

## MonoLux-AA 波长可调谐中红外激光器（量子级联激光器）

MonoLux-AA 是一款波长可调谐的量子级联激光器。它通过调谐光栅外腔的方式调节输出激光波长。中心波长可选 3.8-12 微米，调节幅度为中心波长的+/-5%左右（更宽调谐范围可选）。激光头和驱动器采用一体化设计，可通过软件或者外触发信号进行波长调节。

这款 QCL 激光器工作于准连续（QCW）模式，脉宽 200 - 500ns，重复频率从 500 kHz - 2 MHz，占空比 50 %。MonoLux 也可工作于占空比达 100% 的连续光（CW）模式下。本系统采用无风扇的被动式散热，工作时极为安静，无任何噪音。

除光栅外腔调谐外，MonoLux 还可使用分布自反馈的调谐方式。分布自反馈波长可调谐中红外激光器 MonoLux-AA-DFB 的调谐幅度要窄一些，但是调谐精度更高，当工作于连续光（CW）模式下，输出激光的线宽更窄。



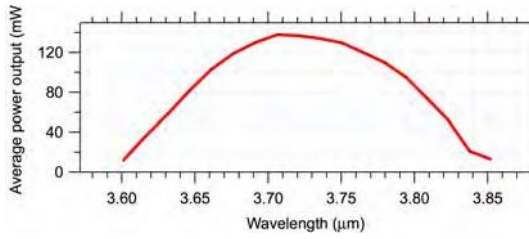
### 激光器参数：

| 可调谐量子级联激光器                      |   |
|---------------------------------|---|
| <b>Operation</b>                | <ul style="list-style-type: none"> <li>QCW operation with the laser head at room temperature (50 ns-500 ns micropulses at a micropulse repetition rate of 1 MHz-2 MHz)</li> <li>Square wave macropulse modulation up to ~40 kHz for lock-in detection</li> <li>CW operation by selecting 100% duty cycle (optional)</li> </ul>  |
| <b>Wavelength</b>               | <ul style="list-style-type: none"> <li>User specified center wavelength (AA)</li> <li>Available center wavelengths are 3.8 <math>\mu\text{m}</math>, 4.1 <math>\mu\text{m}</math>, 4.5 <math>\mu\text{m}</math>, 4.8 <math>\mu\text{m}</math>, 6.3 <math>\mu\text{m}</math>, 6.8 <math>\mu\text{m}</math>, 7.3 <math>\mu\text{m}</math>, 8.5 <math>\mu\text{m}</math>, 9.5 <math>\mu\text{m}</math> and 10.2 <math>\mu\text{m}</math>.</li> </ul> |
| <b>Output spectrum</b>          | <ul style="list-style-type: none"> <li>Tunable over the gain bandwidth of the QCL</li> </ul>  |
| <b>Tuning Speed</b>             | <ul style="list-style-type: none"> <li>100 ms - 250 ms for entire tuning range for the laser</li> </ul>   |
| <b>Tuning mode</b>              | <ul style="list-style-type: none"> <li>Continuous and repeated scans over the entire tuning range</li> <li>Step and scan to any wavelength within the tuning range of the QCL (selected in the operating program on a laptop computer)</li> <li>Scan over selected tuning range with selected step size and selected scanspeed</li> </ul>   |
| <b>Power output</b>             | <ul style="list-style-type: none"> <li>Average power output of up to 500 mW at the center of each QCL tuning curve at the maximum duty cycle for the specific QCL (wavelength dependent)</li> </ul>   |
| <b>Power Output Stability</b>   | <ul style="list-style-type: none"> <li><math>\pm 3\%</math> pulse-to-pulse; <math>\pm 2\%</math> average power over hours</li> </ul>  |
| <b>Pulse trigger</b>            | <ul style="list-style-type: none"> <li>Internal or external; In external mode any pulse repetition sequence can be generated up to the maximum allowable duty cycle</li> </ul>  |
| <b>Output linewidth</b>         | <ul style="list-style-type: none"> <li><math>&lt; 2 \text{ nm}</math> (<math>&lt; 0.3 \text{ cm}^{-1}</math>) when operated in QCW mode</li> </ul>  |
| <b>Output beam</b>              | <ul style="list-style-type: none"> <li>Collimated with beam divergence of <math>&lt; 5 \text{ mrad}</math></li> </ul>   |
| <b>Output beam quality</b>      | <ul style="list-style-type: none"> <li>Nearly diffraction limited (<math>\text{TEM}_{00}</math>)</li> </ul>   |
| <b>Wavelength Accuracy</b>      | <ul style="list-style-type: none"> <li>Better than <math>0.3 \text{ cm}^{-1}</math></li> </ul>  |
| <b>Wavelength repeatability</b> | <ul style="list-style-type: none"> <li><math>\pm 0.3 \text{ cm}^{-1}</math> unidirectional</li> </ul>   |
| <b>Cooling</b>                  | <ul style="list-style-type: none"> <li>Passively cooled</li> </ul>  |
| <b>Guiding beam</b>             | <ul style="list-style-type: none"> <li>Red 640nm, 4mW laser aligned with IR beams to assist optical arrangement (optional)</li> </ul>   |
| <b>Physical Details</b>         | <ul style="list-style-type: none"> <li>Size: 12 cm (W), 4.5 cm (H), 13 cm (D)</li> </ul>  |

