



INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE
2A & 2B, RAJA S.C.MULLICK ROAD, JADAVPUR, KOLKATA -700032

NOTICE INVITING TENDER NO. : IACS/IC-P/RM/15-16/25 Dated 10.12.2015.

Indian Association for the Cultivation of Science invites Sealed Tenders for purchase “**Dynamic Rotational & Oscillatory Research Grade Rheology Instrument with Peltier temperature Controller**” to be procured from **SERB project** (Project No: SERB/F/1927/2014-15 dated 26.06.14). The bids are to be submitted in **Two-Bid pattern i.e. Technical Bid and Price Bid** in two separate sealed covers distinctly marked accordingly and both to be put inside another envelope, which should be sealed and super scribed with “**Dynamic Rotational & Oscillatory Research Grade Rheology Instrument with Peltier temperature Controller**” Tender Notice No., Due date and time of opening. Two bids i.e. Technical Bid and Price Bid should be identical in all respects except that the Technical Bid should have blank space at the places where prices have been quoted in the Price Bid. The bidders may submit bids duly signed in their own letterheads. In case the scheduled date of opening of tender is declared as holiday, the tender will be opened on the next working day at 3.00 P.M. The technical bids will be opened first to evaluate the technical specifications of the equipment and the price bids of the technically qualified companies only will be opened thereafter. Complete tender bids should reach the **Dispatch section, Indian Association for the Cultivation of Science, 2A & 2B, Raja S C Mullick Road, Jadavpur, Kolkata 700032, West Bengal, India**, on or before the scheduled date & time specified below:-

Notice Inviting Tender No.	IACS/IC-P/RM/15-16/25 Dated 10.12.2015
Last date and time of submitting tender	08.01.2016 at 3.00 p.m.
Pre-bid meeting	22.12.2015 at 12.00 Noon.
Date and time of opening tender	11.01.2016 at 11.30 a.m.
Place of opening tender	Office of Dr. R. Mondal
Contact	Email: icrm@iacs.res.in, Tel: +91-33-2473 4971 (Extn. 1374)

The technical bids will be opened first to evaluate the technical specifications of the equipment thereafter, the Price bids of only technically qualified bidders will be opened.

A) **Technical Bid Evaluation:** The Technical Bids will be evaluated in the presence of the representatives of intending bidders who will be able to clarify technical aspects of their bids, if any, required by the Technical Evaluation Team.

Opening of price-bid: The Price Bids of the bidders qualifying the technical bid will only be opened, the date of which will be intimated to the short-listed bidders at their email addresses. The rest of the bids will be rejected.

Please note that IACS will not provide any accommodation or expenses to any of the bidders for attending opening of technical bids.

B) Technical Bid:

The Technical Bid should contain technical specifications and kept in a separate envelope duly superscribed as "Technical Bid" on the outer side of the envelope as detailed above.

C) Technical Specifications for Dynamic Rotational & Oscillatory Research Grade Rheology Instrument with Peltier Temperature Controller:

A research grade rheometer is required for studying non-Newtonian flows, low viscosity structured fluids and thixotropic materials. The instrument should have digital interface for control, display, record of parameters and real time sensor data.

Modes of operation: Oscillatory: Stress/strain sweep at fixed frequency, frequency sweep at fixed strain/stress, temperature sweep at fixed stress/frequency, superimposed stress/strain oscillation and steady shear, multiple frequency modes. Steady shear/Flow mode: Controlled stress/strain sweeps, temperature sweep at constant stress/shear, squeeze flow and pull off. Creep mode and stress relaxation mode are desirable.

Motor Technology:

Air-bearing- supported Synchronous motor (or Brushless DC motor) for precision dynamics. Motor torque output should not change with temperature with no motor heating. Motor torque should be proportional to motor current. Dual Air bearing technology with a radial and axial air bearing supporting the motor. The Transducer can be combined or separate.

1. Bearing Type: Air
2. Motor: Synchronous motor (Brushless DC)
3. Maximum torque: 10-200 mNm
4. Torque resolution: Preferably <1.0 nNm

Motor Dynamics: It should have a Sample-adaptive Shear-rate controller; realtime position control for performing strain-controlled oscillatory tests; Digital Current sources integrated with high-speed digital signal processing to perform measurements.

5. Minimum angular frequency: 1×10^{-7} rad/s or lower
6. Maximum angular frequency: >600 rad/s
7. Angular velocity range (Rotational speed): 10 nrad/s-300 rad/s or more

Motor Measurements:

8. Normal force range: 0.001-50 N
9. Normal force resolution: 0.001 N or less
10. Step time, rate (Change in velocity): 5 ms or less
11. Step time, strain: 10 ms or less
12. Displacement control/Sensing: Optical Encoder
13. Displacement resolution: 10 nrad or better
14. **Auto gap set:** Description on the mechanism and motor speed are required.

15. **Peltier system:** The system should be offered with built in Peltier System with a Temperature Range from -5 °C to 200 °C with Auto-recognition.

16. **Accessories for Peltier:** It should be provided along with an effective Counter-cooling circulation system and an efficient Hood to prevent solvent evaporation.

17. **Measuring systems:** Cone Plate (1°, 2° of 25 mm and higher with 50 mm plate), Parallel Plate (50 mm or higher)

18. **Air Compressor:**

- (i) Compact Oil free Air Compressor necessary for the Rheometer with tubing and connector.
- (ii) Air purification membrane Air Dryer/filter to separate oil, particle and condensate (preferably branded and imported)

19. **Associate parts:** Essential various associated parts for Rheological experiments. Accessories, spares and optional components (to be quoted separately, if not part of the standard configuration): (i) Additional sensors (cylindrical, immersion, special geometries etc.) (ii) Instruments and data analysis software and support (iii) Accessories such as pumps, cooling requirements etc. (v) Standard liquids, sample holders etc. (iv) Any other items needed for a self-contained installation of the unit. Power supply: The main unit, accessories, cables and connectors should conform to the Indian specifications.

