



**NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA**  
**ROURKELA – 769 008, ODISHA**

**Advertised Tender Enquiry**

**Department: Ceramic Engineering**

**Tender notification no: - NITR/PW/CR/2019/128**

**Date: 25/06/2019**

**To**

**Important Dates**

**Through  
CPP Portal  
(e-procurement)**

<b>Event</b>	<b>Date</b>	<b>Time</b>
Pre-bid Conference	<b>NA</b>	<b>NA</b>
Last Date of submission of bid	<b>23/07/2019</b>	<b>11:00 AM</b>
Date of opening of techno-commercial bid	<b>24/07/2019</b>	<b>11:00 AM</b>

Dear Sir,

We intend to purchase the commodities specified below and invite quotations in accordance with the terms and conditions detailed in the bid document. If you are interested, kindly send your offer with prices and complete terms within the time mentioned above.

For any query, Kindly contact to:

**Attention:**  
**Principal Investigator: Prof. Arindam Paul**  
Department of Ceramic Engineering  
National Institute of Technology Rourkela  
Rourkela – 769 008, Odisha  
Phone: 0661 – 2462215  
Mobile No.: 7008230161,9178782203  
E-mail: [paula@nitrkl.ac.in](mailto:paula@nitrkl.ac.in)

Yours sincerely,

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Name: Prof. Arindam Paul  
Principal Investigator  
Project Code: SR/18/CR/041  
Department of Ceramic Engineering  
NIT Rourkela

Encl:

- (1) Schedule of requirement, specifications, dates etc.**
- (2) Bid document containing detail terms and conditions.**

**1. Schedule of requirements**

Item No	DESCRIPTION	Quantity
1	<b>Universal Testing Machine</b>	01 Unit

**2. Specifications and allied Technical Details**

As per the specification mentioned in Annexure I

**3. Format of Quotation** (tick appropriate box)

It is a two-part bid with separate techno-commercial and price bids.

4. The bid should be submitted through <https://eprocure.gov.in/eprocure/app>

5. Quotations should be valid for a period of **120 days** from the date of opening of techno-commercial bid.

**6. Some important dates:**

i. Pre-bid Conference	Date: <b>NA</b>	Time: <b>NA</b>
ii. Last date for submission of Bid:	Date: <b>23/07/2019</b>	Time: <b>11:00 AM</b>
iii. Date of opening of Techno-commercial bid:	Date: <b>24/07/2019</b>	Time: <b>11:00 AM</b>

7. **Warranty:** Comprehensive warranty for 2 years including spares and consumables must be provided.

8. **GST:** For indigenous items, GST will be 5% as the equipment will be used for research purpose and Institute will provide DSIR certificate for the same.

9. **Bid Security (EMD) and Tender Cost:** EMD (Earnest Money deposit) in shape of Banker's cheque /DD (Demand Draft) for **INR 1, 50,000/- (Rupees One lakh fifty thousand only)** and Tender Cost (Non- refundable) in the form of DD for **INR 1,000/- (Rupees One Thousand Only)** in favor of Director, NIT Rourkela Payable at Rourkela from any Scheduled Commercial Bank except Co-operative and Gramin bank. And Banker's cheque/DD for the EMD should remain valid for a period of 45 days beyond the bid validity period from the date of opening of bids. EMD of unsuccessful bidders should be returned to them at the earliest and latest on or before the 30<sup>th</sup> days after the award of the contract. EMD and Tender Cost should reach physically through speed post/ register post/courier, containing in an envelope & superscripted with subject, tender reference number addressing to **Registrar, NIT Rourkela-769008, Odisha;** Attention: Prof Arindam Paul (CR) **on or before 24/07/2019 at 11:00 AM.**

10. **Performance Security:** Rs. 3,00,000/- (Rupees Three Lakh Only) in shape of Bank Guarantee/Demand Draft (DD) in favor of Director, NIT Rourkela payable at Rourkela from any Scheduled Commercial Bank except Co-operative and Gramin bank. Performance security should remain valid for a period of 60 days beyond the date of completion of all contractual obligations of the supplier including warranty obligation. And EMD (Earnest Money deposit) amount of successful bidder will be returned after the receipt of performance security in case of award of contract to successful bidder.

