

 INDIAN INSTITUTE OF TECHNOLOGY PALAKKAD	<p style="text-align: center;">Indian Institute of Technology Palakkad भारतीयप्रौद्योगिकीसंस्थानपालक्काड STORES & PURCHASE SECTION Email: purchase@iitpkd.ac.in Telephone: +91-491 209 2062/63 GSTIN: 32AAAAI9910J1ZR</p>
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Tender No. TENDER/2025-26/434

Date of Publication: 09-02-2026

Date/Time of Closing: 24-02-2026, 15:00 hours

Indian Institute of Technology Palakkad Invites Tender under Two-bid system for the:

**SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF AN
EXPERIMENTAL SETUP FOR THE MEASUREMENT OF THERMAL CONTACT CONDUCTANCE AT
CRYOGENIC TEMPERATURES**

Conforming to the specifications as in BoQ Technical.

Tender Documents may be downloaded from the e-Wizard Portal <https://mhrd.ewizard.in/>. Aspiring Bidders who have not enrolled / registered in e-Wizard should enroll / register before participating through the website <https://mhrd.ewizard.in/>. Bidders are advised to go through instructions provided at “**Procedure for Submission of E-tender**”. [Special Instructions to the Contractors/Bidders for the e-submission of the bids online through this e-Wizard Portal”].

Bidders can access tender documents on the website. For searching in the site, kindly go to Live Tenders option, Click “Advance Search” and select the Department as ‘IIT Palakkad’. Thereafter, Click on “Search” button to view all IIT Palakkad tenders. Select the appropriate tender and fill them with all relevant information and submit the completed tender document online on the website <https://mhrd.ewizard.in/> as per the timeline below.

No manual bids will be accepted. All tender documents including Techno-Commercial, Technical and Financial bids should be submitted in the e-Wizard portal.

S. No.	Events	Date and Time
1	Publication of the Tender Document	09-02-2026
2	Date of Pre-Bid Meeting	16-02-2026, 15:00 hours
3	Last Date/Time for submission of ONLINE Bids	24-02-2026, 15:00 hours
4	Opening of Technical Bids	24-02-2026, 15:15 hours

Note:

1. The bidder should be a Class-I / Class-II Local Supplier meeting the requirement as per the Order No. P-45021/2/2017-PP (BE-II) issued by the Public Procurement Section, DPIIT, Ministry of Commerce and Industry, GOI dated 16-09-2020.

2. Bidders other than Class-I / Class-II Local Suppliers, who may participate in this tender, may be doing so at their own risk. Such bids would not be considered and rejected outright

Pre-Bid Meeting:

- The Pre-Bid Meeting will be held in online mode. The link for the meeting will be communicated through a separate notification to bidders who confirm their participation.
- Bidders who are unable to attend the Pre-Bid Meeting may send their queries by 14:00 hours on 13-02-2026 to purchase@iitpkd.ac.in.
- Bidders wishing to participate in the Pre-Bid Meeting are requested to provide their official email address, name of the authorised representative, and mobile number to purchase@iitpkd.ac.in by 14:00 hours on 13-02-2026.
- Queries received after the Pre-Bid Meeting will not be considered. Any addendum, corrigendum, or clarifications issued in response to the queries will be uploaded on the online portal and shall form part of the tender document.

