

**Global Tender Notification for the procurement of a  
“Dilatometer setup”**

**Tender No.**

PHY/RCM/559/2023-24

Date: 05/07/2023

**GTE Approval no:**

IISc-GTE-2023-250



Department of Physics  
Indian Institute of Science  
Bangalore 560012

**July 2023**

**PREAMBLE AND INTRODUCTION**

Established in 1933 by the Nobel Laureate C.V. Raman, the Department of Physics soon evolved into the leading centre in the country for advanced postgraduate education and cutting-edge research in physics.

The specifications of the proposed Dilatometer system is Single phase, AC 220/240V, 50Hz, continuous duty, single-phase, two-wire (+ earth ) requirement.

The bidders have to visit the site, understand the characteristics of the load and come out with a clear document with respect to the performance deliverables as a part of the offerings.

### **PROPOSED SYSTEM AND TECHNICAL SCOPE OF WORK**

Department of Physics at the Indian Institute of Science (IISc) is planning to procure Single phase, AC 220/240V, 50Hz Dilatometer system to measure the thermal stability of any sample at elevated temperatures.

The bidders have to provide total turn key solution to meet the stated requirement and the turn key services include supply, installation, commissioning, integration and warranty services. The proposed solution must include the main Dilatometer setup with the latest computer system.

All the accessories including (copper) cables of appropriate capacity and length, necessary to ensure complete functionality has to be included in the bid and each one of them is to be shown as a separate line item for a better understanding of the offer and clarity.

The reliability of the units and the availability of the total solution is expected to be more than 99.95% and in the event of any fault or failure, the bidder has to respond within 2 hours and rectify the system within additional 4 hours. Department of Physics will impose a penalty if the successful bidder is not able to meet this requirement. Complete details of the SLA, for the systems offered, have to be included in the technical bid.

### **The technical requirements of the Dilatometer system**

S.No.	Specification	Remarks
1.	Operating principle: Determining dimensional changes versus temperature or time while the sample undergoes a controlled temperature program.	
2.	It comes in horizontal, vertical, and optical dilatometers modes	
3.	Operating models: Push rod and optical	
4.	Operating modes: Push-rod: dilatometry Optical: dilatometry, fleximetry, heating microscopy(optional)	
5.	Displacement sensor technology resolution: Push-rod : optical encoder, or LVDT max. 1 nm Optical: optical bench with HD cameras, or CCD sensors max 50 nm(optional)	
6.	Measuring system: Push-rod: push-rod in mechanical contact with the sample Optical: optical bench with HD cameras, or CCD sensors max 50 nm(optional)	
7.	Sample Dimension Physical state: Push-rod: 0.1 to 50 mm rigid to moderately soft Optical: 0.3 to 80 mm rigid to molten(optional)	
8.	Temperature range: Push-rod: RT to 1100°C Optical: RT to 1600°C(optional)	
9.	Maximum Sample Length: 25 mm	
10.	Maximum Sample Diameter: 12 mm	
11.	Displacement System: Optical encoder	
12.	Length (DL) Resolution: 1 nm	
13.	Measuring Range: 5 mm	

14.	CTE Accuracy: $0.03 \times 10^{-6} \text{ K}^{-1}$	
15.	Sample holder systems: Interchangeable, made of fused silica and alumina, in two versions · Single system (one pushrod) · System with two pushrods usable in dual or differential mode · Al <sub>2</sub> O <sub>3</sub> tension sample holder	
16.	Cooling systems: Air compressor or connection set (ballistic cooling; only for optional SiC-furnace for fast cooling)	
17.	Furnaces: Fused silica: RT to 1100°C · SiC: RT to 1600°C (optional furnace for fast cooling)	
18.	Maximum Heating Rate: 150°C/min	
19.	Maximum Cooling Rate: 100°C/min	
20.	Temperature accuracy: 1 K	
21.	Temperature precision: 0.1 K	
22.	Temperature resolution: 0.001 K	
23.	Thermal stability (isothermal): $\pm 0.02 \text{ K}$	
24.	Atmosphere: Air (oxidizing), inert, reducing, vacuum	
25.	Gas control: 1-way, optional 3-way switch	
26.	Gas-tight: Yes	
27.	Adjustable Force Range: 0.01 to 1 N	
28.	Max Furnace Temperature: RT to 1100°C	
29.	Sample Temperature Range: RT to 1000°C	
30.	Heating Element: CrAlFe	