11. Please go through the enclosed "bid document" carefully for other bidding instructions.
12. Please send your quotations through \_ <https://eprocure.gov.in/eprocure/app>
13. For technical details, you may contact

**Prof. Arindam Paul**

Principal Investigator

Project Code: SR/18/CR/041

Department of Ceramic Engineering,  
National Institute of Technology,

Rourkela – 769 008

Phone: 0661 – 2462215

Mobile No. 7008230161, 9178782203

E-mail: [paula@nitrkl.ac.in](mailto:paula@nitrkl.ac.in)

NB: ***Please furnish your Dealership Certificate (must) and Proprietary Nature Certificate (If applicable)***



**NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA**  
**ROURKELA – 769 008, ODISHA**

**BID DOCUMENT**

**1. Instructions to the bidders**

- 1.1 Bids are invited on behalf of the Director, National Institute of Technology (NIT), Rourkela – 769 008, Odisha, from the intending bidders for supply of the goods/stores/ equipment for the Institute as detailed in the enquiry letter.
- 1.2 The bidders should quote their offer/rates in **BOQ** in clear terms without ambiguity.
- 1.3 In case of any discrepancy between the rates in figures and that in words, the rate in words will be accepted as correct.
- 1.4 The last date for receipt of the bid is marked in the enquiry.
- 1.5 The bids should be uploaded in <https://eprocure.gov.in/eprocure/app>. Please follow the guidelines of the site.
- 1.6 If a prospective bidder requires any clarification in regard to the bidding documents, he may make a request the concerned officer or faculty member at least 15 days before the deadline for receipt of bids.
- 1.7 Bids received after the deadline of receipt indicated in para 1.4 above, shall not be taken in to consideration.
- 1.8 Each bidder shall submit only one bid. A bidder, who submits more than one bid, shall be disqualified and considered non-responsive.
- 1.9 (In respect of high value plant, machinery etc. of a complex and technical nature). The bids may be submitted in two parts, viz., technical bid and financial bid.
- 1.10 The bidder has to sign in full at all pages of the scanned part of the bidding document. No over-writing in those pages is acceptable.
- 1.11 If any bidder does not fulfill technical specifications, his/her eligibility will be cancelled even if his/her price got L1 status.

**2. Conditions of the bid**

- 2.1 The rates quoted should preferably be net, inclusive of packing, forwarding, freight, Insurance and all other incidental charges excluding GST. In case these charges are quoted extra in addition to the quoted rates, the amount thereof or Ad Valorem rate must be specified. Packing, forwarding, freight, entry tax etc., when quotes separately are reimbursable at actual. If external agencies are employed, their receipts must be enclosed with the invoice.
- 2.2 Duties and Taxes are to be quoted separately. Ad Valorem rates thereof should be clearly indicated with reference to the relevant Acts and Rules.

**It may be noted that the Institute is availing custom duty exemption in terms of Notification no 51/96-Customs dt. 23.07.1996, Notification No. - 47/2017-Integrated Tax (Rate) dt. 14.11.2017 and Notification No- 45/2017- Central tax (Rate) dt. 14.11.2017[Vid Registration No.: TU/V/RG-CDE (227)/2016, dated: 13.11.2018].**

