



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION
Powai, Mumbai 400076

Purchase Requisition No. 1000012278 (SRM/RFX No. 6100000199)

Specifications for a fully automated, self-starting, and computer-controlled Titanium Sapphire Laser Oscillator with Integrated Pump Laser

1. **Output power:** $\geq 400\text{mW}$ @ Maximum bandwidth
 $\geq 500\text{mW}$ @ Minimum bandwidth
2. **Bandwidth (FWHM):** Computer controlled and adjustable from $\leq 30\text{nm}$ to $\geq 60\text{nm}$ for 800nm nominal
3. **Tunability:** Computer controlled and adjustable tunability from 780 to 820nm
4. **Pulse duration:** Should have capability to produce pulses between 20 to 35fs (and possibility of $<15\text{fs}$ with external compressor – to be added later) Note: The pulse width should be determined/reported from a sech² pulse shape as done in literature
5. **RMS Noise:** $<0.1\%$ (Measured from 10 Hz to 10 MHz)
6. **Power Stability:** $<\pm 0.5\%$ (Measured over any 2 hours period after warm-up)
7. **Spatial mode:** TEM₀₀
8. **M² beam:** <1.1 to 1.3
9. **Beam Divergence:** <1.0 mrad
10. **Beam diameter (at 1/e²):** 1.5 to 2mm
11. **Polarization:** Horizontal
12. **Repetition rate:** $\sim 80\text{-}85\text{MHz}$
13. **Carrier to Envelope Phase (CEP) Stabilizer** (OPTIONAL but system may have provision for incorporation)
14. **PulsePicker** (OPTIONAL but system should have provision for incorporation)
15. Active stabilization mechanism for long term mode-locking, power, repetition rate and timing jitter.
16. **Lifetime:** The system must have diode lifetimes over 20,000 hours
17. **Humidity control:** System must allow for low humidity conditions within the oscillator portion of the cavity, providing smooth, no dropout mode locked performance throughout specified tuning range.
18. **Warranty:** Min. - 2yr or $>10000\text{hrs.}$ of operation

Other conditions:

- Compliance statement should be enclosed along with the quotation.
- Indian agent should furnish letter of authorization from the manufacturer along with the quotation
- Indian agent should have supplied and installed similar systems in India.
- Indian agent should have trained service personnel to provide efficient after-sales service support. Names of those personnel along with their training certificates should be furnished along with the quotation.
- The quoted Oscillator system should be fully compatible to pump a femtosecond amplifier to produce <35fs which will be purchased later.
- The vendor must have installed similar systems in India, a user list must be enclosed with the technical bid.
- The installation should be done at free of cost for all equipment. Training to operate the instrument must be given to our research scholars at free of cost.