TERMS AND CONDITIONS

1	GENERAL	<ul style="list-style-type: none"> a) The responsibility of submission of the bids on or before the last date shall rest with the tenderer. The institute will hold no responsibility for the non-receipt of the bids or the bids received after the date/time specified. Any bid received by IITPKD after the bid submission deadline prescribed by IITPKD, shall be rejected and returned unopened to the Bidder. b) Canvassing or offer of an advantage or any other inducement by any person with a view to influencing acceptance of a bid is an offence under the Laws of India. Such action will result in the rejection of bid, in addition to other punitive measures. c) Each bidder shall submit only one bid, either by himself or as a partner in a joint venture or as a member of the consortium. If a bidder or if any of the partners in a joint venture or any one of the members of the consortium participate in more than one bid, the bids (of both the individual and the partnership/consortium/joint venture) are liable to be rejected. d) The bidder shall bear all costs associated with the preparation and submission of his bid and IITPKD shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the tender process. e) IITPKD will respond to any request for clarification or modification of the Tender Document that are received up to TWO DAYS prior to the deadline for submission of bids prescribed by IITPKD. For this purpose, the prospective bidder(s) requiring clarification in the Tender Document shall notify IITPKD through the ONLINE Portal ONLY. Any such clarification, together with all the details on which the clarification had been sought, will be published in the ONLINE Portal ONLY. Deviations, if any, observed by the Institute in the submitted bids, from the Terms and Conditions of the Tender Document will not be accepted by the Institute. f) Except for any such clarification by the Institute, which is expressly stated to be an addendum to the tender document issued by the Registrar, IIT Palakkad, no written or oral communication, presentation or explanation by any other employee of any of the Sections/Departments of the Institute, shall be taken to bind or fetter the Institute. g) The bidder is expected to examine all instructions, forms, terms and conditions in the Tender Document. In the event of discovery of any missing pages, the bidder shall inform the same to the Section/Department concerned. Failure to furnish the information required by the Tender Document or submission of a tender not substantially responsive to the Tender Document in every respect will be at the bidder's risk and may result in rejection of the bid. h) The bidder shall not make or cause to be made any alteration, erasure or obliteration to the text of the Tender Document. i) The Supplier shall not, without the prior written consent of the IITPKD, assign to any third party, the Contract or any part thereof.
2	COMPOSITION OF THE TENDER DOCUMENT	<ul style="list-style-type: none"> (a) The Tender Document comprises of: <ul style="list-style-type: none"> Instruction to the bidders including terms and conditions 1. Technical Specifications (Annexure-I) 2. Undertaking by the Bidder (Annexure-II) 3. Fall Clause Notice Certificate (Annexure-III) 4. Annexure regarding Blacklisting/Debarment (Annexure-IV)

3	DOCUMENTS COMPRISING THE BID	<ul style="list-style-type: none"> The Technical, Techno-commercial (Cover One), and Commercial Bid (Cover Two) shall be submitted ONLINE through the e-Wizard Portal. Bids submitted in any mode other than ONLINE will be rejected outright. Documents establishing the conformity of the terms and conditions of the Tender Document shall be provided along with the bid. The offer/bids should be sent only for a system or that is available in the market and supplied to a number of customers. A list of customers in India and abroad with details must accompany the quotations. Quotations for a prototype machine will not be accepted. Original catalogue (not any photocopy) of the quoted model duly signed by the principals must accompany the quotation in the Technical bid. No prices should ever be included in the Technical bid. Compliance or Confirmation report with reference to the specifications and other terms and conditions should also be obtained from the principal. Information related to the agency/bidder such as photocopies of the Registration/PAN/GST/TIN shall be furnished. The technical bid should consist of all technical details along with commercial terms and conditions. No prices should be included in the technical bid. Mentioning of Prices in the Technical Bid shall lead to DISQUALIFICATION. Bidders who are bidding for this tender, <ul style="list-style-type: none"> Should have implemented at least THREE ORDERS of Experimental Setup for the Measurement of Thermal Contact Conductance at Cryogenic Temperatures during previous three financial years (2022-23, 2023-24, and 2024-25) from Centrally Funded Technical Institutes (IITs, NITs, IISc, IISER), DRDO, ISRO, CSIR labs or Government Firms in India. Copies of the most recent purchase orders and user certificates of successful implementation must be included. Copies of financial statements or evidence of turnover must be furnished. Should have an Average Annual Turnover of Rs.1,80,00,000/- (RUPEES ONE CRORE EIGHTY LAKH ONLY) during the last THREE financial years (2022-23, 2023-24, 2024-25). The bidder shall enclose the audited statements of the indicated financial years, which should have been certified by a Chartered Accountant or a Competent Authority. Should submit a Digitally signed Tender Document in Cover One.
4	EARNEST MONEY DEPOSIT (EMD)	<ul style="list-style-type: none"> The bidder shall furnish EMD of Rs.1,80,000/- (Rupees One Lakh Eighty Thousand Only) through online payment gateway in the E-Wizard. Bids not accompanied by EMD shall be DISQUALIFIED. The firms who are registered with National Small Industries Corporation (NSIC) / or Small Scale Industrial (SSI)/ Micro & Small Enterprises (MSEs) are exempted from submitting the EMD. NSIC / MSME registered bidders must submit a copy of a valid NSIC / MSME Registration Certificate for exemption of EMD. It will be applicable for those bidders who shall produce their own goods or provide their own services, and not applicable for trading purposes.