- 2.3 The goods are required to be delivered at the indenting Department of NIT, Rourkela, and must be reached within **90 days after dispatch of goods on opening of L/C** under the risk and arrangement of the bidder and offers with delivery beyond the above period shall be treated as unresponsive. In case the delivery time is higher, the same must be mentioned clearly in the quotation.
- 2.4 The bid should remain valid for a period of **120 days** from the date of opening. In case your offer has a different validity period that should be clearly mentioned in the quotation.
- 2.5 Conditional discount, if any, offered by the bidder shall not be considered at the time of evaluation.
- 2.6 The goods offered should strictly conform to the specification and technical details mentioned in **Annexure-I**.
- 2.7 The Institute may like to conduct pre-dispatch inspection of goods, where applicable.
- 2.8 Period of guarantee/warranty, where applicable, should be specified in the bid.
- 2.9 If the successful bidder, on receipt of the supply order, fails to execute the order within the stipulated period, in full or part, it will be open to the Director, NIT, Rourkela to recover liquidated damage from the firm at the rate of 1 percent of the value of undelivered goods per month or part thereof, subject to a maximum of 5 percent of the value of undelivered goods. Alternatively, it will also be opened to the Director, to arrange procurement of the required goods from any other source at the risk and expenses of the bidder.
- 2.10 The successful bidder may be required to execute a contract, where applicable.
- 2.11 The bidder has to furnish up to date **GST and Income Tax Clearance Certificate** for **last three Financial Years**, i.e. for FY 2015-16, 2016-17 and 2017-18, along with the bid.
- 2.12 90 percent of the total amount (contract value) will be paid through L/C against dispatch of goods, remaining 10 percent will be paid through wire transfer after successful completion of installation and testing.
- 2.13 In case of Advance payment, the payment will be made on either in Foreign Demand Draft or Wire Transfer only. The proforma invoice copy need to be sent for advance payment.
- 2.14 In the event of any dispute arising out of the bid or from the resultant contract, the decision of the Director, NIT, Rourkela shall be final.
- 2.15 The bid document/resultant contract will be interpreted under Indian Laws.

**Specifications for 'Universal Testing Machine'**

<b>Sl. No.</b>	<b>Description</b>		
<b>1.</b>	<b>Function</b>		Minimum 10kN capacity, computer controlled, floor standing rigid Universal Testing Machine to carry out static tensile, compression, bending tests. It should be equipped with high-resolution digital AC servo motor, non-backlash precision ball screws and timing belts. The system should be capable to also have environmental chamber for operation between -70°C to 250°C. The system shall be provided with software for machine control, data acquisition and data analysis. All of these components should be fully integrated and supported by vendor.
<b>2.</b>	<b>Applications</b>	2.1	The machine should be capable of carrying out Tensile, compression and flexure tests on ceramic samples and various non- metallic materials.
<b>3.</b>	<b>Standards</b>	3.1	The machine should comply with all ASTM / ISO and any other equivalent international standards for tension, compression, flexural, shear tests for metals and non-metallic materials at ambient as well as at sub temperature.
<b>4.</b>	<b>Loading Frame and Controller</b>	4.1	The machine should have robust construction having dual column frame which is vertically oriented with easy access for the job mounting and dismantling, grips changing, furnace positioning, extensometer positioning.
		4.2	It should include a digital closed loop command and feedback motion control system with a high performance, AC brushless servo motor.
		4.3	The moving cross head shall be driven by two precision screws each with dual preloaded nuts providing zero back lash.
		4.4	For lateral stiffness and robustness purposes, the load frame shall include adequate diameter rods for the moving cross head to ride on.
		4.5	The frame shall include dual level limit switches on the front of the frame that prevent the cross head from travelling too high or too low.
		4.6	Total crosshead travel should be more than 1350 mm
		4.7	The load capacity : +\ - 10kN
		4.8	Stiffness of the frame should be >47kN/mm
		4.9	Crosshead Speed range: 0.0005-1960 mm/min, with a speed accuracy of greater than +/- 0.1% of set speed measured over full speed range.
		4.10	Crosshead return speed at least 2500 mm/min
		4.11	The load frame shall include an operator panel which can be used to run and stop tests at frame as opposed to through the PC and software.
		4.12	The system should include bright red emergency stop switch. For safety purposes, the system shall not restart the cross head moving when the emergency stop button is released.

