

INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE
2A & 2B , Raja S.C. Mullick Road, Jadavpur, Kolkata-700032

NIT No. : IACS/CSS/SM/21-22/117

Date: 12.01.2022

Sealed tender in two bids system (**Technical Bid & Financial bid**) is invited from bonafide, resourceful and eligible manufacturer/exclusive distributor/vendors for the purchase of “**Research Grade Compact Rheometer and Dynamic Mechanical Thermal Analyzer with Accessories**” with necessary accessories.

Part-I (Technical Bid) of the tender should contain technical specifications in detail as well as commercial terms and conditions. Part-II (Price Bid) should clearly indicate group-wise price, if needed, as mentioned in the technical bid. The Technical Bid and Price Bid are to be submitted in separately sealed envelopes, distinctly marked accordingly and both to be put inside another envelope, that should be sealed and super scribed with tender notice no. and due date. The bidders may submit bids duly signed in their own letterheads.

Completed tender bids should reach the office of the **Registrar, Indian Association for the Cultivation of Science (IACS), 2A & 2B Raja S. C. Mullick Road, Jadavpur, Kolkata- 700032** on or before the scheduled date and time specified below:

Tender Notice No.	NIT No: IACS/CSS/SM/21-22/117 Date: 12-01-2022
Last date and time of submitting tender	02.02.2022 (2.00 PM)
Pre-bid meeting (online mode) to discuss technical specification and detail presentation by the representative(s) of the interested companies on the technical specifications of their instrument and application with representative data acquired in their instrument elsewhere.	20.01.2022 @3.30 PM through online mode (Interested bidders need to send participation request by 18/01/2022 to psusm2@iacs.res.in with cc to psusm2@gmail.com ; Meeting link will be sent upon receiving the request)
Date and time of opening tender (Technical Bids)	02.02.2022, at 3.00 PM
Place of opening tender	IACS
Date and time of 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.
Contact	Email: psusm2@iacs.res.in Tel.+91 33 2473 4971 [Ext 1564] / Mob. 09433806658

The technical bids will be opened first to judge/evaluate the technical specifications of the said instrument and thereafter the price bids of only technically qualified bidders will be opened.

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 reimburse any expenses to any of the bidders for attending opening of technical bid.

Quotations received incomplete or beyond the stipulated time will be summarily rejected.

Bidders should submit their past experience for supplying and successful installation of similar units to other research Institutes/Universities/other organizations in India and abroad. Please provide documentary proofs of such successful installation and supportive documents that the instruments are running successfully.

1. TECHNICAL BID

The technical bid should contain technical specifications and should be kept in a separate sealed envelope duly super scribed as “TECHNICAL BID” on the outer cover of the envelop as already detailed above. It should be clearly mentioned on the envelope as “**Research Grade Compact Rheometer and Dynamic Mechanical Thermal Analyzer with Accessories.**”

TECHNICAL SPECIFICATIONS

Application. Research grade Rheometer should be capable of full characterization of a variety of material like soft materials under controlled stress and controlled strain conditions. The system also provides dynamic mechanical analysis in bending / tension / compression / torsion mode and thermomechanical analysis.

RESEARCH GRADE compact Rheometer and Dynamic Mechanical Thermal Analyzer	
Main Instrument	
I. Operation Mode for Rheometer	Stress control, shear rate control and direct strain-controlled oscillation at demand strain amplitude. A pure Sinusoidal Waveform at all times must be ensured irrespective of the Strain imposed.
Motor Technology	Modern up-to-date system suitable for rheology (oscillatory) option.
Torque Range (Rotation)	1.0 nNm to 220 mNm or better
Torque Range (Oscillation)	0.5 nNm to 220 mNm or better
Bearing	System to ensure lowest radial drag & highest axial stiffness.
Angular Velocity Range	10 nrad/s to 314 rad/s or better
Frequency Range	0.001 to 100 Hz or better
Force Range	0.001 N to 50 N or better
Modulus Range	10^{-3} Pa 10^{+5} Pa or better
Gap control	Gap Control with high gap resolution parallel geometry (automatic) and cone-plate geometry.
Modes of Measurement	Oscillatory: Direct Strain, Shear Strain, Amplitude & Control Shear Stress with respect to time, temperature, frequency and amplitude

