

## Notice Inviting Quotation (E-Procurement mode)

INDIAN INSTITUTE OF TECHNOLOGY DELHI

HAUZ KHAS, NEW DELHI-110016

Dated: 20/04/2018

**Open Tender Notice No.IITD/BTXT(SP-1628)/2018**

Indian Institute of Technology Delhi is in the process of purchasing following item(s) as per details as given as under.

<b>Details of the item</b>	<b>High Pressure Capillary Rheometer</b>
<b>Earnest Money Deposit to be submitted</b>	<b>Rs. NIL</b>
<b>Warranty</b>	Comprehensive warranty for 3 years as per the details mentioned in the technical specification S.No.18
<b>Performance security</b>	<b>10% of FOB value (to be kept as bank guarantee for the period of standard and extended warranty)</b>

Tender Documents may be downloaded from Central Public Procurement Portal <http://eprocure.gov.in/eprocure/app> . Aspiring Bidders who have not enrolled / registered in e-procurement should enroll / register before participating through the website <http://eprocure.gov.in/eprocure/app> . The portal enrolment is free of cost. Bidders are advised to go through instructions provided at ‘Instructions for online Bid Submission ‘.

Tenderers can access tender documents on the website (For searching in the NIC site, kindly go to Tender Search option and type ‘IIT’. Thereafter, Click on “GO” button to view all IIT Delhi tenders). Select the appropriate tender and fill them with all relevant information and submit the completed tender document online on the website <http://eprocure.gov.in/eprocure/app> as per the schedule given in the next page.

No manual bids will be accepted. All quotation (both Technical and Financial should be submitted in the E-procurement portal).

**Schedule**

Name of Organization	Indian Institute of Technology Delhi
Tender Type (Open/Limited/EOI/Auction/Single)	Open
Tender Category (Services/Goods/works)	Goods
Type/Form of Contract (Work/Supply/ Auction/ Service/ Buy/ Empanelment/ Sell)	Buy
Product Category (Civil Works/Electrical Works/Fleet Management/ Computer Systems)	Instrument
Source of Fund (Institute/Project)	Budget Code _Equipment/ Project Code RP03154G
Is Multi Currency Allowed	YES
Date of Issue/Publishing	20/04/2018 (15:00 Hrs)
Document Download/Sale Start Date	20/04/2018 (15:00 Hrs)
Document Download/Sale End Date	11/05/2018 (15:00 Hrs)
Date for Pre-Bid Conference	---
Venue of Pre-Bid Conference	---
Last Date and Time for Uploading of Bids	11/05/2018 (15:00 Hrs)
Date and Time of Opening of Technical Bids	14/05/2018 (15:00 Hrs)
Tender Fee	Rs. __NIL__/- (For Tender Fee)
EMD	Rs. __NIL__/- (For EMD) (To be paid through RTGS/NEFT. IIT Delhi Bank details are as under: Name of the Bank A/C : IITD Revenue Account SBI A/C No. : 10773572622 Name of the Bank : State Bank of India, IIT Delhi, Hauz Khas, New Delhi-110016 IFSC Code : SBIN0001077 MICR Code : 110002156 Swift No. : SBININBB547 (This is mandatory that UTR Number is provided in the on-line quotation/bid. (Kindly refer to the UTR Column of the Declaration Sheet at Annexure-II)
No. of Covers (1/2/3/4)	02
Bid Validity days (180/120/90/60/30)	90 days (From last date of opening of tender)
Address for Communication	<b>Prof. Ashwini Kumar Agrawal</b> Department of Textile Technology Indian Institute of Technology, Hauz Khas, New Delhi – 110016
Contact No.	(+91)-11- 26591415
Email Address	ashwini@smita-iitd.com

**Chairman Purchase Committee  
(Buyer Member)**

## **Instructions for Online Bid Submission:**

As per the directives of Department of Expenditure, this tender document has been published on the Central Public Procurement Portal ([URL:http://eprocure.gov.in/eprocure/app](http://eprocure.gov.in/eprocure/app)). The bidders are required to submit soft copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal.

More information useful for submitting online bids on the CPP Portal may be obtained at:

<http://eprocure.gov.in/eprocure/app>

## **REGISTRATION**

- 1) Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal (URL:<http://eprocure.gov.in/eprocure/app>) by clicking on the link “Click here to Enroll”. Enrolment on the CPP Portal is free of charge.
- 2) As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts.
- 3) Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the CPP Portal.
- 4) Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (Class II or Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify / TCS / nCode / eMudhra etc.), with their profile.
- 5) Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSCs to others which may lead to misuse.
- 6) Bidder then logs in to the site through the secured log-in by entering their user ID / password and the password of the DSC / eToken.

## **SEARCHING FOR TENDER DOCUMENTS**

- 1) There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, organization name, location, date, value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as organization name, form of contract, location, date, other keywords etc. to search for a tender published on the CPP Portal.
- 2) Once the bidders have selected the tenders they are interested in, they may download the required documents / tender schedules. These tenders can be moved to the respective ‘My Tenders’ folder. This would enable the CPP Portal to intimate the bidders through SMS / e-mail in case there is any corrigendum issued to the tender document.
- 3) The bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification / help from the Helpdesk.

## **PREPARATION OF BIDS**

- 1) Bidder should take into account any corrigendum published on the tender document before submitting their bids.
- 2) Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the

bid documents have to be submitted, the number of documents - including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.

- 3) Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF / XLS / RAR / DWF formats. Bid documents may be scanned with 100 dpi with black and white option.
- 4) To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use “My Space” area available to them to upload such documents. These documents may be directly submitted from the “My Space” area while submitting a bid, and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process.

### **SUBMISSION OF BIDS**

- 1) Bidder should log into the site well in advance for bid submission so that he/she upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.
- 2) The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.
- 3) Bidder has to select the payment option as “on-line” to pay the tender fee / EMD as applicable and enter details of the instrument. Whenever, EMD / Tender fees is sought, bidders need to pay the tender fee and EMD separately on-line through RTGS (Refer to Schedule, Page No.2).
- 4) A standard BoQ format has been provided with the tender document to be filled by all the bidders. Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. Bidders are required to download the BoQ file, open it and complete the white colored (unprotected) cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the filename. If the BoQ file is found to be modified by the bidder, the bid will be rejected.

OR

In some cases Financial Bids can be submitted in PDF format as well (in lieu of BOQ).

- 5) The server time (which is displayed on the bidders’ dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.
- 6) All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128 bit encryption technology. Data storage encryption of sensitive fields is done.
- 7) The uploaded tender documents become readable only after the tender opening by the authorized bid openers.
- 8) Upon the successful and timely submission of bids, the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.
- 9) Kindly add scanned PDF of all relevant documents in a single PDF file of compliance sheet.

## **ASSISTANCE TO BIDDERS**

- 1) Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.
- 2) Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk. The contact number for the helpdesk is 1800 233 7315.

## **General Instructions to the Bidders**

- 1) The tenders will be received online through portal <http://eprocure.gov.in/eprocure/app> . In the Technical Bids, the bidders are required to upload all the documents in .pdf format.
- 2) Possession of a Valid Class II/III Digital Signature Certificate (DSC) in the form of smart card/e-token in the company's name is a prerequisite for registration and participating in the bid submission activities through <https://eprocure.gov.in/eprocure/app>. Digital Signature Certificates can be obtained from the authorized certifying agencies, details of which are available in the web site <https://eprocure.gov.in/eprocure/app> under the link “Information about DSC”.
- 3) Tenderer are advised to follow the instructions provided in the ‘Instructions to the Tenderer for the e-submission of the bids online through the Central Public Procurement Portal for e Procurement at <https://eprocure.gov.in/eprocure/app> .

