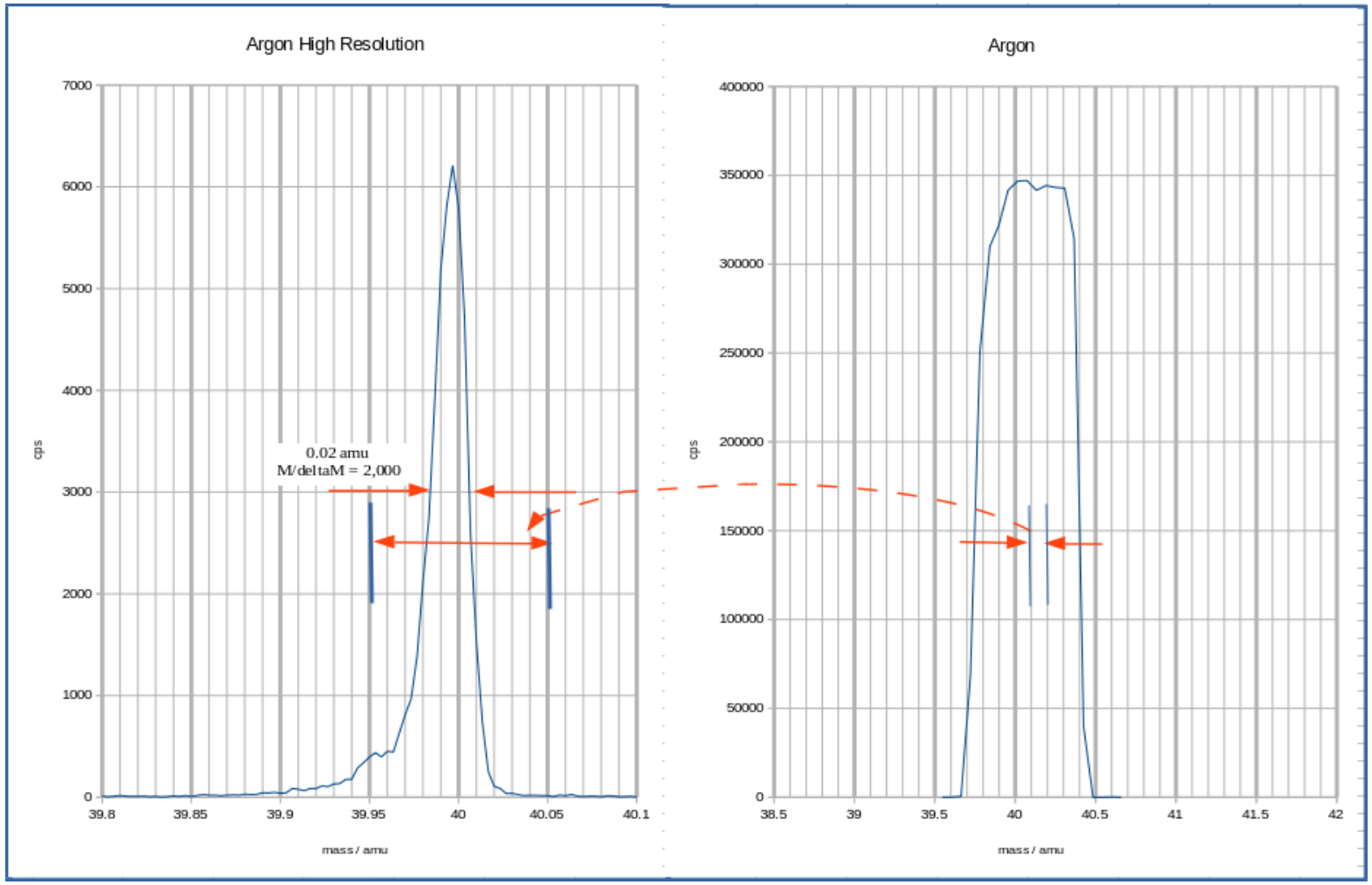
Mass range: 50 AMU

Mounting flange:

DN 150 CF ~ 200mm OD
8inch Conflat type flange.



