Ref. No.: IISc/AE/Tender/2022/Global/DyeLaser Date: 13th June 2022

Global tender notification for the procurement of a pulsed tunable dye laser

(Last Date for Submission: 5th July 2022)

GTE Approval No. IISc-GTE-2022-171

This is a Request for quote (RFQ) for procurement of a pulsed tunable dye laser at the Department of Aerospace Engineering, Indian Institute of Science, Bangalore. The tender should be submitted in two separate sealed envelopes: one containing the technical bid and the other containing the commercial bid, both of which should reach us, duly signed on or before 5 PM on 5th July 2022.

The bids should be addressed to:

The Chairman,
Department of Aerospace Engineering
Indian Institute of Science
Bangalore 560012, India.
Kind attention: Dr. Irfan Mulla
email: irfanmulla@iisc.ac.in, chair.aero@iisc.ac.in

1	Section 1	Bid Schedule	As specified by IISc
2	Section 2	Eligibility Criteria	As specified by IISc
3	Section 3	Specifications	Technical specifications
4	Section 4	Terms and Conditions	As specified by IISc
5	Section 5	Technical bid	Annexure 1: Bidder details
			Annexure 2: Declaration regarding experience of bidder
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Section 1: Bid Schedule

1.	Tender No	IISc/AE/Tender/2022/Global/DyeLaser
2.	Tender date	13th June 2022
3.	Instrument	A pulsed tunable dye laser
4.	Tender type	i) Technical bid (Part A) ii) Commercial bid (Part B)
5.	Place of tender submission	The Chairman, Department of Aerospace Engineering Indian Institute of Science Bangalore 560012, India. Kind attention: Dr. Irfan Mulla
6.	Last date and time of tender submission	5th July 2022, 5 PM
7.	Contact for further clarification	Dr. Irfan Mulla Department of Aerospace Engineering Indian Institute of Science Bangalore 560012, India. Ph: +91-80-2293-2875 email: irfanmulla@iisc.ac.in

Section 2: Eligibility Criteria

Prequalification criteria:

1. The Bidder should have at least 3 years of experience in supplying and servicing pulsed dye lasers in India.
2. The Bidder should have qualified technical service personnel based in India.
3. If the Bidder is a local Distributor/Dealer/Agent, it is mandatory to attach the authorization certificate along with the technical bid from the OEM.
4. The bidder should sign and submit the declaration for Acceptance of Terms and Conditions as per - Annexure 4.
5. The Bidder must be not blacklisted/banned/suspended or have a record of any service-related dispute with any organization in India or elsewhere. A declaration to this effect has to be given as per Annexure 3.

Section 3: Technical Specification for a pulsed tunable dye laser

The procured dye laser will be pumped using a Nd:YAG laser with the following key specifications.

Specifications of pump laser with which dye laser is to be integrated.

S.N.	**Parameter** (unit)	**Specification**
1.	Pulse repetition rate (Hz)	10
2.	Energy per pulse (mJ)	*As described below*
2a.		430 @ 532 nm
2b.		230 @ 355 nm
3.	Pulse duration (ns)	~ 5
4.	Beam diameter (mm)	~ 9
5.	Beam divergence (mrad), full angle at $1/e^2$ of the peak	< 0.5 @ 1064 nm
6.	Spatial beam profile @ 1064 nm (fit to gaussian)	*As described below*
6a.		> 0.7 for near field
6b.		> 0.9 for far field
7.	Polarization ratio (%)	> 80 @ 1064 nm
8.	Pointing stability, full angle value at all harmonics (μrad)	< 40 @ 532 nm
9.	Linewidth (cm^{-1}) measured at FWHM	≤ 0.7 @ 1064 nm

Submit quote for one pulsed tunable dye laser with the following specifications.

Bidder should respond to each point listed below in Sec. T1, T2, and T3.

T1. Mandatory specifications:

S.N.	**Parameter** (unit)	**Specification**
1.	Nominal pulse repetition rate (Hz)	10
2.	Fundamental tuning range (nm)	Range of interest is 420 – 740 nm Wider range is also acceptable provided it covers 420 – 740 nm, e.g., 370 – 760 nm, 370 – 740 nm, 350 – 750 nm, etc.
3.	Grating	Single grating of ≥ 2400 lines/mm
4.	Pumping/conversion efficiency	≥ 25% at 565 or 570 nm with Rhodamine 6G dye pumped at 532 nm with 430 mJ pulse energy laser at 10 Hz rate.
5.	Wavelengths needed	281 to 283.5 nm and 224.5 to 226.5 nm
6.	Energy when pumped with 430 mJ@532 nm at 10 Hz rate	≥ 25 mJ @ 282 or 283 nm and ≥ 5 mJ @ 225 or 226 nm