**NOTICE INVITING QUOTATIONS**

Dated: 20/04/2018

**Subject: High Pressure Capillary Rheometer**

**Invitation for Tender Offers**

Indian Institute of Technology Delhi invites online Bids (Technical bid and Commercial bid) from eligible and experienced OEM (Original Equipment Manufacturer) OR OEM Authorized Dealer for **High Pressure Capillary Rheometer** with (warranty period as stated under technical specifications of this tender) on site comprehensive warranty from the date of receipt of the material as per terms & conditions specified in the tender document, which is available on CPP Portal <http://eprocure.gov.in/eprocure/app>

**TECHNICAL SPECIFICATION:**

S.No.	Parameters	Desired Specifications
1.	System	<ul style="list-style-type: none"> <li>• High pressure, twin bore capillary rheometer to determine the rheological properties of various polymer materials at various temperatures and shear rates.</li> <li>• The dual bore rheometer should comply ISO 11443</li> </ul>
2.	Display Unit	<ul style="list-style-type: none"> <li>• Integrated colour touch screen for direct monitoring and display of torque etc.</li> </ul>
3.	Servo Drive	<ul style="list-style-type: none"> <li>• Dynamic Speed range corresponding Ratio : 1:10,00,000 or better</li> <li>• Lowest test speed : <math>\leq 0.00004</math> mm/s (0.0024 mm/minute)</li> <li>• Highest test speed : <math>\geq 40</math> mm/s (2400 mm/minute)</li> <li>• Feeding speed : 0.0001 - 40 mm/s or better</li> <li>• Speed Resolution : <math>\leq 0.000016</math> mm/s</li> <li>• Position Acquisition Resolution : <math>\leq 0.000016</math> mm</li> </ul>
4.	Rheological Measurement Range	<ul style="list-style-type: none"> <li>• Shear rate test range : <math>10^{-4}</math> to <math>10^7</math> ( Depending on test barrel and Capillary Die configuration) or better</li> <li>• Viscosity test range : 1 mPas to <math>10^8</math> Pas ( Depending on Capillary Die and Pressure Transducer ) or better</li> </ul>
5.	Test Chamber	<ul style="list-style-type: none"> <li>• Electrically heated test chamber should be designed for easy exchangeable test barrel.</li> <li>• Test Chamber should be designed to contain at least three</li> </ul>

		<p>heater circuits with electrically heated system.</p> <ul style="list-style-type: none"> <li>• Temperature transducer : PT 100 1/3 DIN</li> <li>• Temperature variation over time in usable range : Less than <math>\pm 0.2^{\circ}\text{C}</math></li> </ul>
6.	Heating System	<ul style="list-style-type: none"> <li>• Should be designed with at least 3 independently controllable heater</li> <li>• Temperature control algorithm</li> <li>• Temperature range : up to <math>400^{\circ}\text{C}</math> or better</li> <li>• Temperature resolution of real temperature : <math>0.01^{\circ}\text{C}</math></li> <li>• Preset temperature value: <math>5^{\circ}\text{C}</math> above room temp. to <math>400^{\circ}\text{C}</math> or better</li> <li>• Temperature Calibration: at least 5 temperature calibration with separate control parameters for optimal control over the full temperature range.</li> </ul>
7.	Test Barrel and Test Position	<ul style="list-style-type: none"> <li>• Twin Barrel : 15.0 mm diameter, Length <math>\sim 250</math> mm</li> <li>• Test Pistons : compatible with the above barrels</li> <li>• Test Piston also should be made of same material</li> </ul>
8.	Pressure Transducer	<ul style="list-style-type: none"> <li>• Test pressure transducer 0-2000 bar up to <math>400^{\circ}\text{C}</math>, Quality Class I with measuring amplifier for direct feed into the CAN-Bus.</li> <li>• Test pressure transducer 0-1000 bar up to <math>400^{\circ}\text{C}</math>, Quality Class I with measuring amplifier for direct feed into the CAN-Bus.</li> <li>• Resolution of the Pressure Measurement : <math>&lt; 0.005\%</math></li> <li>• Accuracy : 0.2 % or better</li> <li>• Pressure Transducer range and Calibration Data should be automatically identified when the transducer is connected.</li> <li>• Pressure Transducers should be Plug and Test with automatic identification and setting for plug in position, nominal range, calibration value, serial number without any manual input.</li> </ul>
9.	Capillary Dies	<ul style="list-style-type: none"> <li>• Round Hole Capillary with <math>L/D = 20/1</math></li> <li>• Round Hole Capillary with <math>L/D = 10/1</math></li> <li>• Round Hole Capillary with <math>L/D = 0/1</math></li> <li>• Round Hole Capillary with <math>L/D = 20/2</math></li> <li>• Round Hole Capillary with <math>L/D = 10/2</math></li> </ul>

10.	Software	<ul style="list-style-type: none"> <li>• Software should allow Visualization Software to visualize temperature, piston position, etc.</li> <li>• Software for parameter setting and online monitoring via Ethernet</li> <li>• Software should be able to integrate with other accessories and may be easily integrated with main software</li> <li>• Use of commercial databases, such as Microsoft ACCESS</li> <li>• Data download in standard formats for analysis and graphics.</li> <li>• Automated acquisition of all test instrument data</li> <li>• On-line help, self-diagnostic and info fields to help the user</li> <li>• Open platform for user specified fields and filters for measurements</li> <li>• Managed access for more data security</li> </ul> <p>Software for Test and analysis:-</p> <ul style="list-style-type: none"> <li>• Calculations for round hole and slit capillaries</li> <li>• Corrections with Rabinowitsch-Weissenberg, Bagley (linear/non-linear), Mooney, Hagenbach, Gleissle</li> <li>• Approximation of flow curves according to following models: Ostwald-De Waele (Power law), Carreau-Winter, Yasuda, Sabia, Muenstedt and Cross</li> <li>• Elongation viscosity with Cogswell</li> <li>• Additional evaluation tools such as Non Newtonian Index calculation (NNI), thermal degradation, relaxation, wall slip and ramp functions should be offered</li> <li>• Normal stress</li> <li>• Temperature Shift</li> </ul> <ol style="list-style-type: none"> <li>a) Creation of master curves at different temperatures</li> <li>b) Determination of model coefficients for the master curve</li> <li>c) Approximation of the master curve according to Carreau-Winter and Cross</li> </ol> <ul style="list-style-type: none"> <li>• Calculation of shift factors according to WLF and Arrhenius</li> </ul>
11.	Future Up gradations	Should be compatible with optional accessories indicated under point 14