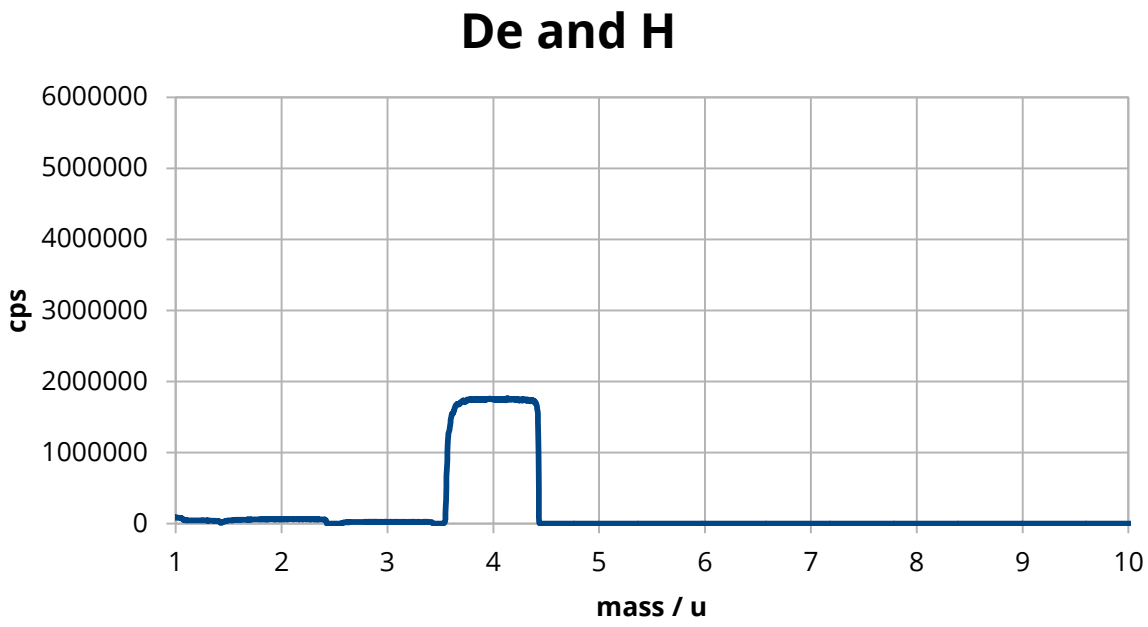
DLS-20, showing Resolving Power of M/ΔM of 2,000 at Argon



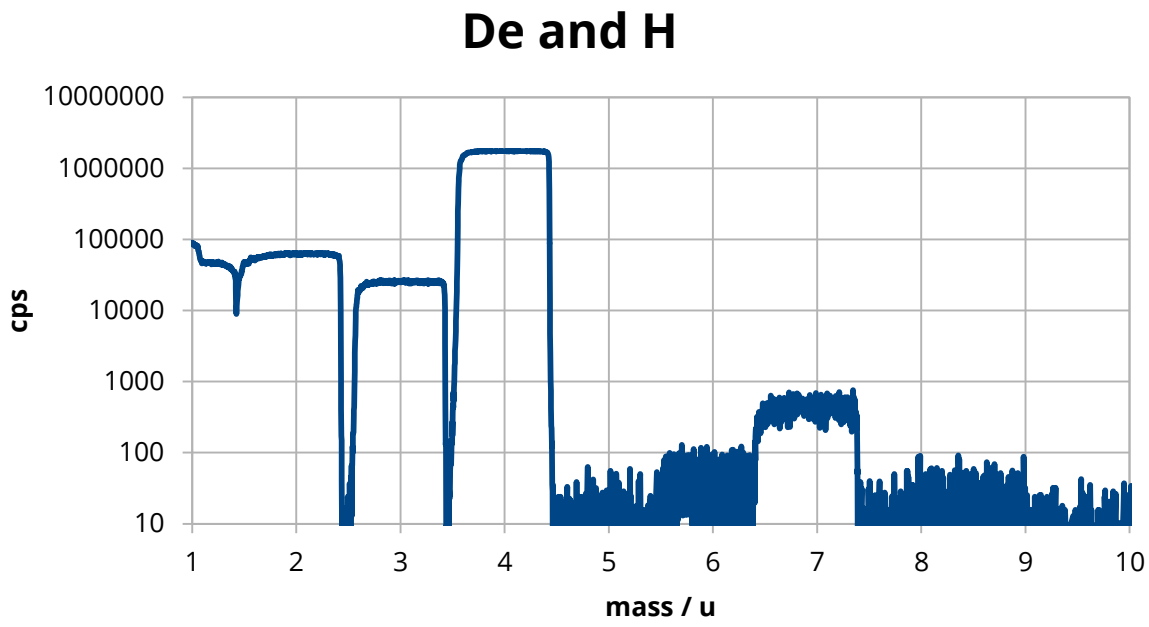
Components within the Mass Range 1 – 6 m/e

