

**Pl.A1/13241/2020/1**

**Department of Optoelectronics, University of Kerala, Kariavattom,  
Thiruvananthapuram, Kerala, India – 695581, Ph: 91 471 2308167**

**Re-Tender Notice**

Department of Optoelectronics, University of Kerala, Kariavattom, invites tenders for the purchase of **Q switched pulsed Nd-YAG laser System and accessories in connection with the implementation of the specific project ‘Pulsed Photoacoustic study in Nanobionics’** having following specifications.

Last date and time for submission of tender online	:06/10/2021, 5pm
Date and time of opening of technical bid	: 11/10/2021, 11am
Date and time of opening of financial bid	: After the Technical Evaluation
Hard copies of the sealed tenders to be submitted to the office of	<b>The Registrar, University of Kerala, Palayam, Thiruvananthapuram.</b>
For technical details contact	<b>Head, Department of Optoelectronics, University of Kerala, Thiruvananthapuram Ph. No. +91 471 2308167 e-mail: optoelectronics@keralauniversity.ac.in</b>

### Item 1- Q switched pulsed Nd-YAG laser system

- With second (532 nm) and third harmonic (355 nm) generator
- Output energy
  - 1064 nm – 1500 mJ or above
  - 532 nm – 800 mJ or above
  - 355 nm - 300 mJ or above
- Pulse repetition rate – 10 Hz
- Pulse width – 10 ns
- Beam diameter – 9.5 mm
- Pointing stability – +/- 30  $\mu$ rad
- Pulse length: 10-15 mrad @ 1064 nm
- Beam divergence - <0.45 mrad
- Timing jitter: <0.5 ns
- Separation optics for the harmonic generators.
- Motorized/Manual optical attenuator for 1064 nm
- Beam dump shutter for 1064 nm.
- Water chiller for the laser system
- Mirrors and lenses with mount suitable for the three wavelength (1064 nm, 532 nm and 355 nm).
- The system must be software controlled for the selection of different laser parameters.
- Voltage: 220-250VAC
- Frequency: 50 Hz

### Item 2- Low power Q-switched Nd:YAG laser

- Energy
  - 1064 nm – 50 mJ or above
  - 532 nm – 25 mJ or above
- Pulses width (Full width at half maximum)
  - 1064 nm : 5 – 7 ns
  - 532 nm : 3 – 5 ns
- Linewidth : Minimum 1  $\text{cm}^{-1}$
- Divergence : <3 mrad
- Beam Diameter : Minimum 3 (mm)
- Jitter : 0.5 $\pm$ ns
- Energy Stability
  - 1064 nm : Not Less than 0.6 $\pm$ %
  - 532 nm : Not Less than 1.0 $\pm$ %

- Polarization
  - 1064 nm : Horizontal
  - 532 nm : Vertical

## **Accessories for Nd YAG laser system**

### **1. Laser Safety Spectacles**

- 180 nm to 534 nm – OD 7+
- 720 nm to 730 nm – OD 5+
- 730 nm to 740 nm – OD 6+
- 740 nm to 1070 nm – OD 7+
- Frame style – F22 OTG Glasses or better
- Visible Light Transmission – 10% or better
- Filter color – Brown
- Lens material – Polycarbonate
- Full field of view
- CE –Certified
- Number of Units required - 5

### **2. Laser Power and Energy Meter**

- Number of Channels: 2
- Measurement Rate: Up to 10 kHz pulses for pyroelectric, Up to 20 kHz for photodiode (peak to peak measurement)
- Sampling Rate - minimum 250 kHz
- Resolution minimum 0.0004% of Range Full Scale
- Accuracy: minimum  $\pm 0.2\%$  for CW,  $\pm 1\%$  for Peak to Peak, Pulse to Pulse, and Integration Mode
- Photodiode Measurement: Average Power, Peak-to-Peak Power, Frequency
- Thermopile Measurement : Average Power, Single Shot Energy
- Frequency Measurement Range Minimum 1 Hz - 250 kHz
- Computer Interfaces: USB and RS-232
- CE : Compliant
- RoHS : Compliant