12.	Accessories	<p><b>1) Die Swell Tester</b> to determine the static and dynamic die swell It should be consisting of :</p> <ol style="list-style-type: none"> <li>Laser measuring head</li> <li>Resolution <math>\leq 0.5 \mu\text{m}</math></li> <li>Operating range <math>\geq 28 \text{ mm}</math>, measuring range at least 0.15 up to 28 mm, repeatability <math>\leq \pm 3 \mu\text{m}</math></li> <li>Swiveling arm with adjustable height for reception of laser measuring head and melt cutting unit. Adjustment range: approx. 80 mm</li> <li>Power supply and data acquisition by means of the instrument.</li> </ol> <p><b>2) Direct method for Extensional Properties of Polymer Melts by drawing a vertical melt strand at</b></p> <ol style="list-style-type: none"> <li>constant pull-off speed</li> <li>with a linear and</li> <li>exponentially accelerating velocity</li> </ol> <p>It should measure:-</p> <ol style="list-style-type: none"> <li>force needed to elongate the strand</li> <li>calculate elongational stress,</li> <li>draw ratios,</li> <li>rate of elongation and</li> <li>elongational viscosity.</li> </ol> <p>This accessory should conform to the following specification:-</p> <ol style="list-style-type: none"> <li>Freely selectable speed with range from 0 to 190 cm/sec</li> <li>Freely selectable acceleration, either in linear or in exponential mode</li> <li>Force Measuring Range should be 0 to 2.0 N or better with Resolution of <math>\leq 1 \text{ mN}</math></li> <li>Extended evaluation according to Wagner</li> <li>Software should provide full control over the instrument's parameter running and evaluation</li> <li>Pull off wheels should be with ridged, smooth and smooth conical surfaces suitable for use with various materials</li> <li>Nitrogen purging unit <ul style="list-style-type: none"> <li>• Attached to the feeding bore of the test chamber</li> <li>• Should consist of a capillary ring with connection part for the nitrogen gas</li> </ul> </li> </ol>
13.	Cleaning Devices	<ol style="list-style-type: none"> <li>Motorized and semi automated cleaning device for easy, quick and effective cleaning</li> <li>Cleaning brush and Cleaning piston for the cleaning of 15 mm test barrel</li> </ol>

14.	Optional Accessories	<p>1) Pressure-Volume-Temperature</p> <ul style="list-style-type: none"> <li>• PVT behaviour of polymeric materials using measurement method ISO 17744</li> <li>• Should be able to determine characteristics pressure, volume and temperature</li> <li>• Should have variable test sample volume</li> <li>• Should be easy to handle with quick die locking system</li> </ul> <p>2) Thermal Conductivity</p> <ul style="list-style-type: none"> <li>• Should measure heat conductivity with temperature range up to 450°C, pressure up to 1000 bar</li> <li>• Method should be developed according to ASTM D 5930</li> <li>• Should have test probe with integrated heater element and temperature sensor</li> </ul> <p>3) Attachment for detection of Flow instability</p> <ul style="list-style-type: none"> <li>• Should have High frequency sensors with up to 20 kHz sampling rate</li> <li>• Software should be integrated with the main system for optimize extrusion, film and coating process, etc.</li> </ul>
15.	Pre Installation Requirements	<p>i) Complete technical details of pre-installation requirements should be furnished along with the technical bid to ensure quoted performance. IIT Delhi will only provide the installation room, air-conditioning units and required electrical outlets and water connections.</p> <p>ii) Vendors must conduct the site survey before installation at no additional cost.</p>
16.	Installation and Commissioning	<p>i) Installation, complete interfacing of the system with its subsystems, and commissioning is to be carried out by the vendor's factory-trained engineers, followed by a demonstration of the system's performance to the user's complete satisfaction.</p> <p>ii) Within 1 month time schedule for installation, commissioning and training must be provided.</p>
17.	Training	<p>i) The manufacturer/supplier of High Pressure Capillary Rheometer should provide at least five days onsite training initially during installation</p> <p>ii) The supplier or manufacturer should also provide dedicated five days advanced training subsequent to the above training installation.</p> <p>iii) Regular follow up training every six months during the period of extended warranty on mutually convenient dates for hardware, software and application to the laboratory personnel in the installation, operation and maintenance of the instruments.</p>

18.	Warranty	System should be covered for comprehensive warranty for 3 years from the manufacturer <b>All parts including spares should be covered under the warranty and this fact should be clearly and explicitly specified in the tender document.</b> The comprehensive Warranty should cover: 1. All parts including accessories, spares and labour on site 2. Free maintenance and service on site or at factory with no cost, and 3. Regular up-gradation of software
19.	Power Supply	Should meet Indian Power standards preferably without use of external converters
20.	System Consumable Parts	Basic frequently required spares should be provided for the entire period of extended warranty. A list of these items should be attached with the quotation.  Component and spares for routine maintenance for entire period of warranty should be shipped along with equipment.
21.	Support and Service	1. The manufacturer and/or their Indian representative must have at least two qualified and factory trained service engineer in India to be able to attend to service at IIT Delhi within 48 hours on submitting a complaint. Training certificates from the manufacturer have to be provided with the tender. 2. For warranty period only factory trained and certified engineers are acceptable to attend the service. 3. The response time with an engineer on site must be less than 48 hours from the notification of the failure. The company must provide evidence that it can fulfil this requirement.  4. In case the parts are required to be imported for repairs, the same should be made available within 2 weeks from the date of reporting of the issue. Any extension in this time will need to be compensated by the manufacturer by extending the comprehensive warranty by the excess period taken (i.e. period beyond 2 weeks) in completing the repairs.  5. A 10% performance guarantee will need to be maintained during the period of extended warranty.

A complete set of tender documents\* may be Download by prospective bidder free of cost from the website <http://eprocure.gov.in/eprocure/app>. Bidder has to make payment of requisite fees (i.e. Tender fees (if any) and EMD) online through RTGS/NEFT only.

## Terms & Conditions Details

Sl. No.	Specification
1.	<b>Due date:</b> The tender has to be submitted on-line before the due date. The offers received after the due date and time will not be considered. No manual bids will be considered.
2.	<b>Preparation of Bids:</b> The offer/bid should be submitted in two bid systems (i.e.) Technical bid and financial bid. The technical bid should consist of all technical details along with commercial terms and conditions. Financial bid should indicate item wise price for the items mentioned in the technical bid in the given format i.e. Financial Bids to be submitted in PDF format. The Technical bid and the financial bid should be submitted Online.
3.	<b>EMD (if applicable):</b> The tenderer should submit an EMD amount through RTGS/NEFT. The Technical Bid without EMD would be considered as UNRESPONSIVE and will not be accepted. The EMD will be refunded without any interest to the unsuccessful bidders after the award of contract. Refer to Schedule (at page 1 of this document) for its actual place of submission.
4.	<b>Refund of EMD:</b> The EMD will be returned to unsuccessful Tenderer only after the Tenders are finalized. In case of successful Tenderer, it will be retained till the successful and complete installation of the equipment.
5.	<b>Opening of the tender:</b> The online bid will be opened by a committee duly constituted for this purpose. Online bids (complete in all respect) received along with EMD (if any) will be opened as mentioned at “Annexure: Schedule” in presence of bidders representative if available. Only one representative will be allowed to participate in the tender opening. Bid received without EMD (if present) will be rejected straight way. The technical bid will be opened online first and it will be examined by a technical committee (as per specification and requirement). The financial offer/bid will be opened only for the offer/bid which technically meets all requirements as per the specification, and will be opened in the presence of the vendor’s representatives subsequently for further evaluation. The bidders if interested may participate on the tender opening Date and Time. The bidder should produce authorization letter from their company to participate in the tender opening.
6.	<b>Acceptance/ Rejection of bids:</b> The Committee reserves the right to reject any or all offers without assigning any reason.
7.	<b>Pre-qualification criteria:</b> (i) Bidders should be the manufacturer / authorized dealer. Letter of Authorization from original equipment manufacturer (OEM) on the same and specific to the tender should be enclosed. (ii) An undertaking from the OEM is required stating that they would facilitate the bidder on a regular basis with technology/product updates and extend support for the warranty as well. (Ref. Annexure-II) (iii) OEM should be internationally reputed Branded Company. (iv) Non-compliance of tender terms, non-submission of required documents, lack of clarity of the specifications, contradiction between bidder specification and supporting documents etc. may lead to rejection of the bid. (v) In the tender, either the Indian agent on behalf of the Principal/OEM or Principal/OEM itself can bid but both cannot bid simultaneously for the same item/product in the same tender. (vi) If an agent submits bid on behalf of the Principal/OEM, the same agent shall not submit a bid on behalf of another Principal/OEM in the same tender for the same item/product.
8.	<b>Performance Security:</b> The supplier shall require to submit the performance security in the form of irrevocable bank guarantee issued by any Indian Nationalized Bank for an amount which is stated at page #1 of the tender document within 21 days from the date of receipt of the purchase order/LC and should be kept valid for a period of 60 days beyond the date of completion of warranty period.
9.	<b>Force Majeure:</b> The Supplier shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extent that, it’s delay in performance or other failure

