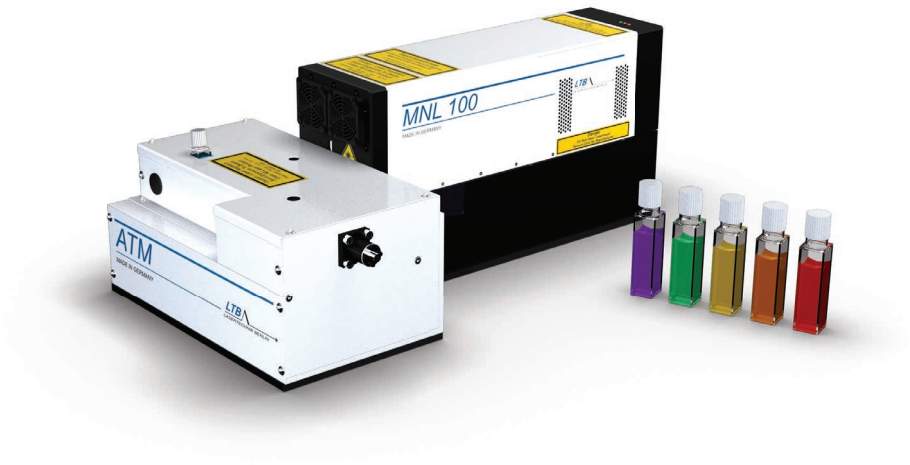
LTB LASERTECHNIK BERLIN

LIGHT. PRECISION. ANALYTICS.

Pulsed dye lasers and frequency doublers for the automated UV-VIS-NIR tuning



ATM
Automated Dye Laser / Frequency doubler

- compact – rugged – efficient
- automated tuning
- integration in different applications
- can be pumped by different laser types

ATM stands for a series of automated tuning modules. They are compact, efficient and variable.

The standard version of the ATM is optimized for LTB nitrogen lasers as pump lasers. In addition, excimer and Nd:YAG lasers (with pulse energies of up to 1 mJ) can be used as pump lasers.

Combined with the MNL nitrogen laser the ATM forms a laser system automati-cally tunable in the UV-VIS-NIR range and delivering nanosecond pulses in the kilowatt range. To exploit the whole wavelength range from 225 - 950 nm, 15 standard dye cells are required. They are easily to exchange. An extensive cleaning and permanent renewing of the dye solution is in general not necessary.

Both components, the nitrogen laser MNL and the ATM are controlled from a PC via a comfortable Windows software.

The compact laser system has only one beam output for the pump laser, the dye laser or the SHG (switchable). It can be equipped with a fibre coupling.

The beam guidance and the control of the laser are carried out via an easy-to-use software. The laser can efficiently be coupled into a multi-mode quartz fibre. The ATM is equipped with an internal sensor for energy measuring and for the optimal phase matching of the SHG. A DLL interface provides for the integration of the ATM in different applications.

The following settings can be chosen via the software:

- 337 nm, direct beam output of the pump laser
- 400 - 950 nm, dye laser
- 225 - 400 nm, dye laser and SHG 1

The ATM is available in different versions:

- The ATM 100 is based on a broadband dye laser (5 - 8 nm). The resonator is formed by 2 mirrors. The wavelength adjustment is done exclusively by a dye cell replacement.
- The ATM 200 is based on a dye laser continuously tunable from 400 - 950 nm. The tuning element is a reflection grating in Littrow mounting (bandwidth ≤ 2nm).
- The ATM-UV 1 is a module containing a dye laser and a SHG unit. This way the range from 225 - 950 nm is covered.

Options:

- fibre couplings and fibres
- dye cells

Applications

- LIF spectroscopy
- Time-resolved spectroscopy
- MALDI-TOF MS
- Analytics in biotechnology and medicine

Specifications

ATM Series			ATM 100	ATM 200
			10 mm dye cell	10 mm dye cell
	Resonator configuration		mirror / mirror	mirror / grating in Littrow mounting
	Tuning range	nm	400 - 950	400 - 950
			fix wavelengths	continuously tunable
	Pump laser wavelength	nm	337 / 308 / 355	337 / 308 / 355
	Spectral bandwidth	nm	5 - 8	≤ 2
	Conversion efficiency, typ. [1]	%	30	20
	Max. repetition rate	Hz	60	60
	Beam dimensions Ø	mm	1.5	1.5
	Beam divergence (v x h)	mrad	1 x 2	1 x 2
	Dimensions	mm	115 x 250 x 170	115 x 250 x 170
	Weight	kg	1.5	1.5

			ATM 100	ATM 200
ATM-UV 1	Tuning range	nm	225 - 400	225 - 400
	Conversion efficiency, typ. [1]	%	6*	6*

* related to the dye laser

[1] @ 10 Hz

Sample specifications automated tunable laser systems

			MNL 100-HP	ATM 200	ATM 200-UV 1
MNL 100-HP as pump laser	Wavelength	nm	337.1	400 - 950	225 - 950
	Spectral bandwidth	nm	0.1	2	2
	Pulse energy, typ.	µJ	up to 225	40	2.4
	Peak power	kW	up to 75	14	0.8
	Max. repetition rate	Hz	30	30	30
	Pulse halfwidth – FWHM, typ.	ns	3	3	3

Subject to technical changes

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