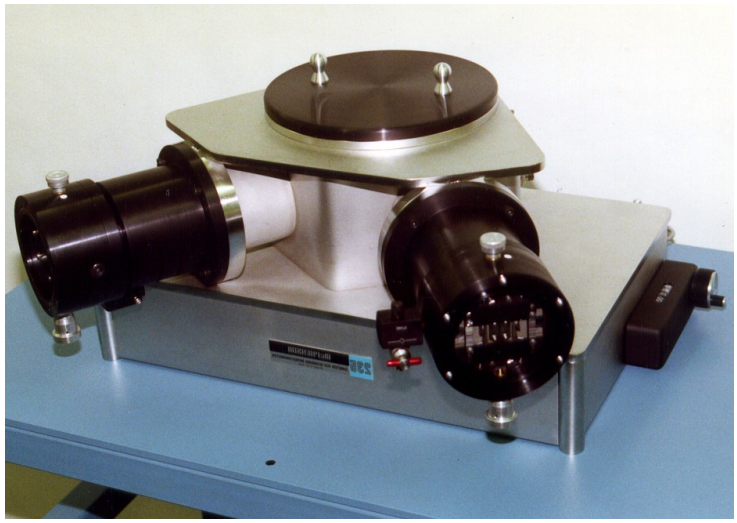
McPHERSON

500mm f.l. Monochromator

The 235 is the McPherson 500 mm focal length Seya-Namioka monochromator. This optical system is housed in a clean stainless steel housing capable of achieving 10-6 Torr vacuum. It delivers full width half-maximum resolution of 0.05 nm with a 1200 g/mm grating. An angle of 70° 15' subtends the entrance and exit slit arms. Seya-Namioka mounting maintains all components (slits and gratings) on the Rowland circle. Resolution is maintained over a broad spectral region, astigmatism should be considered depending on the application. The focal length provides increased resolution and work space.



Stainless steel construction makes this proven design suitable for use with high vacuum, contaminant free experiments or microchannel plate intensifiers. Wavelengths from 30-nm to 1.2-um can be covered within the scanning range and with appropriate gratings. The 235 is for scanning and microchannel plate intensifier or CCD spectroscopy.

Works from 30 nm VUV and up | Gratings rotate about apex | Precision Drive | More Work Space

Optical Design	Seya – Namioka design Monochromator / Spectrometer
Focal Length	500 mm
Aperture Ratio	f/11
Wavelength Range	refer to grating of interest for range
Wavelength Accuracy	±0.10 nm (with 1200 G/mm grating)
Wavelength Reproducibility	± 0.005 nm (with 1200 G/mm grating)
Grating Size	30 x 50 mm ruled area (single kinematic grating holder)
Slits	Micrometer adjustable width 0.01 to 2 mm, height settings from 2 to 20 mm
Vacuum	High vacuum 10E-6 Torr range, stainless steel construction
Focal Plane	multiply dispersion by the width of your detector for range

Ordering Information

Part Number: 8183-0235-0 = Model 235 Seya-Namioka Monochromator, 500 mm focal length, f/11 (requires selection of scan controller, exit accessory detectors and/or light source, and software)

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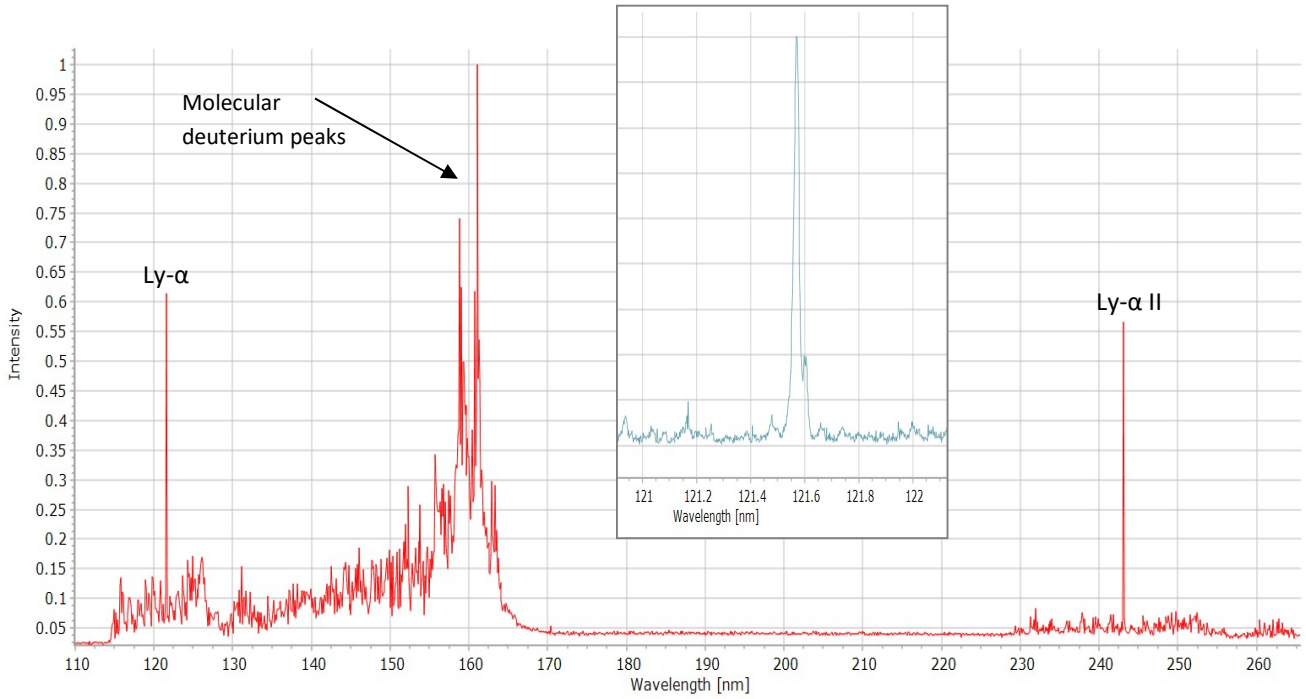
Performance with different gratings:

Grating Groove Density (g/mm)	2400	1200	600	300
Spectral Resolution (nm, FWHM) [1]	0.025	0.05	0.1	0.2
Dispersion (nm/mm)	0.83	1.6	3.3	6.6
Wavelength Range ~30 nm up to (nm)	150	300	600	1200
Blaze Wavelength: (nm) [2]	holo	70	150	550
		150		
		200		

1. Tested in scanning mode at 185 or 312 nm with 10 um wide slits
2. Gratings work best from 2/3 blaze wavelength to 3/2 blaze wavelength

Sample spectrum:



Example spectrum of deuterium lamp with magnesium fluoride window. The sharp peak at 121.6 nanometers is the Lyman-alpha line, sometimes written as Ly-α, a spectral line of hydrogen. You can see it also in second diffracted order at 243.2 nm. There are distinct molecular deuterium peaks at 159 and 161 nm as well.
Inset: Operated with ten micron slits in scanning mode, the 235 is capable of just discriminating H versus D emission at 121.567 nm and 121.534 nm nominal wavelengths with a miniscule 0.033 nm offset.