	<p>to perform its obligations under the Contract is the result of an event of Force Majeure.</p> <ul style="list-style-type: none"> <li>● For purposes of this Clause, "Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence and not foreseeable. Such events may include, but are not limited to, acts of the Purchaser either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.</li> <li>● If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such conditions and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.</li> </ul>
10.	<b>Risk Purchase Clause:</b> In 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 the other source on the total risk of the supplier under risk purchase clause.
11.	<b>Packing Instructions:</b> Each package will be marked on three sides with proper paint/indelible ink, the following: <ul style="list-style-type: none"> <li>i. Item Nomenclature</li> <li>ii. Order/Contract No.</li> <li>iii. Country of Origin of Goods</li> <li>iv. Supplier's Name and Address</li> <li>v. Consignee details</li> <li>vi. Packing list reference number</li> </ul>
12.	<b>Delivery and Documents:</b> Delivery of the goods should be made within a maximum of 12 to 16 weeks from the date of the opening of LC. Within 24 hours of shipment, the supplier shall notify the purchaser and the insurance company by cable/telex/fax/e mail the full details of the shipment including contract number, railway receipt number/ AAP etc. and date, description of goods, quantity, name of the consignee, invoice etc. The supplier shall mail the following documents to the purchaser with a copy to the insurance company: <ol style="list-style-type: none"> <li>1. 4 Copies of the Supplier invoice showing contract number, goods' description, quantity</li> <li>2. unit price, total amount;</li> <li>3. Insurance Certificate if applicable;</li> <li>4. Manufacturer's/Supplier's warranty certificate;</li> <li>5. Inspection Certificate issued by the nominated inspection agency, if any</li> <li>6. Supplier's factory inspection report; and</li> <li>7. Certificate of Origin (if possible by the beneficiary);</li> <li>8. Two copies of the packing list identifying the contents of each package.</li> <li>9. The above documents should be received by the Purchaser before arrival of the Goods (except where the Goods have been delivered directly to the Consignee with all documents) and, if not received, the Supplier will be responsible for any consequent expenses.</li> </ol>
13.	<b>Delayed delivery:</b> If the delivery is not made within the due date for any reason, the Committee will have the right to impose penalty 1% per week and the maximum deduction is 10% of the contract value / price.
14.	<b>Prices:</b> The price should be quoted in net per unit (after breakup) and must include all packing and delivery charges. The offer/bid should be exclusive of taxes and duties, which will be paid by the purchaser as applicable. However the percentage of taxes & duties shall be clearly indicated. The price should be quoted without custom duty and excise duty, since IIT Delhi is exempted from payment of Excise Duty and is eligible for concessional rate of custom duty. Necessary certificate will be issued on demand. <b>In case of imports, the price should be quoted on FOB/FCA origin Airport Basis only.</b> Under

	<p>special circumstances (e.g. perishable chemicals), when the item is imported on CIF/CIP, please indicate CIF/CIP charges separately up to IIT Delhi indicating the mode of shipment. IIT Delhi will make necessary arrangements for the clearance of imported goods at the Airport/Seaport. Hence the price should not include the above charges. <b>At any circumstances, it is the responsibility of the foreign supplier to handover the material to our forwarder at the origin airport after completing all the inland clearing. No Ex- Works consignment will be entertained.</b></p> <p>“In case of <b>CIF/CIP</b> shipments, kindly provide the shipment information at least 2 days in advance before landing the shipment along with the documents i.e. invoice, packing list, forwarder Name, address, contact No. in India to save penalty/demurrage charges (imposed by Indian Customs) . Otherwise these charges will be recovered from the supplier/Indian Agent.”</p>
15.	<p><b>Notices:</b> For the purpose of all notices, the following shall be the address of the Purchaser and Supplier.</p> <p><b>Purchaser: Prof. Ashwini Kumar Agrawal</b>  Department of Textile Technology  Indian Institute of Technology  Hauz Khas, New Delhi - 110016.</p> <p><b>Supplier:</b> (To be filled in by the supplier)  <b>(All supplier’s should submit its supplies information as per Annexure-II).</b></p> <p>_____</p> <p>_____</p>
16.	<p><b>Progress of Supply:</b> Wherever applicable, supplier shall regularly intimate progress of supply, in writing, to the Purchaser as under:</p> <ol style="list-style-type: none"> <li>1. Quantity offered for inspection and date;</li> <li>2. Quantity accepted/rejected by inspecting agency and date;</li> <li>3. Quantity dispatched/delivered to consignees and date;</li> <li>4. Quantity where incidental services have been satisfactorily completed with date;</li> <li>5. Quantity where rectification/repair/replacement effected/completed on receipt of any communication from consignee/Purchaser with date;</li> <li>6. Date of completion of entire Contract including incidental services, if any; and</li> <li>7. Date of receipt of entire payments under the Contract (In case of stage-wise inspection, details required may also be specified).</li> </ol>
17.	<p><b>Inspection and Tests:</b> Inspection and tests prior to shipment of Goods and at final acceptance are as follows:</p> <ul style="list-style-type: none"> <li>• After the goods are manufactured and assembled, inspection and testing of the goods shall be carried out at the supplier’s plant by the supplier, prior to shipment to check whether the goods are in conformity with the technical specifications attached to the purchase order. Manufacturer’s test certificate with data sheet shall be issued to this effect and submitted along with the delivery documents. The purchaser shall be present at the supplier’s premises during such inspection and testing if need is felt. The location where the inspection is required to be conducted should be clearly indicated. The supplier shall inform the purchaser about the site preparation, if any, needed for installation of the goods at the purchaser’s site at the time of submission of order acceptance.</li> <li>• The acceptance test will be conducted by the Purchaser, their consultant or other such person nominated by the Purchaser at its option after the equipment is installed at purchaser’s site in the presence of supplier’s representatives. The acceptance will involve trouble free operation and ascertaining conformity with the ordered specifications and quality. There shall not be any additional charges for carrying out acceptance test. No malfunction, partial or complete failure of any part of the equipment is expected to occur. The Supplier shall maintain necessary log in respect of the result of the test to establish to the entire satisfaction of the Purchaser, the successful</li> </ul>