		4.13	Interface to a standard PC with an industry standard Ethernet connection with a data transfer rate of 2kHz.
		4.13.1	Resolution 24 bit with a data sampling frequency of 400kHz or better.
		4.13.2	The Specimen protect feature to avoid overloading of samples while gripping.
		4.13.3	Automatic safety stop feature while freely positioning the system by user defined limits to prevent accidents/injuries.
<b>5.</b>	<b><u>Measurement Transducer</u></b>		
	<b>5.1) Load</b>		Load Measurement through a single <b>10 kN &amp; 500 N</b> Capacity, Pan Cake type strain gauge load cell for both tension and compression applications. The smaller load cell can be directly mounted on the larger load cell without any tools.
		5.1.1	Load Range 0.2% to 100% of the capacity, force measurement should confirm to ASTM E4, ISO7500-1 Standards.
		5.1.2	Load Accuracy $\pm 0.1\%$ of the full scale
		5.1.3	Load resolution : $1/\pm 900,000$ of capacity or better
		5.1.4	The load cell shall have an over load capacity without permanent zero shift of 150% of the capacity
	<b>5.2) Displacement</b>		Displacement measurement through suitable transducer
		5.2.1	Displacement Accuracy $\pm 0.02$ mm of the displacement
		5.2.2	Displacement Resolution 0.001 $\mu\text{m}$ or better
	<b>5.4) Calibration of transducers</b>		All transducers and thermocouples should be calibrated to traceable international standards
	<b>5.5) Self-recognition electronics</b>		All transducers available for the system shall include self-identification (recognition) electronics in the connector directly attached to these transducers which automates the calibration of these devices.
<b>6.</b>	<b>Flexure Kit/Compression Platens</b>	6.1	The machine should have versatile removable grips and fixtures so that it can change quickly to meet variable requirements in tension, compression, flexure, peeling, tearing, punch, shearing etc.
		6.2	A 3 Point bend test kit (20kN) for testing metals must be quoted with span length separation 4...250 mm and test travel of 40mm minimum. Flexure fin and supports radius 2 and 4.5 mm respectively, Temperature range -70 ... +250 °C. The device should include a tool to easily position the sample in the center of the test axis.
		6.3	A set of compression platens round with about 30 and 90mm diameter must be quoted. These must be mounted on either of the 2 load cells.
<b>7.</b>	<b><u>Software</u></b>		
	<b>7.1 Test frame control</b>	7.1.1	The control software shall be a true graphical user interface meeting all of the Microsoft Windows standards (OS: Windows XP, VISTA or windows 7, windows 10).
		7.1.2	The software must have multi levels of user access based on login name and password.