5	PERFORMANCE SECURITY	<ul style="list-style-type: none"> The performance security shall be submitted within FIFTEEN DAYS of receipt of the material by the IITPKD. The successful bidder shall furnish the Performance Security equal to 5% of the order / contract value (excluding the value of annual maintenance charges). The Performance Security shall be valid all along the warranty period and shall extend up to SIXTY DAYS after the date of completion of warranty period. It shall be ensured by the successful bidder that the validity of the Performance Security submitted is extended depending on the date of commencement of the Warranty. The performance security shall be a bank guarantee/E-Bank Guarantee (in the format as provided) issued by the Indian Scheduled bank acceptable to the IITPKD or a Demand Draft favoring, INDIAN INSTITUTE OF TECHNOLOGY PALAKKAD payable at PALAKKAD. The performance security shall automatically become null and void once all the obligations of the Supplier under the Contract have been fulfilled, including, but not limited to, any obligations during the Warranty Period and any extensions to the period. The performance security shall be returned to the Supplier not later than fifteen (15) days after its expiration. Failure of the successful Bidder to comply with the requirements shall constitute enough grounds for the annulment of the award and forfeiture of the EMD, in which event the IITPKD may make the award to the next lowest evaluated bid submitted by a qualified Bidder or call for new bids.
6	BID PRICES AND CURRENCY	<ul style="list-style-type: none"> Prices must be quoted separately for each equipment/item identified. Price quoted for equipment/items shall include all the costs associated with packing, local transportation from the point of clearance to IITPKD, insurance, loading, unloading and associated delivery charges. The delivery shall be on DOOR DELIVERY basis to the institute including its installation, commissioning, integration and validation. It is the sole responsibility of the supplier to ensure that the equipment is delivered on DDP mode to IIT Palakkad. An undertaking to this effect as in Annexure-II. Prices quoted by the bidder shall be fixed during the validity of the bid. Prices of the equipment/items shall be quoted in Indian Rupees (INR) / Foreign Currency.
7	LETTER OF CREDIT	<ul style="list-style-type: none"> Upon the successful Bidder's furnishing of the copy of the Purchase Order duly signed on each page and the Performance Security, for the equipment ordered in foreign currency, IITPKD will open a letter of credit (LC) in a convenient Nationalized Bank in India. For opening of LC necessary information shall be provided by the supplier or its authorized agents. In case the successful bidder is a foreign company and wishes to submit Performance Security in the form of Bank Guarantee, the Bank Guarantee should be routed through the Beneficiary Bank to the end user bank. Otherwise, the Indian Agent of the foreign vendor shall submit a Bank Guarantee from a Nationalized Bank of India. The following documents shall be submitted in case of an Indian agent submitting the Performance Security on behalf of his principal: <ul style="list-style-type: none"> Foreign principal's proforma invoice indicating the commission payable to the Indian agent and nature of after-sales service to be rendered by the Indian agent. Copy of the agency agreement with the foreign principal and the precise relationship between them and their mutual interest in the business.