Mass	Component	Exact Mass Value (u)		Mass	Component	Exact Mass Value (u)
1	H^+	1.0078252		4	$^4He^+$ HT^4 D_2^+ H_2D^+	4.002600 4.023875 4.028204 4.029650
2	D^+	2.014102		5	DT^+ H_2T^+ D_2H^+ HeH^+	5.03005 5.03170 5.035825 5.01045
3	$^3He^+$ T^+ HD^+ H_3^+	3.016030 3.016050 3.021825 3.023475		6	T^+ D_2^+ $^{12}C^{++}$ HeD^+	6.032 6.042 5.999 6.0168

Scan of 1 – 10 sample is Deuterium in Hydrogen

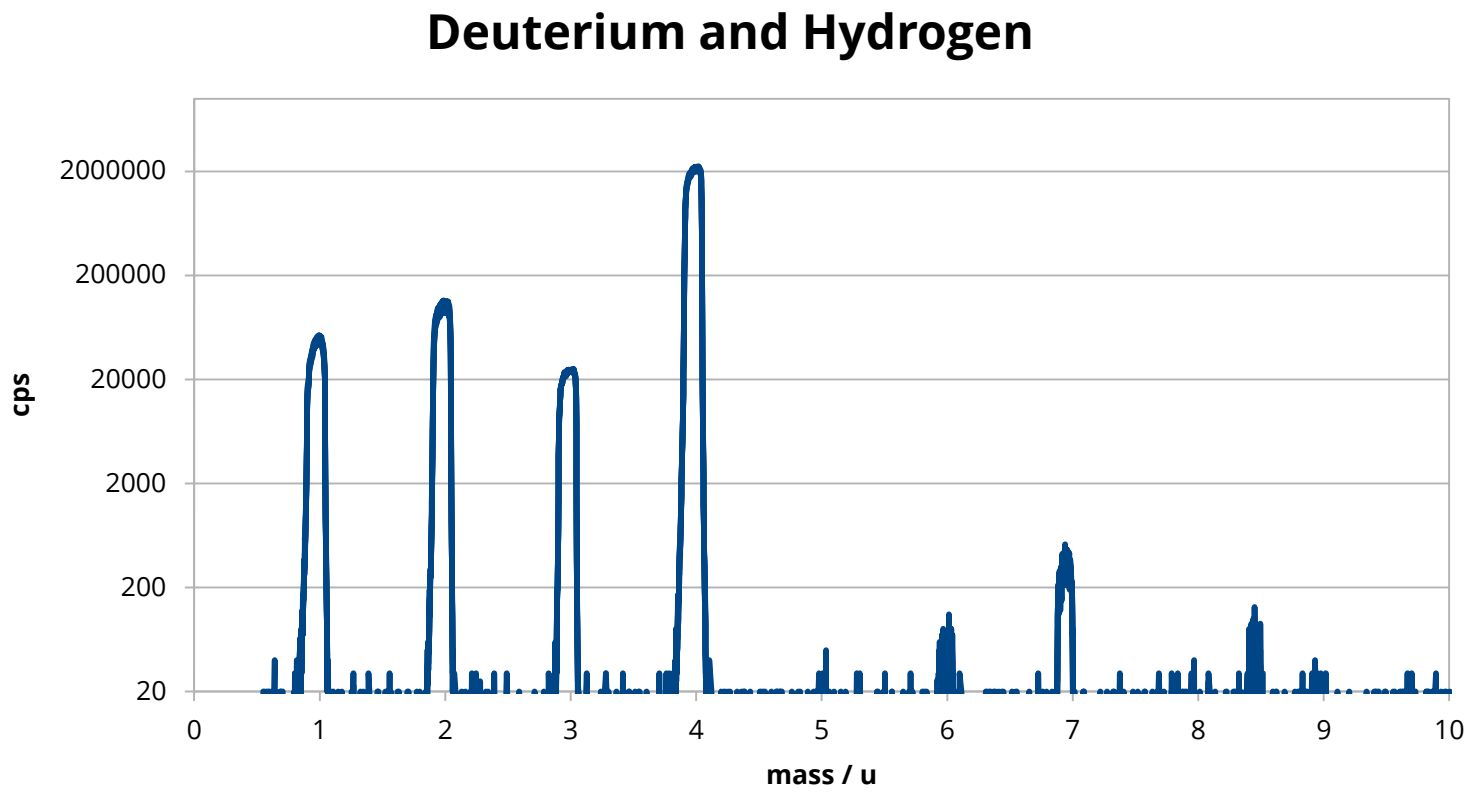


Linear

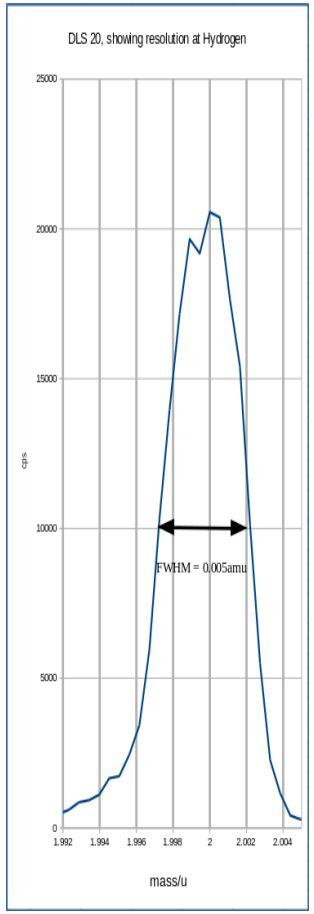


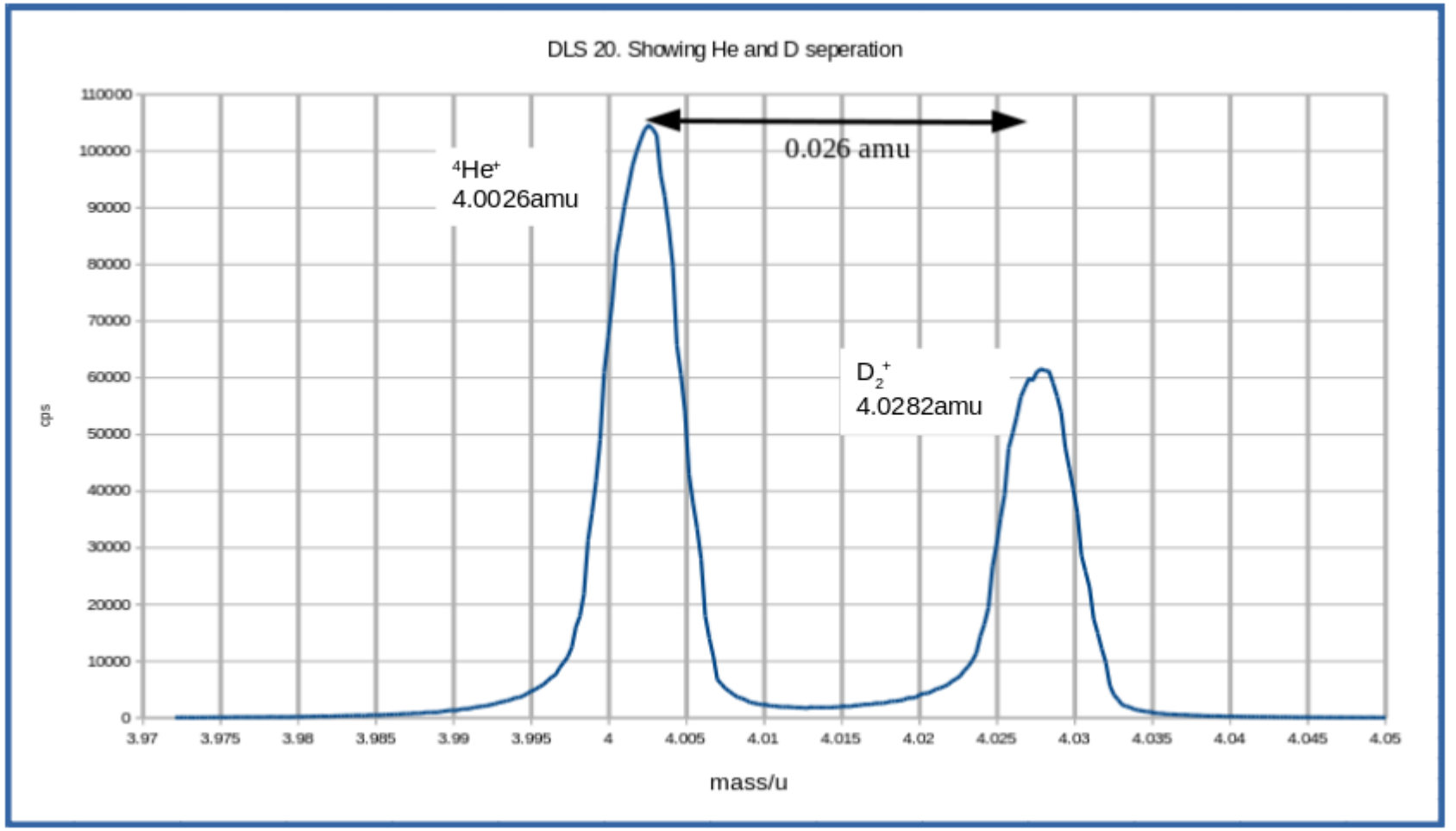
Log

Scan of 1 – 10 sample is Deuterium in Hydrogen

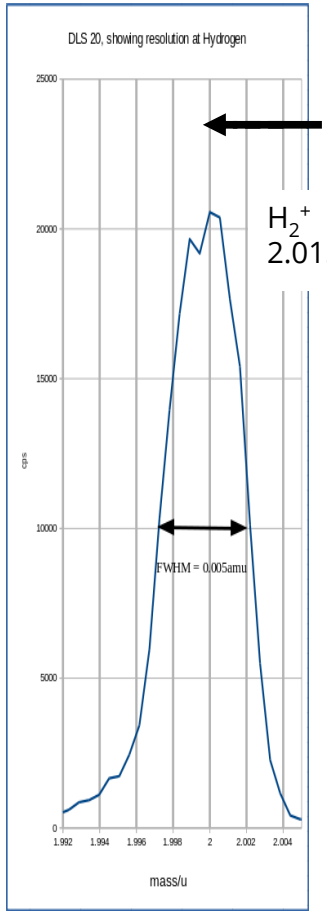