7.	Pulse width (ns) when pumped with above mentioned Nd:YAG laser	4 – 7 @ all wavelengths (or in a close match with the pump laser pulse width)
8.	Beam diameter (mm)	3 – 8 @ 570 nm, 283 nm, and 225 nm
9.	Beam divergence (mrad), full angle at $1/e^2$ of the peak	≤ 0.5 @ 283 and 225 nm.
10.	Polarization ratio	> 98% @ fundamental output
11.	Amplified stimulated emission (ASE)	< 0.5% at the peak of the tuning range of a given dye
12.	Absolute wavelength accuracy, after calibrating against a wavemeter or known emission spectrum	≤ 10 pm (picometer)
13.	Wavelength reproducibility	≤ 5 pm
14.	Thermal stability of wavelength	≤ 1.5 pm/°C
15.	Scan linearity	≤ 2 pm
16.	Linewidth (cm^{-1}) of fundamental beam	≤ 0.06 @ 560, 570, or 580 nm
17.	Wavelength generation approach	*As described below*
17a.		225 nm through frequency-tripling of fundamental dye output of 675 nm. Please specify the linewidth @ 225 nm.
17b.		283 nm through frequency-doubling of fundamental dye output of 566 nm. Please specify the linewidth @ 283 nm.

T2. Mandatory requirements/features:

1. The laser should be installed by a technical expert of either the manufacturer or their authorized Indian technician. Complete training should be given on the operation, alignment, and maintenance of the dye laser. The technical expert of the dye laser should be able to integrate the pump laser (pulsed Nd:YAG laser) of any manufacturer and complete the installation by demonstrating the quoted output energies in the UV and visible regions.
2. Necessary optics with suitable opto-mechanics should be provided to couple the pump laser to the dye laser. This should also include pump beam alignment tools, e.g., optics, mounts, alignment target, etc. To adjust the height of the pump laser, a suitable optical bench can be provided by us.
3. Spatial beam profile: Approximately circular shape with either quasi top-hat or gaussian energy distribution. Please attach samples of near-field and far-field beam profiles indicating typical energy distribution and profiles along the vertical and horizontal axes of the beam.
4. The dye laser optics should either be coated with both 355 nm and 532 nm pumping options or necessary set of separate optics (each for 355 nm and 532 nm pumping) should be provided with the dye laser.
5. Harmonic generators:
    a. Second harmonic generation stage with necessary crystal and beam walk-off compensator for 283 nm generation from 566 nm dye fundamental.
    b. Third harmonic generation stage with necessary crystal and beam walk-off

compensator for 225 nm generation from 675 nm dye fundamental.

c. All harmonic crystals should be thermally stabilized for optimum performance.

6. Wavelength control and scanning: The dye laser should have the facility to control all its parameters using an external computer. The necessary cables, power adapters, and software should be supplied. The computer will be provided by us at the time of installation.
7. Wavelength calibration: A pre-calibrated open loop against the look-up table.
8. Fully automatic scan through auto-tracking feature at both 225 and 283 nm wavelengths. Automatic scanning should be performed with a 1 pm step through provided software.
9. Wavelength separation: Separation unit with 4 Pellin-Broca prisms to remove fundamental dye output from its harmonics.
10. Three grams of the necessary dyes for the demonstration purpose should be provided with the system. Solvents will be supplied by us during the installation.
11. Five dye filters should be supplied with the system.
12. A document with the complete information about the concentrations of the dyes and the solvents required to generate 225 and 283 nm should be provided with the system.
13. 220-240VAC@50Hz, a single-phase power supply to control the laser is preferred.
14. Delivery: Within 3 to 4 months from the date of purchase order.
15. Product warranty from the date of installation
    a. At least 90 days for optics.
    b. At least 12 months for the remaining dye laser system.
16. Servicing/repair: If the need arises, local servicing/repairs should be attended to within five business days. It is mandatory to have a skilled dye laser technician/engineer located within India. The local technician should have substantial experience in servicing/repairing the dye laser. The bidder should provide a letter indicating details of the training received and experience in months. This letter should be endorsed by the manufacturer.

T3. Optional requirements/features:

1. An additional dye circulator to enable switching 283 and 225 nm wavelengths.
2. Two sets of Laser safety spectacles to block the relevant wavelengths (566, 675, 283, 225 nm) pertaining to 225 and 283 nm generation.

T4. Commercial bid price break-up

In the commercial bid, please provide the price of individual components, preferably in the following manner.

1. Dye laser with only a fundamental stage with all necessary optics, opto-mechanics, and grating to generate 566 and 675 nm wavelength beams.
2. Optical bench for a second and third harmonic generation without any optics.
3. Second harmonic crystal with housing and compensator to obtain 283 nm from 566 nm.
4. Third harmonic crystal with housing and compensator to obtain 225 nm from 675 nm.
5. Wavelength separation unit.
6. Pump laser coupling optics unit.
7. Auto-tracking unit.
8. CIP Charges.