	Viscometry: Viscometry as a function of time, temperature and shear rate. Yield stress measurements. Compression: for Foams, elastomers, and other soft solids like food systems and gels.
Measuring geometries	Parallel plate-plate & Cone-plate with the suitable cover / trap / jacket to minimize the evaporation of solvent during measurement at various temperature mentioned below.
Temperature range	Room temperature to 100 DegC
II. Operation Mode for Dynamic Mechanical Thermal Analyzer (DMTA)	DMTA (elongation / bending / compression / torsion) option and thermomechanical analysis.
Motor Technology	Modern up-to-date system combination of synchronous upper and lower linear drive
Torque Range (Rotation)	1.0 nNm to 220 mNm or better
Torque Range (Oscillation)	0.5 nNm to 220 mNm or better
Bearing	System to ensure lowest radial drag & highest axial stiffness.
Angular Velocity Range	10 nrad/s to 314 rad/s or better
Frequency Range	0.001 to 100 Hz or better
Force Range	0.001 N to 40 N or better
Modulus Range	10^{+5} Pa 10^{+10} Pa or better
Tan Delta (Min.)	0.001 or better
Displacement range	0.01 to 9000 micrometer
Modes of Measurement	a) Tensile (rectangular shape of polymeric film/ fiber / bar) b) Bending (three-point-bending, single cantilever, dual cantilevers) c) Compression (Foams, elastomers, and other soft solids like food systems and gels) d) Torsion :(rectangular film or bar) e) Transient: Creep/Creep recovery measurement f) Stress relaxation: Time-Temperature superposition for generating master curve analysis g) Thermomechanical measurement for the expansion coefficient of solid.
Measuring geometries	With suitable clamps or fits and sample chamber to perform experiment at various temperature
Temperature range	-150 DegC to 500 DegC
III. Sample Loading	Manual PC controlled or automated using touch controlled
IV. PC Interface	Direct USB interface / ethernet and serial interface
Temperature Control System	
Temperature control	Suitable temperature control device with temperature sensor for getting sample temperature and viewing the sample during measurement.
Temperature range	-150 DegC to 500 Deg C

Temperature enclosure	Actively cooled jacket and exhaust
Heating / Cooling rate	30 DegC / min
Low temperature option	Suitable low temperature vessel or Dewar (50 litre or more) and low temperature accessories with Liquid N2
Liq. N2 consumption	5 litre/hr @-50 DegC, Max 12 litre/ hr
Measuring geometries	
a) Plate-plate geometries of diameter 50 MM: 1 unit b) Plate-plate geometries of diameter 25 MM: 1 unit c) Cone-plate geometries of diameter 25 MM and angle 2 deg: 2 units d) Cone-plate geometries of diameter 40 MM and angle 2 deg: 2 units e) Lower plate of diameter 50MM: 1 unit f) Clamps or fits for rectangular sample (tension / torsion) g) Cantilevers (upper & lower) for bending h) Three-point bending tools and sample supports	
Associated items	
Air compressor	100 psi, 5cfm oil free or better
Air drier DRYER	Multistage membrane type with microfilters or better
Refrigerated circulator	Temperature range: -10 to 120 DegC, (accuracy ± 0.1 DegC) with the option external circulation. Bath volume ~4-5 litres and flow rate 10-12 litres/min.
Computer	Branded desktop computer suitable for the smooth operation of the said instrument (Microsoft Windows 10 (64bit), 10 th Gen. CPU intel core i5, 2.67 GHz or higher, RAM 8GB, SSD with 480 GB, Keyboard & USB Optical Mouse, LED Monitor (21 inches), 3 USB ports, Laserjet printer.
Online UPS	Online UPS with 30 min backup
Software and Warranty	
Architecture	Template based with built-in templates pre-programmed for all types of materials
Analysis module	Integrated modelling / curve fitting, conversion, data reduction and handling protocols with module of master curve and other data fitting. Data analysis software should be for three users.
Warranty	Three years of comprehensive warranty (from the date of installation) with 48 hours response/rectification time and spare part replacement time of about 3 weeks period if importing from abroad.
Other requirements	
Upgradability	The Rheometer should be upgradable to Rheo-FTIR. The UV Curing Cell should also be mountable on the Rheometer system.

Pre-installation certificates	Pre-installation report of the exact same model of the instrument in different universities/ institutes/ companies in India is required (should be provided with proper documentation from corresponding authority)
Tool Kits	Necessary Tool Kits should be provided with the main instrument.
Authenticity	All Claims made by the vendor with regards to the above specifications should be supported by specification sheets / brochures / data available on company website. No claims with regards to laboratory data will be accepted.
Pre-installation requirements	These should be mentioned and intimated in advance.
Compatibility of power supply	Main supply: 230 $\pm$ 10 volts, 50 Hz
Installation & Training	Installation and student training (30) as required (No extra cost).
Duration	Estimated time of delivery after getting purchase order
Price	FOR upto IACS or Delivery at the installation site.

