

	INDIAN INSTITUTE OF TECHNOLOGY MADRAS Chennai 600 036 Telephone: [044] 2257 9798/9723 FAX: [044] 2257 4855 E-mail: arpp@iitm.ac.in	
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V. Sathyanarayanan
Senior Manager (Project Purchase)

Ref: PHY/JKRA/007/2018
Date: 30.10.2018

Open Tender No: PHY/JKRA/007/2018

Due Date: 27th November 2018, 3pm

Pre-Bid meeting: - Not required.

Technical Bid opening meeting on 27th November 2018, 4:00 PM at Department of Physics, IIT-Madras.

Dear Sir/Madam,

On behalf of the Indian Institute of Technology Madras, offers are invited for the supply of **“Automated Transient Absorption Spectrometer with Wavelength Tuner”** conforming to the specifications given in Annexure I.

Vendor who can supply and integrate the above equipment alone need to respond to the tender please.

Instructions to the Bidder

- I. **Preparation of Bids:** - The tenders should be submitted under two-bid system (i.e.) Technical bid and Financial bid.
- II. **Delivery of the tender:** - The tender shall be sent to the addresses mentioned below, either by post or by courier so as to reach our office before the due date and time specified in our schedule. The offer/bid can also be dropped in the tender box on or before the due date and time specified in the schedule.
The tender box is kept in the office of the:

**Senior Manager,
Project Purchase,
IC & SR Building 2nd floor,
I.I.T. Madras,
Chennai – 600 036.**
- III. **Opening of the tender:** - The offer/bids will be opened by a committee duly constituted for this purpose. The technical bids will be opened first and will be examined by a technical committee which will decide the suitability of the bids as per our specifications and requirements. All bidders will be invited for opening of the technical bids. With respect to opening the financial bid, only technically qualified bidders will be called.
- IV. **Prices:** - The price should be quoted in net per unit (after breakup) and must include all packing and delivery charges to the **Department of Physics**. The offer/bid should be exclusive of taxes and duties.

The percentage of tax & duties should be clearly indicated separately. Kindly note that IIT Madras is eligible for concessional GST and relevant certificate will be issued.

In case of import supply, the price should be quoted without custom duty. IIT Madras is exempted from levy of IGST on Imports and eligible for concessional custom duty (not exceeding 5%) and the price should be quoted on EX-WORKS and CIP basis indicating the mode of shipment.

- V. Agency Commission:** - Agency commission, if any, will be paid to the Indian agents in rupees after receipt of the equipment and its satisfactory installation. Agency Commission will not be paid in foreign currency under any circumstances. The details should be explicitly shown in the tender document even in the case of 'Nil' commission. The tenderer should indicate the percentage of agency commission to be paid to the Indian agent. The foreign Principal should indicate the percentage of payment and it should be included in the basic price quoted originally (if any)..
- VI. Terms of Delivery:** - The item should be supplied to the **Department of Physics, IIT Madras** as per the Purchase Order. In case of import supply, the item should be delivered at the cost of the supplier to our Institution. The Installation/Commissioning should be completed as specified in our important conditions.
- VII. Technical Bid Opening:** The technical bid will be on 27th November 2018, 4:00 PM at the **Department of Physics, IIT-Madras**. The financial bids of those tenders who are technically qualified will be opened at a later date under intimation to them.
- VIII. IIT Madras** reserves the full right to accept / reject any tender at any stage without assigning any reason.

Yours sincerely,

V. Sathyanarayanan
Senior Manager (Project Purchase)
IC&SR Building, I.I.T. Madras,
Chennai - 600 036.

SCHEDULE

Important Conditions of the tender

1. The due date for the submission of the tender is **27.11.2018, 3 pm.**

The offers / bids should be submitted in two bids systems (i.e.) Technical bid and financial bid. The Technical bid should consist of all technical details / specifications only. The Financial bid should indicate item-wise price for each item and it should contain all Commercial Terms and Conditions including Taxes, transportation, packing & forwarding, installation, guarantee, payment terms, pricing terms etc. The Technical bid and financial bid should be put in separate covers and sealed. Both the sealed covers should be put in a bigger cover. The Open Tender for supply of **“Automated Transient Absorption Spectrometer with Wavelength Tuner”** should be written on the left side of the Outer bigger cover and sealed.