Section 4: Terms and Conditions

1. All documentations in the tender should be in English.
2. Tender should be submitted in two envelopes (two bid system).
    a) Technical Bid (Part-A) – Technical bid consisting of all technical details and checklist for conformance to technical specifications. The proposal should contain a compliance table. The compliance table should include all the items of the technical specifications in the same order and format. The first additional column should describe product specifications. The next column should indicate compliance in a "Yes" or "No" response.
    b) Commercial Bid (Part-B) – Indicating item-wise price for the items mentioned in the technical bid, as per the format of quotation provided in tender, and other commercial terms and conditions.
3. The technical bid and price bid should each be placed in separate sealed covers, superscribing on both the envelopes the tender no. and the due date. Both these sealed covers are to be placed in a bigger cover which should also be sealed and duly superscribed with the Tender No, Tender Description & Due Date.
4. The SEALED COVER superscribing tender number and due date & should reach the office of the Chairman, Department of Aerospace Engineering Indian Institute of Science Bangalore 560012, India. Kind attention: Dr. Irfan Mulla, on or before the due date mentioned in the tender notice. In case the due date happens to be a holiday, the tender will be accepted and opened on the next working day. If the quotation cover is not sealed, it will be rejected.
5. The bid should be valid for at least 90 days from the quote date.
6. The lead-time for the delivery of the equipment should be less than 3 to 4 months from the date of receipt of necessary documents. It should be clearly mentioned in the technical and commercial bids.
7. The vendor must provide a compliance statement in a tabular form concerning each technical specification in the tender document duly supported by the manufacturer's literature and published papers. Any other claim will not be accepted and may lead to the rejection of the bid.
8. Wherever requested, data must be supplied along with technical compliance documents. Technical bids without supporting data will be deemed as technically non-compliant.
9. The institute reserves the right to verify the accuracy and seek clarification of submitted specifications after opening the technical bids. Based on such clarification, if specifications are found to be unsuitable, the technical committee reserves the right to disqualify vendors. Any discrepancy between the promised and verified specifications will be deemed as technical non-compliance.
10. The technical bid should also contain warranty details and terms. Further, any periodic maintenance requirements for regular operation should be specified in detail, along with the extent of coverage under warranty for such maintenance activity.
11. The bidder will provide the prerequisite installation requirement of the equipment along with the technical bid. The vendor is responsible for the installation of the system at the institute, along with the training of end-users.
12. In the commercial bid, the price should be inclusive of all discounts (CIF Bangalore, applicable Custom Duty will be borne by the Institute). The price quotation should include the cost of installation and training of potential users if any. Please quote the price of each dye laser component separately, as indicated in Sec. 3.T4. Please quote the price of each optional item, separately.
13. Any statutory increase in the taxes and duties subsequent to the bidder's offer, if it takes place

within the original contractual delivery date, will be borne by IISc, Bangalore, subject to the claim being supported by documentary evidence. However, if any decrease takes place, the advantage will have to be passed on to IISc, Bangalore. Any information furnished by the bidder found to be incorrect, either immediately or at a later date, would render the bidder liable to be debarred from the bidding process.

14. The vendor must submit a list of all Indian customers (only Government of India organizations) where similar systems have been installed. References from this list can be used to disqualify vendors with a poor track record of service, build quality, system performance, or poor availability of spares. Additionally, IISc shall have the absolute right to take the opinion of other departments/institutes for their opinion/experience about the bidder's services/sales. Based on such input, IISc may decide about the rejection of a bid of such bidder(s).
15. The vendor can include up to five testimonials from existing users of a similar laser system indicating the performance of the laser and maintenance satisfaction.
16. Notwithstanding anything specified in this tender document, IISc Bangalore, in its sole discretion, unconditionally and without having to assign any reason, reserves the rights:
    a) To accept OR reject the lowest tender or any other tender or all the tenders.
    b) To accept any tender in full or in part.
    c) To reject the tender, offer not conforming the tender terms.
17. The indenter reserves the right to relax any or all of the above conditions without assigning any reason.

Annexure 1:

Details of the Bidder: The bidder must provide the following mandatory information & attach supporting documents wherever mentioned:

Sr. No.	Type	Details
1.	Name of the Bidder	
2.	Nature of Bidder (Attach attested copy of Certificate of Incorporation/ Partnership Deed)	
3.	Registration No/ Trade License, (attach attested copy)	
4.	Registered Office Address	
5.	Address for communication	
6.	Contact person- Name and Designation	
7.	Telephone No	
8.	Email ID	
9.	Website	
10.	PAN No. (attach copy)	
11.	GST No. (attach copy)	

(Signature of the Bidder)
Name: Date:
Designation, Seal

Annexure 2:

Declaration regarding experience

To,

The Chairman,
Department of Aerospace Engineering
Indian Institute of Science
Bangalore 560012, India.
Kind attention: Dr. Irfan Mulla

Ref: Tender No:

Dated:

Sub: Supply and installation of a pulsed tunable dye laser

I have carefully gone through the Terms & Conditions contained in the above referred tender. I hereby declare that my company / firm has ---- years of experience in supplying and installing a pulsed tunable dye laser.