	<p>completion of the test specified.</p> <ul style="list-style-type: none"> <li>• In the event of the ordered item failing to pass the acceptance test, a period not exceeding one weeks will be given to rectify the defects and clear the acceptance test, failing which the Purchaser reserve the right to get the equipment replaced by the Supplier at no extra cost to the Purchaser.</li> <li>• Successful conduct and conclusion of the acceptance test for the installed goods and equipment shall also be the responsibility and at the cost of the Supplier.</li> </ul>
18.	<p><b>Resolution of Disputes:</b> The dispute resolution mechanism to be applied pursuant shall be as follows:</p> <ul style="list-style-type: none"> <li>• In case of Dispute or difference arising between the Purchaser and a domestic supplier relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled in accordance with the Indian Arbitration &amp; Conciliation Act, 1996, the rules there under and any statutory modifications or re-enactments thereof shall apply to the arbitration proceedings. The dispute shall be referred to the <b>Director, Indian Institute of Technology (IIT) Delhi</b> and if he is unable or unwilling to act, to the sole arbitration of some other person appointed by him willing to act as such Arbitrator. The award of the arbitrator so appointed shall be final, conclusive and binding on all parties to this order.</li> <li>• In the case of a dispute between the purchaser and a Foreign Supplier, the dispute shall be settled by arbitration in accordance with provision of sub-clause (a) above. But if this is not acceptable to the supplier then the dispute shall be settled in accordance with provisions of UNCITRAL (United Nations Commission on International Trade Law) Arbitration Rules.</li> <li>• The venue of the arbitration shall be the place from where the order is issued.</li> </ul>
19.	<p><b>Applicable Law:</b> The place of jurisdiction would be New Delhi (Delhi) INDIA.</p>
20.	<p><b>Right to Use Defective Goods</b> If after delivery, acceptance and installation and within the guarantee and warranty period, the operation or use of the goods proves to be unsatisfactory, the Purchaser shall have the right to continue to operate or use such goods until rectifications of defects, errors or omissions by repair or by partial or complete replacement is made without interfering with the Purchaser's operation.</p>
21.	<p><b>Supplier Integrity</b> The Supplier is responsible for and obliged to conduct all contracted activities in accordance with the Contract using state of the art methods and economic principles and exercising all means available to achieve the performance specified in the contract.</p>
22.	<p><b>Training</b> The Supplier is required to provide training to the designated Purchaser's technical and end user personnel to enable them to effectively operate the total equipment.</p>
23.	<p><b>Installation &amp; Demonstration</b> The supplier is required to done the installation and demonstration of the equipment within one month of the arrival of materials at the IITD site of installation, otherwise the penalty clause will be the same as per the supply of materials.</p> <p>In case of any mishappening/damage to equipment and supplies during the carriage of supplies from the origin of equipment to the installation site, the supplier has to replace it with new equipment/supplies immediately at his own risk. Supplier will settle his claim with the insurance company as per his convenience. IITD will not be liable to any type of losses in any form.</p>
24.	<p><b>Insurance:</b> For delivery of goods at the purchaser's premises, the insurance shall be obtained by the supplier in an amount equal to 110% of the value of the goods from "warehouse to warehouse" (final destinations) on "All Risks" basis including War Risks and Strikes. The insurance shall be valid for a period of not less than 3 months after installation and commissioning. <b>In case of orders placed on FOB/FCA basis, the purchaser shall arrange Insurance. If orders placed on CIF/CIP basis, the insurance should be up to IIT Delhi.</b></p>
25.	<p><b>Incidental services:</b> The incidental services also include:</p>

	<ul style="list-style-type: none"> <li>● Furnishing of 01 set of detailed operations &amp; maintenance manual.</li> <li>● Arranging the shifting/moving of the item to their location of final installation within IITD premises at the cost of Supplier through their Indian representatives.</li> </ul>
26.	<p><b>Warranty:</b></p> <p>(i) Warranty period shall be (as stated at page #2 of this tender) from date of installation of Goods at the IITD site of installation. The Supplier shall, in addition, comply with the performance and/or consumption guarantees specified under the contract. If for reasons attributable to the Supplier, these guarantees are not attained in whole or in part, the Supplier shall at its discretion make such changes, modifications, and/or additions to the Goods or any part thereof as may be necessary in order to attain the contractual guarantees specified in the Contract at its own cost and expense and to carry out further performance tests. The warranty should be comprehensive on site.</p> <p>(ii) The Purchaser shall promptly notify the Supplier in writing of any claims arising under this warranty. Upon receipt of such notice, the Supplier shall immediately within in 02 days arrange to repair or replace the defective goods or parts thereof free of cost at the ultimate destination. The Supplier shall take over the replaced parts/goods at the time of their replacement. No claim whatsoever shall lie on the Purchaser for the replaced parts/goods thereafter. The period for correction of defects in the warranty period is 02 days. If the supplier having been notified fails to remedy the defects within 02 days, the purchaser may proceed to take such remedial action as may be necessary, at the supplier's risk and expenses and without prejudice to any other rights, which the purchaser may have against the supplier under the contract.</p> <p>(iii) The warranty period should be clearly mentioned. The maintenance charges (AMC) under different schemes after the expiry of the warranty should also be mentioned. The comprehensive warranty will commence from the date of the satisfactory installation/commissioning of the equipment against the defect of any manufacturing, workmanship and poor quality of the components.</p> <p>(iv) After the warranty period is over, Annual Maintenance Contract (AMC)/Comprehensive Maintenance Contract (CMC) up to next two years should be started. The AMC/CMC charges will not be included in computing the total cost of the equipment.</p>
27.	<p><b>Governing Language</b></p> <p>The contract shall be written in English language. English language version of the Contract shall govern its interpretation. All correspondence and other documents pertaining to the Contract, which are exchanged by the parties, shall be written in the same language.</p>
28.	<p><b>Applicable Law</b></p> <p>The Contract shall be interpreted in accordance with the laws of the Union of India and all disputes shall be subject to place of jurisdiction.</p>
29.	<p><b>Notices</b></p> <ul style="list-style-type: none"> <li>● Any notice given by one party to the other pursuant to this contract/order shall be sent to the other party in writing or by cable, telex, FAX or e mail and confirmed in writing to the other party's address.</li> <li>● A notice shall be effective when delivered or on the notice's effective date, whichever is later.</li> </ul>
30.	<p><b>Taxes</b></p> <p>Suppliers shall be entirely responsible for all taxes, duties, license fees, octroi, road permits, etc., incurred until delivery of the contracted Goods to the Purchaser. However, VAT in respect of the transaction between the Purchaser and the Supplier shall be payable extra, if so stipulated in the order.</p>
31.	<p><b>Duties</b></p> <p>IIT Delhi is exempted from paying custom duty under notification No.51/96 (partially or full) and necessary "Custom Duty Exemption Certificate" can be issued after providing following information and Custom Duty Exemption Certificate will be issued to the shipment in the name of the Institute, (no certificate will be issued to third party): The procured product should be used for teaching, scientific</p>