2. **EMD: - The EMD in the form of account payee DD for 2% value of the item in favor of Registrar IIT Madras should be enclosed in the cover containing financial bid.** Any offer not accompanied with the EMD shall be rejected summarily as non-responsive.

(However, in case the Bid security is more than a threshold (Rupee five lakh) and in case of foreign bidders in GTE tenders it may also be allowed in the form of a bank guarantee (in equivalent Foreign Exchange amount, in case of GTE) issued/confirmed from any of the scheduled commercial bank in India in an acceptable form, and so on, safe guarding the purchaser’s interest in all respects.)

The EMD of the unsuccessful bidders shall be returned within 30 days of the end of the bid validity period. The same shall be forfeited, if the tenderers withdraw their offer after the opening during the bid validity period. The Institute shall not be liable for payment of any interest on EMD. EMD is exempted for Micro and Small Enterprises (MSE) as defined in MSE Procurement Policy issued by Department of Micro, Small and Medium Enterprises (MSME) or registered with the Central Purchase Organization or with IIT Madras as on the date of submission of bids.

When no local agent, the foreign vendor can submit demand draft equal to 2% or wire transfer the amount to our account as detailed in the attachment (Annexure II) and enclose the proof with the financial bid.

3. **Performance Security: -** The successful bidder should submit Performance Security for an amount of 5% of the value of the contract/supply. The Performance Security may be furnished in the form of an Account Payee DD, FD Receipt from the commercial bank, Bank Guarantee from any nationalized bank in India. **The performance security should be furnished within 21 days from the delivery of the purchase order.**

Performance Security in the form of Bank Guarantee:- In case the successful bidder wishes to submit Performance Security in the form of Bank Guarantee, the Bank Guarantee should be routed through the Beneficiary Bank to the end user bank. Otherwise, the Indian Agent of the foreign vendor has to submit a Bank Guarantee from a Nationalized Bank of India.

The Bank Guarantee should remain valid for a period of sixty days beyond the date of completion of all contractual obligations of the supplier including the warranty obligations.

4. **Indian agent:** If an Indian agent is involved, the following documents must be enclosed:
Foreign principal’s proforma invoice indicating the commission payable to the Indian Agent and nature of after-sales service to be rendered by the Indian Agent.
 - ✓ Copy of the agency agreement with the foreign principal and the precise relationship between them and their mutual interest in the business.