		<ul style="list-style-type: none"> For imported equipment, a Letter of Credit (LC) shall be opened for 100% CIP price on receipt of the acknowledgment of the purchase order. However, 80% of the LC amount only shall be released on proof of the shipment of the consignment with necessary documents to be provided in detail at the time of placing of the purchase order. Balance 20% of the LC amount shall be released upon the receipt of a performance security of 5% of the total value of the purchase order and installation, commissioning, integration, validation and installation report/certification jointly given by the end user and the supplier. <p>Any costs associated with the amendments made in the LC as per the request made by the Supplier s should be borne by the supplier.</p> <p>Any fluctuation in rates / rate conversions arising due to the amendment requests made by the supplier shall be on the supplier and not on the institute.</p>
8	PERIOD OF VALIDITY OF BIDS	<ul style="list-style-type: none"> Bids shall remain valid for a period of 180 DAYS after the date of the deadline for submission of bids prescribed by IITPKD. If the deadline is extended due to unforeseen circumstances, the bid validity shall be deemed to have extended accordingly.
9	TIME FOR SUPPLY, INSTALLATION, COMMISSIONING AND VALIDATION OF THE EQUIPMENTS/ITEMS	<ol style="list-style-type: none"> The Supplier shall supply the equipment/items within the period specified in the tender document i.e. within 20 WEEKS of signing the purchase order or within the period mutually agreed between IITPKD and supplier. All the equipment and accessories should be delivered at IIT Palakkad, Thermo-fluids Lab, Nila campus, Kanjikode West, Palakkad - 678623, Kerala. The Supplier shall thereafter proceed with the installation, commissioning, integration and validation and demonstrate operational acceptance of the equipment/items within the period specified. The equipment/items shall be installed and commissioned by the successful bidder within 20 to 25 days from the date of its receipt. The tenderer should indicate clearly the time required for delivery of the item. In case there is any deviation in the delivery schedule, liquidated damages clause will be enforced or penalty for the delayed supply period will be levied. In the event of failure of supply of the item/equipment/items within the stipulated delivery schedule, IITPKD has all the right to purchase the item/equipment/items from other sources on the total risk of the Supplier under the risk purchase clause.
10	PRODUCT UPGRADES	The Supplier shall continue to support and maintain the version/model of the Equipment supplied by upgrading the software and the hardware as and when amendments are carried out in the existing version or the product is upgraded. Whereas upgrades to the software shall be supplied free of cost, the Supplier may charge for upgrade in hardware provided it is of major nature. An upgraded higher version of the instrument and software related with the instrument shall be supplied.
11	PENALTIES	If the Supplier fails to complete any of the activities in accordance with the time specified for it, or any extension of time granted by IITPKD, Liquidated Damages Clause shall be invoked.
12	UP-TIME GUARANTEE/ DOWNTIME PENALTY CLAUSE	<ol style="list-style-type: none"> The Supplier should provide up-time guarantee of 95% [24 (hours) X 7 (days) X 365 (days)] basis during the warranty period. The Supplier should provide up-time guarantee of 95% (24 hours/day basis) both during warranty. If downtime exceeds the 5% limit, extension of the warranty period will be twice the excess down time period.
13	LIQUIDATED DAMAGES	If a firm accepts an order and fails to execute the order, in full or part, as per the terms and conditions stipulated therein, it will be open to the Institute to recover liquidated damages from the firm at the rate of 1% of the value of the undelivered goods per month or part thereof, subject to a maximum of 5% of the value of the undelivered goods. It will also be open to the Institute alternatively,