	<p>and research work only.</p> <p>a) Shipping details i.e. Master Airway Bill No. and House Airway No. (if exists)</p> <p>b) Forwarder details i.e. Name, Contact No., etc.</p> <p>IIT Delhi is exempted from paying Excise Duty and necessary Excise Duty Exemption Certificate will be provided for which following information are required.</p> <p>b) Quotation with details of Basic Price, Rate, Tax &amp; Amount on which ED is applicable</p> <p>c) Supply Order Copy</p> <p>d) Performa-Invoice Copy.</p>
32.	<p><b>Agency Commission:</b> Agency commission if any will be paid to the Indian agent in Rupees on receipt of the equipment and after satisfactory installation. Agency Commission will not be paid in foreign currency under any circumstances. The details should be explicitly shown in Tender even in case of Nil commission. The tenderer should indicate the percentage of agency commission to be paid to the Indian agent.</p>
33.	<p><b>Payment:</b></p> <p>(i) For imported items Payment will be made through irrevocable Letter of Credit (LC) Cash Against Documents (CAD)/Against delivery/after satisfactory installation by T.T. Letter of Credit (LC) will be established in favor of foreign Supplier after the submission of performance security. The letter of credit (LC) will be established on the exchange rates as applicable on the date of establishment. For Imports, LC will be opened for 100% FOB/CIF value. 80% of the LC amount shall be released on presentation of complete and clear shipping documents and 20% of the LC amount shall be released after the installation and demonstration of the equipment at the INST site of installation in faultless working condition for period of 60 days from the date of the satisfactory installation and subject to the production of unconditional performance bank guarantee as specified in Clause 8 of tender terms and conditions.</p> <p>(ii) For Indigenous supplies, 100% payment shall be made by the Purchaser against delivery, inspection, successful installation, commissioning and acceptance of the equipment at IITD in good condition and to the entire satisfaction of the Purchaser and on production of unconditional performance bank guarantee as specified in Clause 9 of tender terms and conditions.</p> <p>(iii) Indian Agency commission (IAC), if any shall be paid after satisfactory installation &amp; commissioning of the goods at the destination at the exchange rate prevailing on the date of negotiation of LC documents, subject to DGS&amp;D registration for restricted items.</p> <p>(iv) All the bank charges within India will be borne by the Institute and outside India will be borne by the Supplier.</p>
34.	<p><b>User list:</b> Brochure detailing technical specifications and performance, list of industrial and educational establishments where the items enquired have been supplied must be provided. (Ref. Annexure-III)</p>
35.	<p><b>Manuals and Drawings</b></p> <p>(i) Before the goods and equipment are taken over by the Purchaser, the Supplier shall supply operation and maintenance manuals. These shall be in such details as will enable the Purchaser to operate, maintain, adjust and repair all parts of the works as stated in the specifications.</p> <p>(ii) The Manuals shall be in the ruling language (English) in such form and numbers as stated in the contract.</p> <p>(iii) Unless and otherwise agreed, the goods equipment shall not be considered to be completed for the purposes of taking over until such manuals and drawing have been supplied to the Purchaser.</p>
36.	<p><b>Application Specialist:</b> The Tenderer should mention in the Techno-Commercial bid the availability and names of Application Specialist and Service Engineers in the nearest regional office. (Ref. to Annexure-III)</p>
37.	<p><b>Site Preparation:</b> The supplier shall inform to the Institute about the site preparation, if any, needed for the installation of equipment, immediately after the receipt of the purchase order. The supplier</p>

	<p>must provide complete details regarding space and all the other infrastructural requirements needed for the equipment, which the Institute should arrange before the arrival of the equipment to ensure its timely installation and smooth operation thereafter.</p> <p>The supplier shall visit the Institute and see the site where the equipment is to be installed and may offer his advice and render assistance to the Institute in the preparation of the site and other pre-installation requirements.</p>
38.	<p><b>Spare Parts</b></p> <p>The Supplier may be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the Supplier:</p> <ul style="list-style-type: none"> <li>ii. Such spare parts as the Purchaser may elect to purchase from the Supplier, providing that this election shall not relieve the Supplier of any warranty obligations under the Contract; and</li> <li>iii. In the event of termination of production of the spare parts:</li> <li>iv. Advance notification to the Purchaser of the pending termination, in sufficient time to permit the Purchaser to procure needed requirements; and</li> <li>v. Following such termination, furnishing at no cost to the Purchaser, the blueprints, drawings and specifications of the spare parts, if requested.</li> </ul> <p>Supplier shall carry sufficient inventories to assure ex-stock supply of consumable spares for the Goods, such as gaskets, plugs, washers, belts etc. Other spare parts and components shall be supplied as promptly as possible but in any case within six months of placement of order.</p>
39.	<p><b>Defective Equipment:</b> If any of the equipment supplied by the Tenderer is found to be substandard, refurbished, un-merchantable or not in accordance with the description/specification or otherwise faulty, the committee will have the right to reject the equipment or its part. The prices of such equipment shall be refunded by the Tenderer with 18% interest if such payments for such equipment have already been made. All damaged or unapproved goods shall be returned at suppliers cost and risk and the incidental expenses incurred thereon shall be recovered from the supplier. Defective part in equipment, if found before installation and/or during warranty period, shall be replaced within 45 days on receipt of the intimation from this office at the cost and risk of supplier including all other charges. In case supplier fails to replace above item as per above terms &amp; conditions, IIT Delhi may consider "Banning" the supplier.</p>
40.	<p><b>Termination for Default</b></p> <p>The Purchaser may, without prejudice to any other remedy for breach of contract, by written notice of default sent to the Supplier, terminate the Contract in whole or part:</p> <ul style="list-style-type: none"> <li>i. If the Supplier fails to deliver any or all of the Goods within the period(s) specified in the order, or within any extension thereof granted by the Purchaser; or</li> <li>ii If the Supplier fails to perform any other obligation(s) under the Contract.</li> <li>iii If the Supplier, in the judgment of the Purchaser has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.</li> </ul> <ul style="list-style-type: none"> <li>● For the purpose of this Clause: <ul style="list-style-type: none"> <li>i. “<b>Corrupt practice</b>” means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution.</li> <li>ii. “<b>Fraudulent practice</b>” means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Borrower, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Borrower of the benefits of free and open competition;”</li> </ul> </li> <li>● In the event the Purchaser terminates the Contract in whole or in part, the Purchaser may procure, upon such terms and in such manner, as it deems appropriate, Goods or Services similar to those undelivered, and the Supplier shall be liable to the Purchaser for any excess costs for such similar</li> </ul>

	Goods or Services. However, the Supplier shall continue the performance of the Contract to the extent not terminated.
41.	<b>Shifting:</b> After 1-2 years once our new Academic Block will be ready, the supplier has to shift and reinstall the instrument free of cost (if required).
42.	<b>Downtime:</b> During the warranty period not more than 5% downtime will be permissible. For every day exceeding permissible downtime, penalty of 1/365 of the 5% FOB value will be imposed. Downtime will be counted from the date and time of the filing of complaint with in the business hours.
43.	<b>Training of Personnel:</b> The supplier shall be required to undertake to provide the technical training to the personnel involved in the use of the equipment at the Institute premises, immediately after completing the installation of the equipment for a minimum period of one week at the supplier's cost.
44.	<b>Disputes and Jurisdiction:</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 New Delhi.
45.	<b>Compliance certificate:</b> This certificate must be provided indicating conformity to the technical specifications. (Annexure-I)