5. The offer/bids should be sent only for a machine that is available in the market and supplied to a number of customers. A list of customers in India and abroad with details must accompany the quotations. Quotations for a prototype machine will not be accepted.
6. Original catalogue (not any photocopy) of the quoted model duly signed by the principals must accompany the quotation in the Technical bid. No prices should ever be included in the Technical bid.
7. Compliance or Confirmation report with reference to the specifications and other terms & conditions should also be obtained from the principal.
8. **Validity:** Validity of Quotation not less than 90 days from the due date of tender.
9. **Delivery Schedule:** - The tenderer should indicate clearly the time required for delivery of the item (subjected to the executive committee-IITMadras approval). In case there is any deviation in the delivery schedule, liquidated damages clause will be enforced or penalty for the delayed supply period will be levied.
If there is delay, the penalty will be @1% per week of delay subject to a max of 10% of the value of purchase order and if the delay is more than accepted time frame by IITM, the PO would be cancelled and liquidated damages will be enforced.
10. **Risk Purchase Clause:-** In the event of failure of supply of the item/equipment within the stipulated delivery schedule, the purchaser has all the right to purchase the item/equipment from other sources on the total risk of the supplier under risk purchase clause.
11. **Payment:-**
 - (i) No Advance payment will be made for Indigenous purchase. However 90% Payment against Delivery and 10% after installation are agreed to wherever the installation is involved. In case of import supplies the payment will be made only through 100% Letter of Credit i.e. (90% payment will be released against shipping documents and 10% after successful installation wherever the installation is being done).
 - (ii) **Advance Payment:** No advance payment is generally admissible. In case of specific percentage of advance payment is required, the Foreign Vendor has to submit a Bank Guarantee equal to the amount of advance payment and it should be routed through the Beneficiary Bank to the end user Bank. Otherwise, the Indian Agent of the foreign vendor has to submit a Bank Guarantee through a Nationalized Bank of India.
12. **On-site Installation:** - The equipment or machinery has to be installed or commissioned by the successful bidder within 15 to 20 days from the date of receipt of the item at site of IIT Madras.
13. **Warranty/Guarantee:** - The offer should clearly specify the warranty or guarantee period for the machinery/equipment. Normally the warranty should be for four years from the date of commissioning of the equipment. After the warranty of three years, the bidder should be willing to maintain the equipment further at an AMC rate which should be specified in the bid by the bidder. Also the manufacturer should give an undertaking to support the equipment for 5 years from the date of supply. Also no equipment which is not currently in production should be quoted. Any extended warranty offered for the same has to be mentioned separately (For more details please refer our Technical Specifications).
14. **Late offer:** - The offers received after the due date and time will not be considered. The Institute shall not be responsible for the late receipt of Tender on account of Postal, Courier or any other delay.
15. **Acceptance and Rejection:** - I.I.T. Madras has the right to accept the whole or any part of the Tender or portion of the quantity offered or reject it in full without assigning any reason.

16. **Do not quote the optional items or additional items unless otherwise mentioned in the Tender documents / Specifications.**

17. Disputes and Jurisdiction:

Settlement of Disputes: Any dispute, controversy or claim arising out of or in connection with this PO including any question regarding its existence, validity, breach or termination, shall in the first instance be attempted to be resolved amicably by both the Parties. If attempts for such amicable resolution fails or no decision is reached within 30 days whichever is earlier, then such disputes shall be settled by arbitration in accordance with the Arbitration and Conciliation Act, 1996. Unless the Parties agree on a sole arbitrator, within 30 days from the receipt of a written request by one Party from the other Party to so agree, the arbitral panel shall comprise of three arbitrators. In that event, the supplier will nominate one arbitrator and the Project Coordinator of IITM shall nominate on arbitrator. The Dean IC&SR will nominate the Presiding Arbitrator of the arbitral tribunal. The arbitration proceeding shall be carried out in English language. The cost of arbitration and fees of the arbitrator(s) shall be shared equally by the Parties. The seat of arbitration shall be at IC&SR IIT Madras, Chennai.

- a. **The Applicable Law:** This Purchase Order shall be construed, Interpreted and governed by the Laws of India, Court at Chennai shall have exclusive jurisdiction subject to the arbitration clause.
- b. Any legal disputes arising out of any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction located within the city of Chennai in Tamil Nadu.

20. All Amendments, time extension, clarifications etc., will be uploaded on the website only and will not be published in newspapers. Bidders should regularly visit the above website to keep themselves updated. No extension in the bid due date/ time shall be considered on account of delay in receipt of any document by mail.

Acknowledgement: - It is hereby acknowledged that the tenderer has gone through all the conditions mentioned above and agrees to abide by them.

**SIGNATURE OF TENDERER
ALONG WITH SEAL OF THE
COMPANY WITH DATE**

Complete Automated Transient Absorption Spectrometer with Wavelength Tuner

The Transient Absorption Spectrometer cum Wavelength Tuner system should be designed to work with our existing 35fs Coherent femtosecond amplified laser Model Astrella to generate spectral and kinetic data required for the investigations of photo excitation events on the femtosecond and longer timescale. The system should offer automated switching (crystal, beam path, filters, detector and other necessary components) between UV-VIS and if required also to NIR range in future.