20. **Software:** The system should be offered with user friendly software to perform experiments, measurement and analysis including: integrated modelling/curve fitting, inter-rheological conversion, data reduction and handling protocols with special optional modules like master curve, intrinsic viscosity module, spectrum relaxation/retardation, molar mass distribution, squeeze flow rheology and extensional rheology modules, rotational with control stress/combination of csr + css, oscillatory with true strain/direct strain amplitude/control stress/combination of strain + css transient with creep(single/multi-level)/step-strain(stress relaxation) combination with any modes above $\dot{\gamma}$ for e.g. transient + rotational or oscillatory + rotational

21. **Additional features:** A modular design with scope for various attachments for structural analysis of materials under shear would be highly preferred. Any other additional features in favour of your instrument with technical compliance data originally signed should be included along with quotation.

22. The system should be offered with suitable & branded windows operating system based PC workstation with following essential accessories/items: Computer with latest configuration [with 17" monitor (LCD) with latest configuration] and appropriate online UPS (APC/Power one make) with 30 minutes back-up.

23. Technical compliance chart should be provided following the following format*

Sr. No	Tender specification	Your offered instrument specification	Extent of compliance

*Tender will not be accepted if the technical compliance chart is not provided following the above format.

D) **User List:** The supplier should provide a list of current users (with contact no, Email address etc) for the quoted item in India.

E) **Service facility:** Trained technicians should install the instrument and ensure it is operating correctly and within specifications. User training at site should also be provided. Supplier should mention their details of service setup that are responsible for after sales support.

F) **Price Bid:**

The financial bid indicating (item-wise) price for the item(s) mentioned in the technical bid should be kept in a separate sealed envelope duly super scribed as "PRICE BID" on the outer cover of the envelope as already detailed above. The price bids of only technically qualified bidders will be opened and they will be intimated the date and time of opening of price bids at their email id-(s). Rest of the bids will stand rejected.

G) **Price:** Price to be quoted both on FOB/CIF basis. Name of the particular port from where our authorized forwarder will lift the consignment must be mentioned clearly with FOB price.

H) **Bid Security:**

1. The financial bid should be superscribed as **'PRICE BID'** on the outer cover of the envelope

2. **Bid Security (EMD):** An Account Payee Demand Draft of Rs. 40,000/- (Rupees forty thousands) in the name of "Indian Association for the Cultivation of Science" is to be furnished by the bidders, as Bid Security money or Earnest Money Deposit (EMD).

3. The Demand Draft for the Bid-Security money should have at least 45(forty five) days validity period after the opening of the Bids.

4. In case of non-award of the work the Bid Security money would be returned to the unsuccessful Bidders.

I) **Performance Security:**

An Account Payee Demand Draft of an amount of **10% of the order value** in the name of "**Indian Association for the Cultivation of Science**" is to be furnished by the successful bidder as Performance security. Performance security money should remain valid for a period of 60 days beyond the date of completion of all contractual obligations of the supplier including warranty obligations. Bid security money will be refunded to successful bidder on receipt of the Performance security money.

J) **General Instructions:**

1. Incomplete & conditional tenders and tenders received after the due date will be summarily rejected without assigning any reasons thereof.

'Dynamic Rotational & Oscillatory Research Grade Rheology Instrument with Peltier temperature Controller' should clearly be written on the envelope.

2. At any time prior to the bid due date, IACS may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder during pre-bid meeting, modify the bidding documents. The amendment(s) will be notified on the Institute website.

Prospective bidders are advised to occasionally visit the website (www.iacs.res.in/tender) for any amendment.

3. **Payment:** 100% against delivery and successful installation subject to submission of performance guarantee.

4. **Warranty:** Minimum 5 years or 2 years warranty (on site) + 3 years annual maintenance contract (free of additional charge)

5. **Installation/Demonstration/Application Training at site:** Free of cost by the supplier.

6. **Service facility:** Supplier should mention their details of service setup and Manpower in Kolkata who are responsible for after sales support.

Response time should be within 24 hours.

7. **Validity of tender:** Tender submitted shall remain valid at least for three months from the date of opening of the tender. Validity beyond four months from the date of opening of the tender shall be by mutual consent.

8. **The tender should accompany a compliance chart.**

9. The rate should be inclusive of all taxes, transportation etc. Nothing extra will be paid in addition to the quoted rate.

10. The model number, make, and a printed literature of the product shall be submitted positively.

11. Proposed delivery schedule should be mentioned clearly.

12. Manufacturers/exclusive distributors/vendors should have history of supplying this type of instrument to this or other Scientific Organization.

13. Authorized Dealership Certificate is must, in case of principal manufacturing company is not quoting directly.

14. Guarantee certificate, users manuals etc. are to be handed over to the user after successful commissioning of the system.

15. In the event of date being declared a closed holiday for purchaser's office, the due date for submission of bids and opening of technical bids will be the following working day at the appointed time.

16. In case of any dispute, the decision of the Institute authority shall be final and binding on the bidders.

17. For any clarification regarding technical specifications etc. Please send your queries to **“Dr. Raju Mondal”** at icrm@iacs.res.in.

18. The Institute reserves the right to reject any or all of the tenders received without assigning any reason thereof.

ACTING REGISTRAR