

Mixing After Doubling

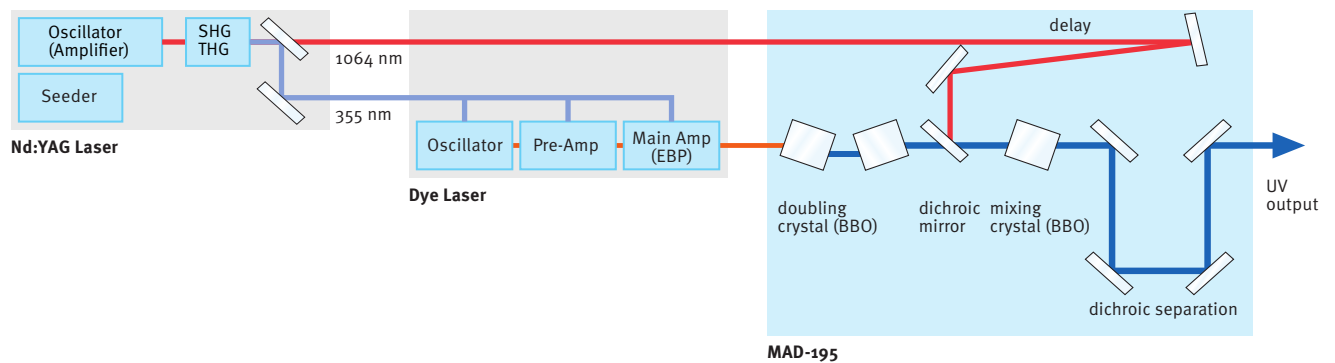
The Sirah MAD-195 (mixing after doubling) is designed to generate laser radiation in the UV wavelength range from 190 nm to 202 nm.

It is operated together with a Cobra-Stretch or PrecisionScan dye laser, pumped by an injection seeded Nd:YAG laser.

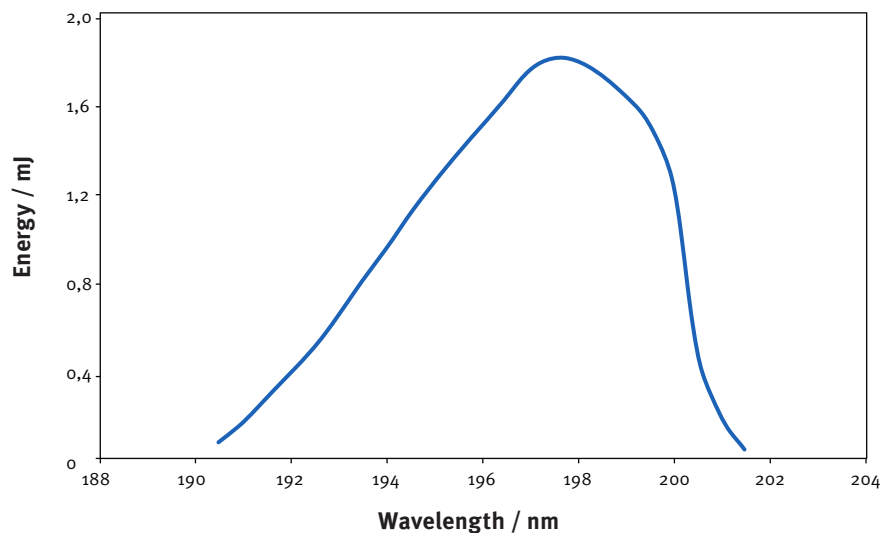
Principles

The dye laser is operated in the blue spectral range, from 462 nm to 490 nm. Its output beam is first frequency doubled by a BBO crystal. Then, the resulting UV beam is sum frequency mixed with the residual fundamental Nd:YAG radiation.

A set of 4 dichroic mirrors separates the generated UV beam from the two incoming beams. Additionally, the MAD-195 unit may easily be upgraded to a third harmonic generation unit (THU-205), giving access to wavelength from 197 nm to 212 nm.



Tuning Range



Tuning curve with Coumarin 102 dye, when pumped with approximately 400 mJ @ 355 nm

Mixing After Doubling

Energy Output

Pump Laser	Dye Laser	Output Energy
400 mJ @ 355 nm	PrecisionScan-G-24	1.5 mJ
400 mJ @ 355 nm	PrecisionScan-D-24	1.4 mJ
320 mJ @ 355 nm	Cobra-Stretch-G-24	1.2 mJ
320 mJ @ 355 nm	Cobra-Stretch-D-24	1.1 mJ

UV energy output at 196 nm. See tuning curves for energies at other wavelengths.

General Characteristics

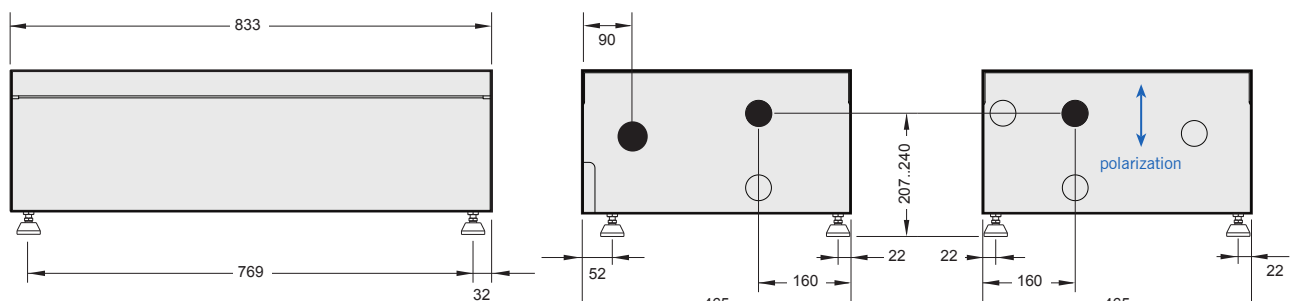
Wavelength range MAD	190 - 202 nm
Wavelength range SHG ¹⁾	206 - 220 nm (SHG-206 crystal, optional) 215 - 280 nm (SHG-215 crystal, included) 250 - 380 nm (SHG-250 crystal, optional)
Wavelength range THU ²⁾	200 - 210 nm
Maximum Pump Energy	350 mJ @ 355 nm 550 mJ @ 355 nm ³⁾
Dye Laser Resonator	2400 lines / mm grating recommended 1800 lines / mm grating possible
Dye Laser Amplifier	Enhanced Beam Profile cell recommended
Repetition Rate	10 Hz recommended
UV Beam Polarization	Vertical, >98%
UV Beam Diameter (typical)	3 - 6 mm, depending on amplifier cell type
UV Beam Divergence	< 0.5 mrad

¹⁾ single crystal operation, requires Pellin-Broca unit for separation

²⁾ requires upgrade set consisting of crystals (SHG-260 and SHG-205), halfwave plate, DC-205 dichroics.
Requires 2400 lines/mm grating

³⁾ with secondary main amplifier, only possible with PrecisionScan laser

Dimensions



MAD-195 (side)

MAD-195 (Nd:YAG, dye input)

MAD-195 (uv output)

All Dimensions in mm
Specifications are subject to change without notice



VISIBLE AND INVISIBLE
LASER RADIATION
AVOID EYE OR SKIN EXPOSURE TO
DIRECT OR SCATTERED RADIATION
CLASS 4 LASER PRODUCT

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