The system should include a complete transient spectrometer, with all optical and electronic parts, up to 8 ns delay line, controller and PC.

A	Tender Specifications of Transient Absorption Spectrometer
1.	Transient absorption apparatus should allow for spectral data acquisition in 320-800 nm spectral ranges and it should be upgradable up to 2400 nm in future.
2.	All crystal should be mounted together and automated switching between different spectral ranges should be available.
3.	The system should be automated (software controlled) to switch between different spectral ranges (UV-VIS & also NIR if procured in future) without any manual intervention or alignment.
4.	The system should be able to work with laser frequency inputs of 1 KHz.
5.	Low Profile High Speed Delay Line with all necessary electronics having: <ul style="list-style-type: none"> • Retroreflectors with chirp corrected dielectric mirrors to preserve the laser pulse parameters (Short pulse) as well as retain most of the power (~90%). • Fully automated and hands-off alignment of the delay line with Beam pointing drift of <10 μm throughout an 8 ns delay range • Max time window of 8ns or more • Step size of 3- 4 fs, • Bi-direction Repeatability: 14fs • Max. speed: 8-12 ns/s • Acceleration: 250-300 ns/s²
6.	Anisotropy measurements should be possible.
7.	Reflective and transmission measurements should be possible. (Attachments for this should be quoted separately as Accessories)
8.	The system should be able to work with easily photodegradable samples.
9.	Chopper phase synchronization with TTL from Laser Sync out. Optical chopper must accommodate pump beams of up to 9 mm in diameter without sacrificing the contrast of pump-on and pump-off measurements and the transient absorption signal amplitude.
10.	The spectral range for probe beam should be 320 to 800 nm
11.	UV-Visible Detector: <ul style="list-style-type: none"> • It should have a Fiber optics coupled multichannel spectrometer with CMOS based sensor, including software • Spectrometer should have Single optical element (Grating) without any moving parts for high efficiency. • Sensor Size: 1024 pixels • Spectral resolution of 4nm or better with 200 micron slit • Spectral range 200-1000nm. • Max Scanning rate 5000 spectra/s. • ADC resolution- 16 bit digitization
12.	A Liquid sample holder with magnetic stirring option should be included.

13.	Data acquisition hardware and software for transient absorption. A labview based advanced software capable of performing following functions should be provided with the system. <ul style="list-style-type: none"> • Computer controlled switching between UV, VIS and NIR modes • Supports computer controlled translating sample holder • Support pump beam shutter • Supports motorized filter wheel for automated pump intensity control • Preset optical delay sizes • Averaging time for each transient spectrum • Selection of Time window • Random delay line stepping
14.	For each pump-probe delay, all probe light spectra to be analyzed for stability over a specified (user controlled) wavelength range. The probe light spectra with the deviation over a certain threshold (user controlled) should be retaken to maintain the statistical weight of the averaged spectrum
15.	Data analysis software for kinetic and spectral analysis should include the following <ul style="list-style-type: none"> • Various display options for dynamic surface • Averaging of multiple surfaces • Facile "stitching" of surfaces having different temporal and spectral ranges • Quick navigation through transient spectra and kinetics • Simultaneous display of multiple spectra and kinetics • Origin integration • Selected spectra and kinetics can be quickly exported into CSV files or directly into Origin • Quickly fit kinetics and export results into Origin with a single click • Create reports and export them into PDF or Origin with a single click • Time zero adjustment • Temporal chirp correction • Quickly and easily normalize spectra and kinetics • Subtraction of scattered light & background • Anisotropy calculation • Perform SVD and Global Analysis • The software should save every individual kinetic scan, to prevent the data loss if experiment is aborted by any means. • Should be able to produce a 3-Dimensional Wavelength-Time-Absorbance data matrix and, which should be easily exportable into ASCII
16.	Necessary beam routing optics from OPA & Laser to the spectrometer should be included.
17.	The System should be field-upgradable to 800-2400nm detection range and 500 microsecond time window with sub-ns resolution.
18.	Provide appropriate supporting documents wherever required, for example, spectral range, spectral resolution, measurement range, automatic alignment of delay stage and spectral range change, detector range and optical accessories.
19.	A suitable computer with preloaded windows based operating system and other softwares should be supplied with the equipment.
20.	Please provide the laboratory conditions (such as working temperature range, humidity level, power back up requirement and etc.,) required for the installation and working of the equipment.
21.	Optionally, please quote for Translation sample holder of 10mm x 10mm XY range to work with Solid/Thin film samples.
	Notes and Important terms:

22.	Authorization letter should be furnished along with the quotation.
23.	Compliance statement should be enclosed with the quotation.
24.	The installation should be done at free of cost. Training to operate the instrument must be given to our research scholars at free of cost.
25.	The technical details of the quoted instrument must be available on the official website of the principal.
26.	The vendor should not quote for automated spectrometer in R&D stage or being built for first time. Such offers will not be considered. Vendor should have a minimum of 3-5 installations worldwide and atleast one or more installations of similar spectrometer in India along with Coherent Astrella Amplifier. Please provide the list of end users with contact details.
27.	Trained Service engineers in India (with suitable certificates) for the quoted model must be readily available to resolve the technical problems.
28.	Vendor should take total responsibility of installing the spectrometer with existing amplified laser and demonstrating the performance.

B. Wavelength Tuner (WT) for Transient Absorption Spectrometer system item A:

Type and compatibility

The wavelength tuner should be of the type – Optical Parametric Amplifier (OPA) – suitable to generate the required source wavelengths using the existing Ti:Sapphire femtosecond laser Astrella (model name) from Coherent Inc. (vendor). Coherent femtosecond amplified laser Model Astrella. (If further details are required, please contact the indenter).

Automation of Wavelength tuner

The WT-OPA should be fully computer controlled and designed to work with our existing 35fs OPA should be pumped easily with 5mJ @800nm@1kHz.

In addition to the above, the following technical specifications should be met by the Wavelength Tuner OPA:

- OPA system must integrate all components (harmonics)
- The OPA system must have single laptop computer control of all components with unified software control to allow operators to adjust system parameters and verify status of the optimization loops.
- Inbuilt accessories to extend the wavelength range to cover from 240nm to 2.6 micron.
- Fresh Pump beam should be used for Sum Frequency Generation.
- Repetition Rate: 1KHz
- Input Pump duration: ~35 fs
- Input pump Energy: ~5mJ
- Pulse width : (1 to 1.5) x pump for <50 fs pump duration
- Typical output energy when pump with ~5mJ :
 - ☒ 1150nm – 2600nm : >1250uJ
 - ☒ 533nm – 1150nm : >300uJ
 - ☒ 475nm – 533nm : >450uJ
 - ☒ 290nm – 475nm : >75uJ
- Polarization: Idler (1600 – 2600 nm) – Horizontal; Signal (1160 – 1600 nm) – Vertical

Necessary Beam routing, telescopic optics & beam Splitter for pumping OPA should be included.

Important essential terms:

- Vendor should take total responsibility of installing the OPA with existing Astrella Amplifier laser and demonstrating the performance.
- Vendor should have Trained Multiple Service Personnel to provide efficient local service support. Names of such Service Personnel in India (with suitable certificates) for the quoted model should be furnished along with the quotation and must be readily available to resolve the technical problems
- System must have installation and on-site training included
- Compliance sheet of the quoted system against tender specification should be provided.

- The details of the manufacturer should be mentioned and the quoted OPA technical details should be mentioned in the manufacturer's website.
- The vendor should not quote for automated OPA in R&D stage or being built for first time. Such offers will not be considered. Vendor should have a minimum of 3-5 installations worldwide and atleast one or more installations of OPAs in India along with Coherent Astrella Amplifier. Please provide the list of end users with contact details
- Also the manufacturer should have ISO9001 or similar certifications.
- Authorization letter should be furnished along with the quotation.