## COMPLIANCE SHEET

### TECHNICAL SPECIFICATION

S.No.	Parameters	Desired Specifications	Compliance (Y/N) with detailed specifications
1.	System	<ul style="list-style-type: none"> <li>• High pressure, twin bore capillary rheometer to determine the rheological properties of various polymer materials at various temperatures and shear rates.</li> <li>• The dual bore rheometer should comply ISO 11443</li> </ul>	
2.	Display Unit	<ul style="list-style-type: none"> <li>• Integrated colour touch screen for direct monitoring and display of torque etc.</li> </ul>	
3.	Servo Drive	<ul style="list-style-type: none"> <li>• Dynamic Speed range corresponding Ratio : 1:10,00,000 or better</li> <li>• Lowest test speed : <math>\leq 0.00004</math> mm/s (0.0024 mm/minute)</li> <li>• Highest test speed : <math>\geq 40</math> mm/s (2400 mm/minute)</li> <li>• Feeding speed : 0.0001 - 40 mm/s or better</li> <li>• Speed Resolution : <math>\leq 0.000016</math> mm/s</li> <li>• Position Acquisition Resolution : <math>\leq 0.000016</math> mm</li> </ul>	
4.	Rheological Measurement Range	<ul style="list-style-type: none"> <li>• Shear rate test range : <math>10^{-4}</math> to <math>10^7</math> ( Depending on test barrel and Capillary Die configuration) or better</li> <li>• Viscosity test range : 1 mPas to <math>10^8</math> Pas ( Depending on Capillary Die and Pressure Transducer ) or better</li> </ul>	
5.	Test Chamber	<ul style="list-style-type: none"> <li>• Electrically heated test chamber should be designed for easy exchangeable test barrel.</li> <li>• Test Chamber should be designed to contain at least three heater circuits with electrically heated system.</li> <li>• Temperature transducer : PT 100 1/3 DIN</li> <li>• Temperature variation over time in usable range : Less than <math>\pm 0.2^\circ\text{C}</math></li> </ul>	
6.	Heating System	<ul style="list-style-type: none"> <li>• Should be designed with at least 3 independently controllable heater</li> <li>• Temperature control algorithm</li> <li>• Temperature range : up to <math>400^\circ\text{C}</math> or better</li> <li>• Temperature resolution of real temperature : <math>0.01^\circ\text{C}</math></li> </ul>	

		<ul style="list-style-type: none"> <li>• Preset temperature value: 5°C above room temp. to 400°C or better</li> <li>• Temperature Calibration: at least 5 temperature calibration with separate control parameters for optimal control over the full temperature range.</li> </ul>	
7.	Test Barrel and Test Position	<ul style="list-style-type: none"> <li>• Twin Barrel : 15.0 mm diameter, Length ~250 mm</li> <li>• Test Pistons : compatible with the above barrels</li> <li>• Test Piston also should be made of same material</li> </ul>	
8.	Pressure Transducer	<ul style="list-style-type: none"> <li>• Test pressure transducer 0-2000 bar up to 400°C, Quality Class I with measuring amplifier for direct feed into the CAN-Bus.</li> <li>• Test pressure transducer 0-1000 bar up to 400°C, Quality Class I with measuring amplifier for direct feed into the CAN-Bus.</li> <li>• Resolution of the Pressure Measurement : &lt; 0.005%</li> <li>• Accuracy : 0.2 % or better</li> <li>• Pressure Transducer range and Calibration Data should be automatically identified when the transducer is connected.</li> <li>• Pressure Transducers should be Plug and Test with automatic identification and setting for plug in position, nominal range, calibration value, serial number without any manual input.</li> </ul>	
9.	Capillary Dies	<ul style="list-style-type: none"> <li>• Round Hole Capillary with L/D = 20/1</li> <li>• Round Hole Capillary with L/D = 10/1</li> <li>• Round Hole Capillary with L/D = 0/1</li> <li>• Round Hole Capillary with L/D = 20/2</li> <li>• Round Hole Capillary with L/D = 10/2</li> </ul>	
10.	Software	<ul style="list-style-type: none"> <li>• Software should allow Visualization Software to visualize temperature, piston position, etc.</li> <li>• Software for parameter setting and online monitoring via Ethernet</li> <li>• Software should be able to integrate with other accessories and may be easily integrated with main software</li> <li>• Use of commercial databases, such as Microsoft ACCESS</li> </ul>	

		<ul style="list-style-type: none"> <li>• Data download in standard formats for analysis and graphics.</li> <li>• Automated acquisition of all test instrument data</li> <li>• On-line help, self-diagnostic and info fields to help the user</li> <li>• Open platform for user specified fields and filters for measurements</li> <li>• Managed access for more data security</li> </ul> <p>Software for Test and analysis:-</p> <ul style="list-style-type: none"> <li>• Calculations for round hole and slit capillaries</li> <li>• Corrections with Rabinowitsch-Weissenberg, Bagley (linear/non-linear), Mooney, Hagenbach, Gleissle</li> <li>• Approximation of flow curves according to following models: Ostwald-De Waele (Power law), Carreau-Winter, Yasuda, Sabia, Muenstedt and Cross</li> <li>• Elongation viscosity with Cogswell</li> <li>• Additional evaluation tools such as Non Newtonian Index calculation (NNI), thermal degradation, relaxation, wall slip and ramp functions should be offered</li> <li>• Normal stress</li> <li>• Temperature Shift</li> </ul> <p>d) Creation of master curves at different temperatures</p> <p>e) Determination of model coefficients for the master curve</p> <p>f) Approximation of the master curve according to Carreau-Winter and Cross</p> <ul style="list-style-type: none"> <li>• Calculation of shift factors according to WLF and Arrhenius</li> </ul>	
11.	Future Up gradations	Should be compatible with optional accessories indicated under point 14	
12.	Accessories	<p><b>1) Die Swell Tester</b> to determine the static and dynamic die swell</p> <p>It should be consisting of :</p> <p>f) Laser measuring head</p> <p>g) Resolution <math>\leq 0.5 \mu\text{m}</math></p> <p>h) Operating range <math>\geq 28 \text{ mm}</math>, measuring range at least 0.15 up to 28 mm, repeatability <math>\leq \pm 3 \mu\text{m}</math></p> <p>i) Swiveling arm with adjustable height for reception of</p>	

		<p>laser measuring head and melt cutting unit. Adjustment range: approx. 80 mm</p> <p>j) Power supply and data acquisition by means of the instrument.</p> <p><b>2) Direct method for Extensional Properties of Polymer Melts by drawing a vertical melt strand at</b></p> <p>d) constant pull-off speed</p> <p>e) with a linear and</p> <p>f) exponentially accelerating velocity</p> <p>It should measure:-</p> <p>f) force needed to elongate the strand</p> <p>g) calculate elongational stress,</p> <p>h) draw ratios,</p> <p>i) rate of elongation and</p> <p>j) elongational viscosity.</p> <p>This accessory should conform to the following specification:-</p> <p>h) Freely selectable speed with range from 0 to 190 cm/sec</p> <p>i) Freely selectable acceleration, either in linear or in exponential mode</p> <p>j) Force Measuring Range should be 0 to 2.0 N or better with Resolution of <math>\leq 1</math> mN</p> <p>k) Extended evaluation according to Wagner</p> <p>l) Software should provide full control over the instrument's parameter running and evaluation</p> <p>m) Pull off wheels should be with ridged, smooth and smooth conical surfaces suitable for use with various materials</p> <p>n) Nitrogen purging unit</p> <ul style="list-style-type: none"> <li>• Attached to the feeding bore of the test chamber</li> <li>• Should consist of a capillary ring with connection part for the nitrogen gas</li> </ul>	
13.	Cleaning Devices	<p>1) Motorized and semiautomated cleaning device for easy, quick and effective cleaning</p> <p>2) Cleaning brush and Cleaning piston for the cleaning of 15 mm test barrel</p>	
14.	Optional Accessories	<p>1) Pressure-Volume-Temperature</p> <ul style="list-style-type: none"> <li>• PVT behaviour of polymeric materials using measurement method ISO 17744</li> <li>• Should be able to determine characteristics pressure, volume and temperature</li> <li>• Should have variable test sample volume</li> </ul>	