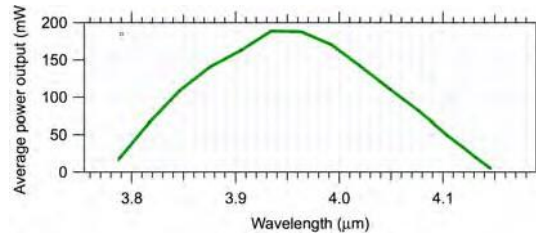
# 中红外可调谐激光器

|                              |   |
|------------------------------|---|
|                              | <ul style="list-style-type: none"> <li>Weight: &lt; 0.5 kg</li> </ul>   |
| <b>Computer Interface</b>    | <ul style="list-style-type: none"> <li>USB</li> </ul>   |
| <b>Computer Requirements</b> | <ul style="list-style-type: none"> <li>Windows XP or later computer with USB 2.0 port</li> <li>Software controls laser operation and allows user to select scan mode for as well as enable/disable the laser</li> </ul> |

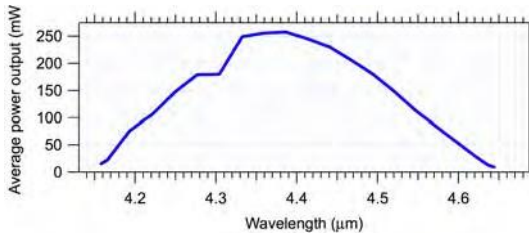
MONOLUX-AA 调谐波长-输出功率图谱。



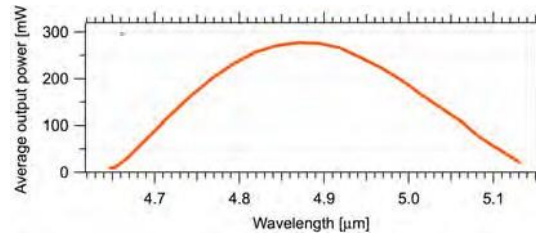
**MonoLux-37**



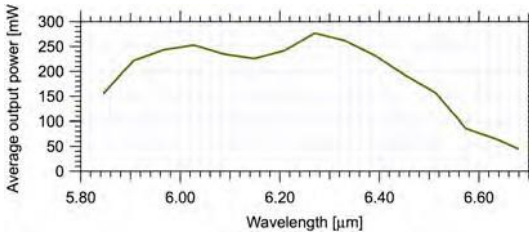
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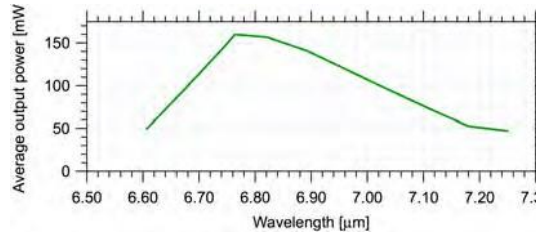
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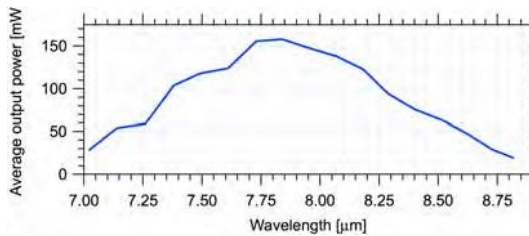
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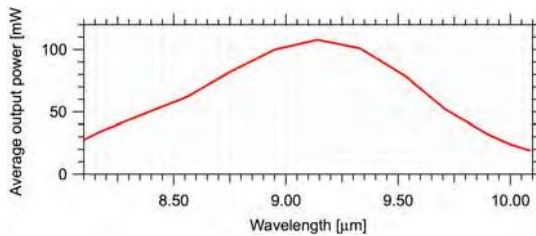
**MonoLux-62**



**MonoLux-68**

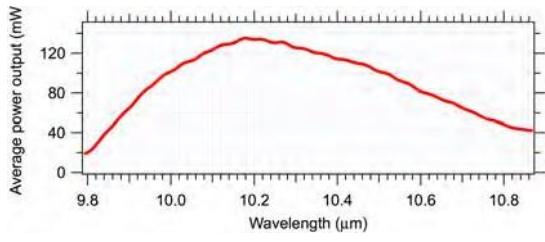


**MonoLux-80**

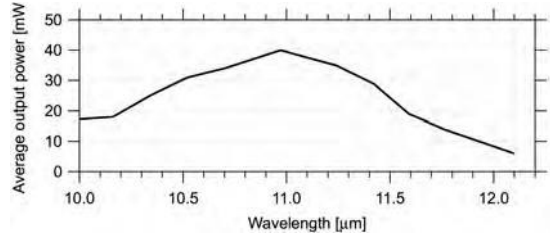


**MonoLux-90**

# 中红外可调谐激光器



**MonoLux-102**



**MonoLux-110**