C. Optional items and accessories

1) Option #1:

Sample holder and manipulation for solid samples and Gels.

2) Option #2:

Honeycomb table-top with vibration isolation.

- A. Table of Dimension: 2400 x 1200 x 800 mm (L x B x H) or nearest
- Thickness of Table top required: 200mm or nearest – 1 set
 - Dynamic Deflection coefficient : 1.10×10^{-3}
 - Relative Motion: 0.5nm
 - Compliance : 37nm/N
 - Natural frequency : 110Hz- 214Hz
- B. Suitable Air compressor (1no) should be quoted along with the system

Working Surface should have the following specifications:

- Top Skin should have 4.0 mm thickness 430 series ferro magnetic SS plate, smooth sanded finish
- Side Walls should have 2.0mm thickness carbon steel plate with damped wood composite, vinyl covered finish
- Bottom Skin should be 4.5 mm thickness carbon steel plate epoxy painted finish
- Core: Plated steel Honeycomb (0.25mm foil, 3.2cm² cell size)
- Surface Flatness: +/- 0.1mm over 600mm square
- Mounting Holes: Metric – M6-1.0 holes on 25mm grid,37.5mm borders
- Hole/Core Sealing: Easy clean cylindrical cup (25mmdeep)
- Damping: Broadband Standard Damping
- Compliance curve should be provided
- Core Shear Modulus: 19339kgf/cm² (275,000 psi)

Pneumatic Support System should have the following or nearest specification:

- Integrated pneumatic support
- Load capacity : 500Kg
- Height : 600 mm
- Leveling : Auto Leveling by 3 Automatic Leveling valve
- Self-centering
- Maximum air pressure : 6bar
- Accuracy of Leveling Repeatability:

Standard leveling valve = $\pm 0.5\text{mm}$ (0.02 in.)

Precision leveling valve = $\pm 0.05\text{mm}$ (0.002 in.)

- Integrated supports should come with casters and leveling feet
- Effective damping by the two chamber system
- Pendulum piston for superior vibration isolation

Performance Specifications

- 1st Resonant Frequency - Vertical : ≤ 1.2 Hz, Horizontal : ≤ 1.5 Hz
- Roll off rate (or Isolation efficiency)
 - at 5 Hz, vertical : over 85 %, Horizontal : over 75 %
 - at 10 Hz vertical : over 95 %, Horizontal : over 85 %



CENTRE FOR INDUSTRIAL CONSULTANCY & SPONSORED RESEARCH (IC&SR)
INDIAN INSTITUTE OF TECHNOLOGY MADRAS
CHENNAI 600 036



B NAGARAJAN
JOINT REGISTRAR (IC & SR)

Project Accounts
July 22, 2016

TO WHOMSOEVER IT MAY CONCERN

In connection with project, **US currency may be transferred to CANARA BANK, IIT - MADRAS Branch** with the following details.

FOR TRANSFER OF CURRENCY US DOLLAR

Please Credit in USD

(THROUGH)

JP MORGAN CHASE, NEW YORK
SWIFT CODE: CHASUS33

For Credit to

USD ACCOUNT No: 001-1395969, of CANARA BANK INTERNATIONAL DIVISION
MUMBAI

For Further Credit to

ACCOUNT NO: **2722101001741** of IIT Chennai – Swift Code: **CNRBINBBIIT**
OF THE REGISTRAR, IIT, MADRAS


JOINT REGISTRAR (IC & SR) i/c

संयुक्त कुलसचिव (आई.सी. एवं एस.आर.)
JOINT REGISTRAR (IC & SR)

आई.आई.टी. मद्रास

This is to certify that the particulars furnished are correct.

For Canara Bank

Senior Manager
Canara Bank - IIT Madras branch



एस. अरवींदन
S.ARAVINDAN
सीनियर प्रबंधक Senior Manager
प.अ.सं. S.P.No.31649