31.	Measuring System: Fused silica	
32.	Max Heating Rate: 50°C/min	
33.	Natural Cooling Time (min) (from max temp to 25 °C): 51 min	
34.	Model Compatibility: 820, 830	
35.	Software: Windows 7 32/64 bit Professional®, Windows 7 32/64-bit Enterprise®, Windows 7 32/64 bit Ultimate®, Windows 8.1 Pro® and Enterprise® Windows 10 Pro® and Enterprise®	
36.	Power supply: Single phase, AC 220/240 V, 50 Hz	
37.	Warranty, Installation & Training: 3 years of comprehensive warranty should be offered. Installation, commissioning, and training should be carried out at the buyer's site.	
38.	Compliance Statement: The supplier must submit technical brochures and proper application notes adequately explaining and confirming the availability of the features in the model of the equipment being quoted. The supplier must submit a table indicating the compliance and non-compliance of the features of the model of the equipment being quoted with those given in the indent. Additional features and features in the quoted equipment which are better than those in the indent – must be clearly explained.	
39.	User list & After sales service: A comprehensive list of users of the Instrument must be supplied. In India and abroad. (Minimum of 5 numbers each in India and abroad)	
40.	The supplier must submit the name of the service engineers employed by them who are competent to service the equipment being quoted with their locations in India.	
41.	Reference sample kit:	

**The technical requirements of the computer system:**

1. System should have at least 13th Gen Intel Core i7 or i9 Processor.
2. Operating system should have Microsoft Windows 10 or Windows 11 Home, Pro, Enterprise or Education version.
3. It should contain at least 8-16 GB of RAM.
4. For Storage, 240 GB solid-state drive, or larger.
5. Integrated or discrete graphics processor capable of 1440 X 900 resolution, or better (1920 X 1080 or 1200 ideal).
6. For desktop: 24" – 27" widescreen flat-panel display.
7. Mouse: wireless and/or USB, 2-button, optical mouse.
8. Network: 802.11ac (or better) Wi-Fi capability.
9. Warranty: 3 year on-site (better) or depot warranty, accidental damage service highly recommended

**Installation and Acceptance of the Equipment**

1. The tenderer should be able to install and commission the equipment at the designated location. Installation charges (payable in Indian Rupees only), if any, should be indicated by the tenderer in the Price Bid.
2. Subsequent to successful installation at Department of Physics, IISc, the equipments will be accepted after a successful uninterrupted operation for a period of 30 (thirty) days.

**Warranty**

10. Warranty on all the hardware components should be valid for a period of at least 3 years for the Dilatometer system and 3 years for the

computer system from the date of acceptance of the equipment at a particular location. Warranty service charges (in Indian rupees) have to be explicitly mentioned as a separate line item in the Price Bid.

11. During the warranty period, the tenderer shall be fully responsible for the manufacturer's warranty in respect of the proper design, quality and workmanship of all the equipment, accessories, etc.
12. During the warranty period, the tenderer shall attend to all the hardware problems on site and shall replace the defective parts at no extra cost to the purchaser.
13. The bidder should also clearly indicate post-warranty comprehensive AMC cost, as a percentage of the equipment cost, in the Price bid.

### **GUIDELINES TO TENDERERS**

1. Quote should come only from Original Equipment Manufacturer (OEM) or their authorized distributor.
2. The equipments have to be supplied within 4 weeks after receiving a firm PO from IISc and the installation to be completed within two weeks after the supply of the equipment.
3. The bidders have to provide warranty services for a period of three years for Dilatometer systems and 1 year for computer system after acceptance of the solution by IISc. Bidders should also quote post-warranty comprehensive AMC cost as a percentage of the equipment cost.
4. Institute of Science is eligible for customs and excise duty exemption under notification 10/97-ce. Hence please quote the ED component if any separately so as to avail exemption on the issue of the certificate by us. Bidders planning to quote any imported solution have to give the offer in the respective currency.
5. The offer has to clearly state the components of pricing separately. For example, the supply part, F & I, I & C, Warranty services and any other charges have to be quoted as separate line items.
6. **The bidder should have supplied and implemented Dilatometer systems (of the same make proposed in their bid) of similar capacity at least in 2/3 different locations in the country, out of which 1 of them should preferably be in Bangalore. Documentary evidence of the above is to be submitted along with the offer, along with contact details of the purchaser. Non-compliance to this condition will result in disqualification.**