NOTES / Pre-Qualification criteria:

A) Equipment offered must be a model from the current serial production range of the manufacturer. Offer should be supported with printed catalogue and depiction on company website.

B) The local vendor of OEM must attach a reference list of supplies (similar model) in last 3 year with contact details (Name, Phone, email address).

C) The company should be an original equipment manufacturer (OEM) of the compact Rheometer with DMTA with expertise of manufacturing over 5 years, please attach exclusive authorization certificate specific for this tender with quote without which bid will be rejected. This criterion is proof of accountable service supported by vendor & OEM.

Warranty: Minimum 3 years. The warranty will be valid from the date of actual installation.

Proper installation and training should be provided by the vendor. Onsite after sales service, within 48 hours of reporting any problems, is mandatory. It is essential to have a technical person stationed in Kolkata.

A compliance table (see below) must be prepared and submitted along with the technical bid.

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

2. 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 envelop as already detailed above. Price bids of only technically qualified bidders will be opened and they will be intimated the date and time of the opening of price bid at their e- mail ids. Rest of the bidders will stand rejected.

PRICE: FOR upto IACS or Delivery at the installation site.

3. BID SECURITY:

- a. An Account payee Demand Draft/Pay Order of any of the Nationalized Banks for Rs. 300,000/- (Rupees THREE lakh only) drawn in favour of “Indian Association for the Cultivation of Science (State Bank of India, Jadavpur University Branch, A/C No. 11079699211, IFSC: SBIN000093, MICR Code: 700002048)” is to be furnished by the bidders except those who are registered with the Central Purchase Organizations, **National Small Industries Corporation or the concerned Ministry or Department**, as Bid Security money or Earnest Money Deposit (EMD). Alternatively, the Bidder shall have the option to furnish the EMD in the format of Bank Guarantee (BG) of any Indian Nationalized Bank preferably located at Kolkata.
- b. The Demand Draft for the Bid-Security should have at least 90 (ninety) days validity period of opening of the bids.
- c. In case of non-award of the work the Bid Security money would be returned to the unsuccessful Bidders.

4. PERFORMANCE SECURITY:

An Account Payee Demand Draft on any nationalized bank of India 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 or EMD will be refunded to successful bidder on receipt of the Performance security money.

5. TERMS OF PAYMENT:

Payment will be made through irrevocable Letter of Credit in two instalments. 90% of the money will be released on submission of shipping of documents. Remaining 10% will be released after successful installation of the instrument.

6. GENERAL INSTRUCTIONS:

1. Validity of tender: Tender submitted should remain valid for at least SIX months from the date of opening the tender. Validity beyond six months from the date of opening of the tender shall belapsed by mutual consent.

2. The tender should accompany a compliance chart. Without compliance chart, bidders will be rejected.
3. Incomplete and conditional tenders as well as tenders received after the due date will be summarily rejected without assigning any reasons thereof.
4. 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.
5. Installation/Demonstration/Application training at site: Installation & user training at IACS, free of cost by the supplier.
6. Service facility: In India, preferably Kolkata, supplier should mention their details of service setup and man powers who are responsible for after sales support. Response time should be within 24 hrs.
7. The model number, make and a printed literature of the product should be submitted positively.
8. Proposed delivery schedule should be mentioned clearly.
9. Manufacturers / exclusive distributors / vendors should have history of supplying this type of instruments to this or other scientific organizations. Availability of a list in this regard would be preferred.
10. Authorized dealership certificate should be provided in case of principal manufacturing company is not quoting directly.
11. Guarantee certificate, users manuals etc. are to be handed over to the user after successful commissioning of the system.
12. In the event of date being declared a closed holiday for purchaser's office, the due date for submission of bids and opening of the technical bids will be the following working day at the appointed time.
13. In case of any dispute, the decision of IACS authority shall be final and binding on the bidders.
14. For any clarification regarding technical specifications, information etc., please send your queries to Prof. SUDIP MALIK (psusm2@iacs.res.in)
15. The authority of IACS reserves the right to reject any or all of the tenders received without assigning any reason thereof.

Acting Registrar