Separation of He^+ and D^+ and resolution of H^+ at 0.005amu FWHM



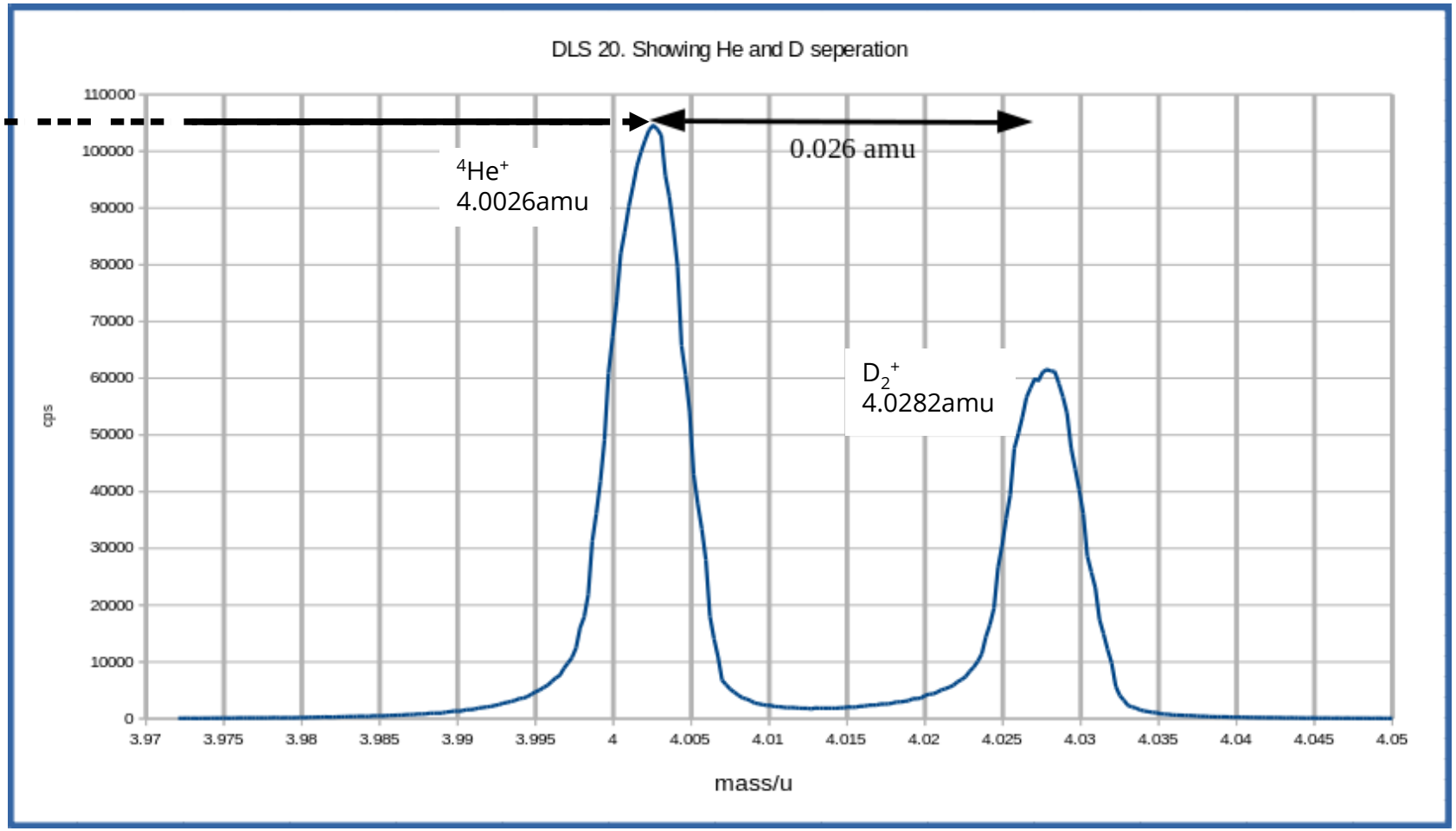


Separation of He^+ and D^+ and resolution of H^+ at 0.005amu FWHM



1.9876amu

H_2^+
2.015amu



Summary

20mm Rod Mass Filters offer significant advantages for the analysis of isotope ratio measurements:

- Flat top peaks at unit mass resolution
- Ultra High abundance sensitivity
- Resolution adjustable from unit mass to 0.005 AMU- FWHM

The combination of a 20mm pole diameter micron precision mass filter, and the high power, high frequency RF at low mass range, is ideal for analysis of He and H isotopes.

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