7. A two-cover system is proposed for the submission of tenders, consisting of
- **Cover A : Technical Bid** : The technical bid should contain
    - i. Executive Summary of the proposal as per Proforma given in this document.
    - ii. Complete Technical Details of the proposed solution.
    - iii. Performance details of the proposed equipments.
    - iv. Specifications for the individual or common battery bank.
    - v. Specification for the power distribution/control panel.
    - vi. Terms and conditions for the offer.
    - vii. Supporting technical material, including brochures.
    - viii. A copy of the masked price-bid of the bill-of-materials.
  - **Cover B: Price Bid**: Prices for individual line items (eg., Dilatometer setup, Computer system, Unit price (per metre) for power cable of appropriate specification should be quoted separately as specified in the Price-Bid format given below.
8. The quotations should be on CIP/CIF-Bangalore Airport basis in INR only.
9. The individual covers to be sealed and superscribed as **Tendor no./ Technical Bid**, and **Tendor no./ Price Bid** respectively.
10. The two sealed covers should be placed in another sealed cover, addressed to The Chairman, Department of Physics, Indian Institute of Science, and should be superscribed as **Tendor no.. PHY/RCM/559/2023-24**
- The sealed cover should reach the office of  
**The Chairman,**  
**Attn. to Prof. Ramesh Chandra Mallik**  
**Department of Physics,**  
**Indian Institute of Science,**  
**Bangalore 560012**  
*on or before the deadline.*
11. No request for any further extension of the above deadline shall be entertained. Delayed and/or incomplete tenders are liable to rejection.
12. All the covers should bear the name and address of the tenderer.



13. The Technical Bid and the Price Bid should be duly signed by the authorized representative of the tenderer.
14. The Technical Bid and the Price Bid should be bound separately as complete volumes.
15. **The prices should not be mentioned in the Technical Bid.**
16. A tender, not complying with any of the above conditions is liable to rejection. Incomplete proposals are liable to be rejected.
17. The Chairman, Department of Physics reserves the right to accept or reject any proposal, in full or in part, without assigning any reason.
18. The Chairman, Department of Physics, Bangalore-12 reserves the right to modify the technical specifications or the required quantity at any time. In such cases, the tenderers will be notified.
19. The tenderers are requested to go through the Terms and Conditions, detailed in this document, before filling out the tender.

#### **COMMERCIAL TERMS & CONDITIONS**

1. The commercial bid should contain among other things, payment terms, warranty, installation, and commissioning charges. These charges will be paid only after successful supply, installation, and acceptance. Department of Physics will enter into a contract with the successful bidder which will detail all contractual obligations during the warranty period. Bidders have to quote for AMC charges (for the Dilatometer system) for 5 years after 3 year warranty period.
2. In the case of rupee offer, the component of tax, E.D. and any other statutory levies should be shown separately and not included in the total amount, to enable us to avail of exemption.
3. In case of imports, the commercial bid should contain among other things the name and address of the Indian agent, if any and the agency commission payable to him. The agency commission part will be deducted from CIF/CIP value, and will be paid to him by us separately in equivalent Indian rupees. Please quote the prices for shipment on 'CIF/CIP' terms.
4. In respect of imported solution, IISc will arrange for customs clearance, at Bangalore airport, which will be final destination airport. Hence costs related to customs/clearance need not be included in the offer.

5. In CIF/CIP offers of imported solutions, insurance should be on “Warehouse to Warehouse” basis and should not terminate at Bangalore airport.
6. IISc is not exempted from any other VAT or other taxes. Hence this component may be shown as separate line item wherever applicable.
7. Proposals should contain name and contact details viz phone, fax, email of designated person to which all future communication will be addressed.
8. Price should be quoted per unit and the total amount for the required quantity.
9. Offer should be valid for 30 days from the date of submission.
- 10. Among the technically qualified bidder, the successful bidder would be identified using the total cost of ownership (TCO) which includes supply, installation and commissioning of the total turn-key solution, warranty for 3 years.**

**PAYMENT TERMS**

100% payments (except AMC) will be released after completion delivery and satisfactory installation subject to TDS as per rules. AMC cost (if ordered), after completion of warranty period) will be released on half-yearly basis at the end of each six months subject to satisfactory services. The AMC will be comprehensive. The quotations should be CIP/CIF-Bangalore Airport.

