

TGM -Series Toroidal Grating Monochromators



Coming from
Synchrotron technologies



Monochromators to explore the 8 - 400 nm spectral range

Applications

- FUV/EUV Reflectometry
- VUV tunable filter/light source
- Transmission measurements
- Laser harmonic filter
- Plasma physics study

The TGM (Toroidal Grating Monochromator) series are grazing monochromators especially designed for analyzing the whole VUV wavelength range from 8 to 400 nm.

Thanks to its original optical design based on toroidal Variable Line Spacing (VLS technology) grating, the TGM series is a low aberration grazing monochromator with an unmatched throughput. Coupled with a single channel detector, this device analyzes VUV radiations, such as those emitted from UV plasma sources. It can also be used as a stand alone tunable light source when equipped with dedicated UV light source.

TGM are available in three configurations (TGM300, TGM1200 and TGM1900) depending on the spectral range and resolution you want to achieve.

Features

- Single Toroidal Grating design
- Low astigmatism level
- Dual grating Slider option
- High Vacuum compatible
- Entrance and exit slits fixed in position
- Choice of master or replica gratings
- Fully automated wavelength drive
- USB2 controller
- HORIBA Scientific software

Options

- Ultra High Vacuum (UHV, 10^{-9} mbar) version
- Slider for grating change under vacuum

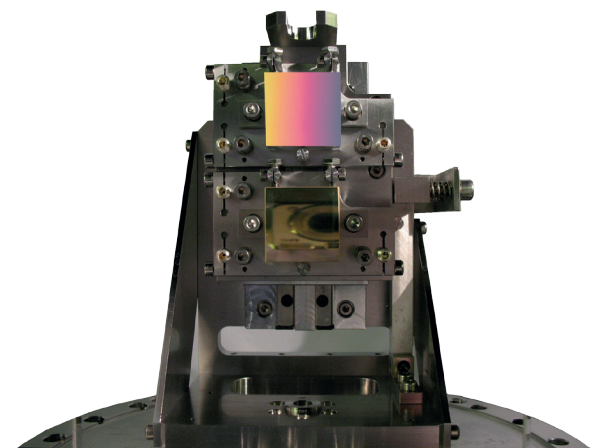
Benefits

- Optimized for throughput
- High S/N ratio measurement
- Versatility under vacuum
- A few 10^{-6} mbar– option a few 10^{-9} mbar
- Easy integration in any setup
- Synchrotron compatible with master gratings and UHV option
- Easy to operate
- Easy computer control
- Easy programmable with SDK

Accessories

- EUV/UV Light Sources
- Single channel detection
- Mirror chambers
- Sample compartments
- Laser kit for easy alignment

Synchrotron compatible
Tunable light source
High throughput
Aberration corrected VLS gratings
EUV spectroscopy
High resolution



The new generation of toroidal monochromator

An original HORIBA Scientific Concept

The TGM series bring up to date the concept of the first VUV instrument in the world designed around a single toroidal aberration corrected grating (LHT30, HORIBA Scientific patent), while improving the resolution and reducing the stray light. Its optical design dramatically reduces astigmatism and results in excellent luminosity and spectral purity, even at low wavelength.

First dedicated to synchrotrons, TGM are now available in tabletop version for a wide range of applications.

Gratings available

Model	Gratings		Spectral range		Exit Dispersion	Resolution** (FWHM in nm)
	Part Number	Density (gr/mm)	nm	eV		
TGM300	540 00 900*	550	10 - 50	25 - 124	1.8 nm/mm at 10 nm, 1.6 nm/mm at 50 nm	0.20 at 30 nm
	540 00 910*	550	15 - 150	10 - 83	1.8 nm/mm at 15 nm, 1.2 nm/mm at 150 nm	0.25 at 50 nm
	540 00 920*	275	50 - 300	4 - 25	3.5 nm/mm at 50 nm, 2.3 nm/mm at 300 nm	0.40 at 110 nm
TGM1200	540 00 800	950	12.5 - 52.5	24 - 100	0.3 nm/mm at 12.5 nm, 0.34 nm/mm at 52.5 nm	0.02 at 22 nm
	540 00 810	250	50 - 200	6 - 25	1.1 nm/mm at 50 nm, 1.3 nm/mm at 200 nm	0.07 at 90 nm
	540 00 820	125	85 - 400	3 - 15	2.1 nm/mm at 85 nm, 2.6 nm/mm at 400 nm	0.16 at 165 nm
TGM 1900	540 00 600	1800	8 - 32	39 - 155	0.08 nm/mm at 8 nm, 0.11 nm/mm at 32 nm	0.01 at 26 nm
	540 00 610	450	32 - 128	10 - 39	0.3 nm/mm at 32 nm, 0.4 nm/mm at 128 nm	0.04 at 100 nm

* Gratings are available in master or replica version

** using 10 μm x 2 mm slits

TGM Specifications

	TGM300	TGM1200	TGM1900
Optical design	Toroidal VLS Grating (single optic)		
Focal length	320 mm	1000 mm	1146 mm
Aperture	f/16	f/32	f/34
Optic coating	Pt or Au		
Deviation angle	142°	146°	150°
Drive	Sine arm		
Vacuum	a few 10 ⁻⁶ mbar (HV version) or a few 10 ⁻⁹ mbar (UHV version)		
Pumping flange	DN63 LF (DN100 CF)	DN100 LF (DN 100 CF)	DN100 LF (DN 100 CF)
Entrance/exit port	Micrometric slits (10 μm to 2 mm)		
Entrance/exit flange	DN40 KF (DN 40 CF)		
Software	HORIBA Scientific software		
PC Interface	USB2		

HORIBA Scientific, Your partner in VUV Spectroscopy

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