		7.1.3	The testing software must be able to perform tensile, compression, flexure tests and include appropriate calculation list for each type of test as per relevant international test standards (ASTM E 8M, E9, ASTM E 517, ASTM E 646, ISO 6892-1, ISO 10275, ISO 37, ASTM D 412, ISO 572-1, ISO 34, ASTM D 3574 etc.) for tensile, compression, flexure, cyclic and tear tests.
	<b>7.2 Tension test software</b>		The Tension Test software shall provide test control and result calculations required for most tension testing requirements. The tension test software shall display the results such as Yield Stress, Ultimate Tensile strength, Modulus of Elasticity, Upper Yield Strength, Lower Yield strength, Non- proportional elongation, 0.2% elongation, % Plastic Elongation, total elongation at rupture, stress-strain Diagram, Load-elongation diagram, elongation to rupture, creep/Relaxation etc.
	<b>7.3 Compression test software</b>		The Compression Test software shall provide test control and result calculations required for most compression testing requirements. System shall display the results such as compression stress, elasticity limit value, proportional limit, Yield strength, modulus of elasticity, Compression Strength at X%, Stress-strain diagram, load elongation diagram, Creep/Relaxation, etc.
	<b>7.4 Enhanced control</b>		System shall be capable of controlling the movement of the crosshead as a function of load, stress, strain or true strain in addition to displacement control.
	<b>7.5 Data acquisition</b>	7.5.1	The control software shall be capable of acquiring data at 2KHz across load, displacement, and up to four optional strain channels. Data rates should not be affected by the number of strain channels collected.
		7.5.2	Run time screen must be capable of displaying both the real time graph and the calculated results of multiple specimens simultaneously.
		7.5.3	Test control software must be able to automatically store raw data or calculated results in an ASCII file. Data should be easily exported to Excel.
	<b>7.6)Data control in software</b>	7.6.1	The software shall offer the following calculations: Maximum Peak (all available channels), Minimum Peak (all available channels), Specimen Break Point (all available channels), Yield (Zero slope, Offset and Energy at Yield), Modulus (Secant, Tangent, Automatic Young's, User-defined Young's, Chord).
		7.6.2	The software must include the capability to define correction factors such as machine compliance, slack, pretension, load and gauge length.
		7.6.3	The ability to re-analyse past test data using different calculations must be provided.
<b>8.</b>	<b>Computer with printer</b>		The machine should be supplied with PC for control of UTM. It should have following configuration or better. [Computer Configuration: 8 GB RAM, 2 TB hard drive, Windows 10 operating system]



11.	<b>Power</b>		230 V +/-10% (1Ph, N, PE), 50/60 Hz.
12.	<b>Manual</b>		Both operation and maintenance manual should be supplied with the machine

**Details of the configuration and deviation must be provided along with technical bid**

**Other Terms and Conditions**

1.	<b>Installation and Commissioning</b>		To be done by supplier
2.	<b>Training</b>		To be done by qualified personnel of the supplier
3.	<b>Warranty</b>		<b>Comprehensive warranty of 2 years.</b> The supplier will be responsible for supply any parts that may become faulty. The warranty will be effective from the date of successful installation at NIT Rourkela.
4.	<b>General Points</b>	4.1	Please give detailed specifications, catalogues, list of users & technical details, pre-installation requirements, delivery period etc. very explicitly without any ambiguity. The quotation must clearly specify make and model of the equipment. All relevant technical literature/brochures, application notes and specifications must also be provided adequately explaining and confirming compliance of the features of the model of the equipment being quoted with those given in the tender enquiry. Without this, the quotation may be liable to be rejected. If there are features in the quoted equipment which are better than what are indicated in the enquiry, they must also be clearly explained.
		4.2	Compliance Statement All manufacturers/suppliers must submit the compliance statement (in tabular format with column heads given below) along with the technical bid.  a] NIT Rourkela's Enquiry specification, b] Specification of the equipment offered by the supplier, c] Compliance to NIT Rourkela's specification (yes/No), d] Details of deviation, if any, as per NIT Rourkela's specifications
		4.3	Offers must include sufficient technical documents in support of claims made. Statements like "conform/Comply/Yes" without supporting documents will not be considered for technical evaluation
		4.4	At least three user name and detail contact from IITs/NITs/reputed Indian Institutes/Govt. Research organizations must be provided where the similar or higher capacity equipment has been supplied in last six years along with copy of purchase order.
		4.5	Certificate from OEM or its Indian representative to have a complete after sales service set up unit in India.
		4.6	If the bidder is not an OEM, the representative must submit a certificate from OEM for serving the same OEM in India at least for 5 years.

		4.7	Price should include installation and delivery of the Item to CIF Kolkata basis. Price should be quoted in foreign currency for imported items and in Indian rupee for indigenous item.
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**Terms of Payment:** 90 percent of the total amount (contract value) will be paid through L/C against dispatch of goods, remaining 10 percent will be paid through wire transfer after successful completion of installation and testing.

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