**Proforma for Executive Summary**

1. Name and Address of the Manufacturer:
  
2. Name and Address of the Tenderer:
  
3. Tenderer’s Proposal Number and Date:
  
4. Summary of the solutions proposed:

**Item**

**Make and Model No.**

A

- B
- C
- D
- E
- F

5.

<b>Checklist for documents attached</b>	<b>√ appropriately</b>
Technical details of the proposed equipment.	
Performance Details of the proposed Equipment.	
Terms and conditions for offer	
Authorization Letter from Foreign Principal	
Supporting Literatures	
Company's profile	
Any other documents (please specify)	

6. Contact details of the personnel for all future correspondence related to this proposal:

Name & Designation: **Prof. Ramesh Chandra Mallik, Associate Professor**

Phone No: **22932450**

Fax No:

Mobile: **9448898560**

Email: **rcmallik@iisc.ac.in**

**FORMAT FOR PRICE BID**

Price information should be specified in the following format. Prices should be specified for each line-item separately. Additional lines should can be added as appropriate.

<b>Sl. No</b>	<b>Description</b>	<b>Unit Rate</b>	<b>Qty.</b>	<b>Amount</b>	<b>Taxes, if any</b>	<b>Total</b>
1	Basic horizontal single pushrod Dilatometer					
2	Furnace SiC heating element					
3	Manual gas control for 2 gases					
4	Vacuum Pump					
5	Breakers / MCCB (use separate line for each capacity)					
6	Cables (use separate line for each capacity)					
7	Other accessories (pls. specify)					
	Grand Total (including Taxes)					

**CHRONOLOGY OF EVENTS**

- ❖ Release of RFP : 05-07-2023
- ❖ Receipt of vendor queries : 15-07-2023
- ❖ Prebid clarification meeting : 17-07-2023
- ❖ Due date for submission

of tender

: 03-08-2023

### **Details of the Bidder**

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

Details of the Bidder

<b>Sl. No</b>	<b>Items</b>	<b>Details</b>
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

Designation, Seal

Date:

**Declaration regarding experience:**

To,

The Chairperson,

Department of

Physics, Indian

Institute of Science,

Bangalore – 560012,

India

Ref: PHY/RCM/559/2023-24

Dated:

05/07/2023

Supply and installation of Dilatometer system for measurement of thermal expansion of materials at elevated temperatures at Department of Physics, IISc Bangalore

Sir,

I've 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 Dilatometer system for measurement of thermal expansion of materials at elevated temperatures.

Signature of the Bidder

Name

Designation, Seal

Date:

**Declaration regarding track record:**

To,

The Chairperson,

Department of Physics,

Indian Institute of Science,

Bangalore-560012

Ref: PHY/RCM/559/2023-24

Dated:

05/07/2023

Supply and installation of a Dilatometer system for measurement of thermal expansion of materials at elevated temperatures at Department of Physics, IISc Bangalore.

Sir,

I've 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'm competent officer in my company / firm to make this declaration.

Or

I declare the following

Sl. No	Country in which the company is Debarred /blacklisted / case isPending	Blacklisted / debarred by Government / Semi Government/Organizations /Institutions	Reason	Since when and for how long
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(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).

Yours faithfully

(Signature of the Bidder)

Name

Designation, Seal

Date:

**Declaration for acceptance of terms and conditions:**

To,

The Chairperson,

Department of Physics,

Indian Institute of Science,

Bangalore-560012, India

Ref: PHY/RCM/559/2023-24

Dated:

05/07/2023

Supply and installation of a Dilatometer system for measurement of thermal expansion of materials at elevated temperatures at Department of Physics, IISc Bangalore.

Sir,

I've carefully gone through the Terms & Conditions as mentioned 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'm an authorized signatory of my company and am, therefore, competent to make this declaration.

Yours faithfully

(Signature of the Bidder)

Name

Designation, Seal

Date:



Addressed to,  
The Chairman,  
Attn. to Prof. Ramesh Chandra Mallik,  
Department of Physics, Indian Institute of Science,  
Bangalore-560012, India