		<ul style="list-style-type: none"> <li>• Should be easy to handle with quick die locking system</li> </ul> <p>2) Thermal Conductivity</p> <ul style="list-style-type: none"> <li>• Should measure heat conductivity with temperature range up to 450°C, pressure up to 1000 bar</li> <li>• Method should be developed according to ASTM D 5930</li> <li>• Should have test probe with integrated heater element and temperature sensor</li> </ul> <p>3) Attachment for detection of Flow instability</p> <ul style="list-style-type: none"> <li>• Should have High frequency sensors with up to 20 kHz sampling rate</li> <li>• Software should be integrated with the main system for optimize extrusion, film and coating process, etc.</li> </ul>	
15.	Pre Installation Requirements	<p>i) Complete technical details of pre-installation requirements should be furnished along with the technical bid to ensure quoted performance. IIT Delhi will only provide the installation room, air-conditioning units and required electrical outlets and water connections.</p> <p>ii) Vendors must conduct the site survey before installation at no additional cost.</p>	
16.	Installation and Commissioning	<p>i) Installation, complete interfacing of the system with its subsystems, and commissioning is to be carried out by the vendor's factory-trained engineers, followed by a demonstration of the system's performance to the user's complete satisfaction.</p> <p>ii) Within 1 month time schedule for installation, commissioning and training must be provided.</p>	
17.	Training	<p>i) The manufacturer/supplier of High Pressure Capillary Rheometer should provide at least five days onsite training initially during installation</p> <p>ii) The supplier or manufacturer should also provide dedicated five days advanced training subsequent to the above training installation.</p> <p>iii) Regular follow up training every six months during the period of extended warranty on mutually convenient dates for hardware, software and application to the laboratory personnel in the installation, operation and maintenance of the instruments.</p>	
18.	Warranty	<p>System should be covered for comprehensive warranty for 3 years from the manufacturer <b>All parts including spares should be covered under the warranty and this fact should be clearly and explicitly specified in the tender document.</b></p> <p>The comprehensive Warranty should cover:</p>	



		<p>1. All parts including accessories, spares and labour on site</p> <p>2. Free maintenance and service on site or at factory with no cost, and</p> <p>3. Regular up-gradation of software</p>	
19.	Power Supply	Should meet Indian Power standards preferably without use of external converters	
20.	System Consumable Parts	<p>Basic frequently required spares should be provided for the entire period of extended warranty. A list of these items should be attached with the quotation.</p> <p>Component and spares for routine maintenance for entire period of warranty should be shipped along with equipment.</p>	
21.	Support and Service	<p>1. The manufacturer and/or their Indian representative must have at least two qualified and factory trained service engineer in India to be able to attend to service at IIT Delhi within 48 hours on submitting a complaint. Training certificates from the manufacturer have to be provided with the tender.</p> <p>2. For warranty period only factory trained and certified engineers are acceptable to attend the service.</p> <p>3. The response time with an engineer on site must be less than 48 hours from the notification of the failure. The company must provide evidence that it can fulfil this requirement.</p> <p>4. In case the parts are required to be imported for repairs, the same should be made available within 2 weeks from the date of reporting of the issue. Any extension in this time will need to be compensated by the manufacturer by extending the comprehensive warranty by the excess period taken (i.e. period beyond 2 weeks) in completing the repairs.</p> <p>5. A 10% performance guarantee will need to be maintained during the period of extended warranty.</p>	

A complete set of tender documents\* may be Download by prospective bidder free of cost from the website <http://eprocure.gov.in/eprocure/app>. Bidder has to make payment of requisite fees (i.e. Tender fees (if any) and EMD) online through RTGS/NEFT only.

I have also enclosed all relevant documents in support of my claims, (as above) in the following pages.

**Signature of Bidder**

**Name:** \_\_\_\_\_

**Designation:** \_\_\_\_\_

**Organization Name:** \_\_\_\_\_

**Contact No. :** \_\_\_\_\_

**<< Organization Letter Head >>  
DECLARATION SHEET**

We, \_\_\_\_\_ hereby certify that all the information and data furnished by our organization with regard to this tender specification are true and complete to the best of our knowledge. I have gone through the specification, conditions and stipulations in details and agree to comply with the requirements and intent of specification.

This is certified that our organization has been authorized (Copy attached) by the OEM to participate in Tender. We further certified that our organization meets all the conditions of eligibility criteria laid down in this tender document. Moreover, OEM has agreed to support on regular basis with technology / product updates and extend support for the warranty.

The prices quoted in the financial bids are subsidized due to academic discount given to IIT Delhi.

We, further specifically certify that our organization has not been Black Listed/De Listed or put to any Holiday by any Institutional Agency/ Govt. Department/ Public Sector Undertaking in the last three years.	NAME & ADDRESS OF THE Vendor/ Manufacturer / Agent
1 Phone	
2 Fax	
3 E-mail	
4 Contact Person Name	
5 Mobile Number	
6 TIN Number	
7 PAN Number	
(In case of on-line payment of Tender Fees)	
8 UTR No. (For Tender Fee)	
(In case of on-line payment of EMD)	
9 UTR No. (For EMD)	
10 Kindly provide bank details of the bidder in the following format:	
a) Name of the Bank	
b) Account Number	
c) Kindly attach scanned copy of one Cheque book page to enable us to return the EMD to unsuccessful bidder	

**(Signature of the Tenderer)**

**Name:**

**Seal of the Company**

## List of Govt. Organization/Deptt.

**List of Government Organizations for whom the Bidder has undertaken such work during last three years (must be supported with work orders)**

Name of the organization	Name of Contact Person	Contact No.

**Name of application specialist / Service Engineer who have the technical competency to handle and support the quoted product during the warranty period.**

Name of the organization	Name of Contact Person	Contact No.

**Signature of Bidder**

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Organization Name: \_\_\_\_\_

Contact No. : \_\_\_\_\_

## Bid Submission

### Online Bid Submission:

The Online bids (complete in all respect) must be uploaded online in **two** Envelops as explained below:-

<b>Envelope – 1</b> (Following documents to be provided as single PDF file)			
Sl. No.	Documents	Content	File Types
1.	Technical Bid	Technical bid with parts and specifications and Compliance Sheet as per Annexure - I	.PDF
2.		Organization Declaration Sheet as per Annexure - II	.PDF
3.		List of organizations/ clients where the same products have been supplied (in last two years) along with their contact number(s). (Annexure-III)	.PDF
4.		Technical supporting documents in support of all claims made at Annexure-I (Annexure-IV)	.PDF
<b>Envelope – 2</b>			
Sl. No.	TYPES	Content	
1.	Financial Bid	Price bid should be submitted in PDF format.	.PDF

**<Department/Centre Name>  
Indian Institute of Technology Delhi  
Hauz Khas, New Delhi-110016**

**Date: XX/XX/XXXX**

**Subject: Purchase of Rheometer (Following format is used for imported items)**

S. No.	Currency	Description and Specification of the Item	Qty. in Units	Unit Price (a)	Agency Commission (If applicable) (b)	Discount (c)	Ex-works price (d=a+b-c)	Packing + Handling + DOC + Inland Freight + FCA Charges (e)	FOB/FCA Airport Price (f=d+e)	Insurance + Freight (g)	CIF Price (f+g)
1											

**Note: At any circumstances, it is the responsibility of the foreign supplier to hand over the material to our forwarder at the origin airport after completing all the inland clearing. No Ex-works consignment will be entertained.**

**For indigenous items please quote as per following format.**

S. No.	Description and Specification of the Item	Qty. in Units	Unit Price in Rs.	GST%	Total Price in Rs.
1.					
2.					

**Note: The above financial template should be strictly followed. Any deviation from the above template (in terms of description and specification of the item) may lead to cancellation of the tender.**