I also declare that my company / firm has a skilled dye laser technician/engineer located within India. The local technician has ---- years/months of experience in servicing/repairing the dye laser. The details of the training received are ---. The training details are endorsed by the dye laser manufacturer.

(Signature of the Bidder)
Name: Date:
Designation, Seal

(Signature of the laser manufacturer)
Name: Date:
Designation, Seal

Annexure 3:

Declaration of track record

To,
The Chairman,
Department of Aerospace Engineering
Indian Institute of Science
Bangalore 560012, India.
Kind attention: Dr. Irfan Mulla

Ref: Tender No:

Dated:

Sub: Supply and installation of a pulsed tunable dye laser

Sir,

I have carefully gone through the Terms & Conditions contained in the above referred tender.

I hereby declare that my company / firm is not currently debarred / blacklisted by any Government / Semi-Government organizations / institutions in India or abroad. I further certify that I am competent officer in my company / firm to make this declaration.

OR

I declare the following:

Sr. No.	Country in which the company is debarred/ blacklisted / having pending case	Blacklisted / debarred by Government / Semi Government Organizations or Institutions / having pending case	Reason	Time Period

(Note: In case the company / firm was blacklisted previously, please provide the details regarding period for which the company / firm was blacklisted and the reason/s for the same).

(Signature of the Bidder)
Name: Date:
Designation, Seal

Annexure 4:

Declaration of acceptance of terms and conditions

To,
The Chairman,
Department of Aerospace Engineering
Indian Institute of Science
Bangalore 560012, India.
Kind attention: Dr. Irfan Mulla

Ref: Tender No:

Dated:

Sub: Supply and installation of a pulsed tunable dye laser

Sir,

I have carefully gone through the Terms & Conditions contained in the above referred tender document. I declare that all the provisions of this tender document are acceptable to my company. I further certify that I am an authorized signatory of my company and am, therefore, competent to make this declaration.

(Signature of the Bidder)
Name: Date:
Designation, Seal

Annexure 5:

Details of items quoted:

a. Company Name
b. Product Name
c. Part / Catalogue number
d. Product description / main features
e. Detailed technical specifications
f. Remarks, if applicable

Instructions to bidders:

1. Bidder should provide technical specifications of the quoted product/s in detail.
2. Bidder should attach product brochures along with technical bid.
3. Bidders should clearly indicate compliance or non-compliance of the technical specifications provided in the tender document.

Section 5 – Commercial Bid

The commercial bid should be furnished with all requirements of the tender with supporting documents as mentioned below:
Please provide the price of individual components, preferably in the following manner.

1. Dye laser with only a fundamental stage with all necessary optics, opto-mechanics, and grating to generate 566 and 675 nm wavelength beams.
2. Optical bench for a second and third harmonic generation without any optics.
3. Second harmonic crystal with housing and compensator to obtain 283 nm from 566 nm.
4. Third harmonic crystal with housing and compensator to obtain 225 nm from 675 nm.
5. Wavelength separation unit.
6. Pump laser coupling optics unit.
7. Auto-tracking unit.
8. CIP Charges.

Items requested in the mandatory specification section

S.No	Description	Cat. Number	Quantity	Unit Price	Sub total
1.	Essential items noted in the technical specification				
2	… (details of essential items)				
3.	Warranty (years)				
4.	FOR-IISc Bangalore only				

Items requested in the optional specification section

S.No	Description	Cat. Number	Quantity	Unit Price	Sub total
1.	Optional items noted in the technical specification				
2	… (details of Optional items)				
3.	Warranty (years)				
4.	FOR-IISc Bangalore only				

Section 6 - Checklist

The following items must be checked before the bid is submitted.

1. Sealed Envelope "A": Technical Bid
   Technical bid (signed by the authorized signatory and sealed) with the below documents:
   a. Annexure 1: Bidder details
   b. Annexure 2: Declaration regarding experience
   c. Annexure 3: Declaration of track record
   d. Annexure 4: Declaration of acceptance of terms and conditions
   e. Annexure 5: Details of item quoted
   f. Authorization certificate from the OEM

2. Sealed Envelope "B": Commercial Bid

Your quotation must be submitted in two separate sealed envelopes: Technical Bid (Envelope A) and Commercial Bid (Envelope B) super scribing on both the envelopes with Tender No. and due date. These envelopes should be put in a bigger cover which should also be sealed and duly superscribed with Tender No., Tender description & Due Date.