### **Energy sensors**

- Two sensors
  1. Energy Range –20  $\mu\text{J}$  to 10mJ
  2. EnergyRange - 2mJ to 10J
- It should have <10mm diameter aperture
- Minimum Spectral Range of 0.24 to 2.2  $\mu\text{m}$

- Maximum Average Power: 25W
- Maximum Pulse Width: 20 ms
- Maximum Repetition Rate - 250 Hz with less than 1 ms pulse
- Damage Threshold- 4J/cm<sup>2</sup> for less than 100 ns pulses

#### **Power sensor**

- Maximum Measurable Power (W) : 50 W
- Minimum Active diameter: 2.40 cm<sup>2</sup>
- Maximum Average Power (W)(continuous) : 50 W
- Calibration Uncertainty (%): ±5
- Repeatability (%): ±1
- Resolution (%):Minimum ±0.5
- Linearity (%): ±1.5
- Uniformity (%): ±2

#### **General Conditions:**

1. Every tenderer should submit Tender fee of **Rs. 2,500/-**
2. Every tenderer should submit an Earnest Money Deposit (EMD) of **Rs. 70,000/-**
3. The tender shall be submitted in the **two bid** viz. Technical Bid and Financial Bid. Only those qualified in technical bid will be eligible for participating in financial bid. A presentation regarding the technical specification and item to be supplied shall be done before the technical evaluation committee if requested.
4. The bidder should be a manufacturer or their dealer specifically authorized by the manufacturer to quote on their behalf for this tender as per Manufacturer Authorization from and Indian agents of foreign principals, if any, who must have designed, manufactured, tested and supplied the equipment(s) similar to the type specified in the “Technical Specification”. Such equipment must be of the most recent series/models incorporating the latest improvements in design. The models should be in successful operation for at least one year as on date of Bid Opening.
5. **Compliance Statement:** Along with the technical details provide a tabular column indicating whether the equipment quoted by you meets the specifications by indicating 'YES' or 'NO'. If 'YES', support the claim by providing original brochures. **Vendors should provide clear brochures/data sheets about the equipment and its working. Also include adequate proof for the claim regarding the performance.**
6. **Reference:** Names of Institutes with contact person and telephone/ email where similar equipment supplied by you in India shall be mentioned in the bid.

7. Incomplete & conditional tenders and tenders received after the due date will be summarily rejected without assigning any reasons thereof.
8. The prices quoted must be on “**all-inclusive till destination**” basis. The prices quoted should be inclusive of all Taxes, Insurance, Freight, Packing & Forwarding Charges, Handling, Delivery Charges, installation charges etc.
9. Payment Terms: 90% payment shall be made through irrevocable LC on presentation of complete and clear shipping documents and balance 10% of the amount shall be released after the receipt, installation commissioning and acceptance of the equipment **in case of foreign consignment**.
10. Validity of tender: Tender submitted shall remain valid at least for 120 days from the date of opening the tender. Validity beyond 120 days, from the date of opening of the tender shall be by mutual consent.
11. Delivery and installation: Proposed delivery schedule should be mentioned clearly. The item should be installed at the Department of Optoelectronics, University of Kerala, Kariavattom campus, Trivandrum without any extra cost. Training should be made at the Department of Optoelectronics, University of Kerala, Kariavattom campus, Trivandrum. Necessary documents will be provided by the university.
12. Service facility: Supplier should mention their details of service setup and manpower in Thiruvananthapuram who are responsible for after sales support.
13. The model number, make, and a printed literature of the product shall submit positively.
14. In case of any dispute, the decision of the University authority shall be final and binding on the bidders.
15. The undersigned reserves the right to reject any or all of the tenders received without assigning any reason thereof.
16. The quoted item should be under **comprehensive warranty for minimum 3 years**.
17. If any component is found to be defective during the warranty period, the vendor has to replace the defective item immediately at their own cost.

#### **Documents to be Uploaded**

1. Signed Compliance Matrix
2. Detailed Technical Brochure
3. BoQ
4. Detailed Financial Bid