		to arrange procurement of the required stores from any source, at the risk and expense of the firm, accepted and failed to execute the order according to stipulations agreed upon. This will also entail the removal of the defaulters' name from the approved/registered list of Suppliers.
14	EFFECT OF FORCE MAJEURE	<p>(a) If the Supplier is prevented, hindered, or delayed from or in performing any of its obligations under the Contract by an event of Force Majeure, then it shall notify the IITPKD in writing of the occurrence of such event and the circumstances of the event of Force Majeure within FIFTEEN DAYS after the occurrence of such event.</p> <p>(b) The Supplier, when affected by the event of Force Majeure shall use reasonable efforts to mitigate the effect of the event of Force Majeure upon its performance of the Contract and to fulfill its obligations under the Contract, but without prejudice to IITPKD's right to terminate the Contract.</p> <p>(c) No delay or non-performance by the Supplier caused by the occurrence of any event of Force Majeure shall:</p> <ul style="list-style-type: none"> • Constitute a default or breach of the Contract; • Give rise to any claim for damages or additional cost or expense occasioned by the delay or non-performance. <p>(d) If the performance of the Contract is substantially prevented, hindered, or delayed for a single period of more than THIRTY DAYS or an aggregate period of more than SIXTY DAYS on account of one or more events of Force Majeure, the IITPKD shall have the right to terminate the Contract by giving a notice to the Supplier.</p>
15	EXTENSION OF TIME LIMITS FOR SUPPLY AND MAKING OPERATIONAL, THE EQUIPMENT	<ul style="list-style-type: none"> • The time limit for supply, installation & commissioning, integration & validation shall be extended if the supply is delayed or impeded in the performance of any of its obligations under the Contract by reason of any of the following: <ul style="list-style-type: none"> • Any occurrence of Force Majeure; • Any other matter specifically mentioned in the Contract; • By such period as shall be fair and reasonable in all the circumstances and as shall fairly reflect the delay or impediment sustained by the Supplier.
16	GOVERNING LAW AND SETTLEMENT OF DISPUTES	<p>(a) The Contract shall be governed by and interpreted in accordance with the laws of India.</p> <p>(b) Any dispute or claim arising out of/relating to this Contract or the breach, termination or the invalidity thereof, shall be settled by the Hon'ble Courts of Justice at Palakkad.</p> <p>(c) The page number should be marked in all pages serially (including all supporting documents enclosed with the tender document) and the declaration for the same shall be submitted by the bidder as in Annexure-II.</p> <p>(d) IITPKD reserves the right to accept or reject any or all the tenders in part or whole or may cancel the tender at its sole discretion without assigning any reason whatsoever. No further correspondence in this regard will be entertained.</p>

AWARD OF CONTRACT

1	AWARD CRITERIA	<ol style="list-style-type: none">1. IITPKD will award the Contract to the Bidder whose bid has been determined to be substantially responsive and as per the Order No. P-45021/2/2017-PP(BE-II) dated 16-09-2020 from Department for Promotion of Industry and Internal Trade (Public Procurement Section), Ministry of Commerce and Industry, Govt. of India.2. The bidder should be a Class-I / Class-II Local Supplier meeting the requirement of minimum 20% Local Content in line with the Public Procurement (Preference to Make in India) Order 2017 No. P-45021/2/2017-PP(BE-II) dated 16-09-2020.3. The Institute reserves the right to buy different items/quantities from different bidders considering price of individual/group of equipment/items or any other factors as decided by the Committee.
2	AWARD OF PURCHASE ORDER	<ol style="list-style-type: none">1. Prior to the expiration of the period of bid validity, IITPKD will issue the Letter of Intent / Purchase Order to the successful Bidder in writing.2. Any amendment(s) in the Purchase Order will be permitted within SEVEN DAYS of its issuance. No amendments will be permitted beyond this period.3. The Purchase Order will constitute the foundation of the Contract.
3	CONTRACT AGREEMENT	<ol style="list-style-type: none">a. Within SEVEN DAYS of receipt of the Purchase Order, the successful Bidder shall sign and date its copy on each page and return it to the Purchaser.b. Copy of Purchase Order duly signed and dated by the successful Bidder on each page shall constitute the Contract Agreement.
4	CONTRACT DOCUMENTS / AMENDMENT TO CONTRACT	<ol style="list-style-type: none">a. All documents forming part of the Contract (and all parts of these documents) are intended to be correlative, complementary and mutually explanatory. The Contract shall be read as a whole.b. The order of precedence of the Contract documents shall be as follows:<ul style="list-style-type: none">• Contract Agreement/Purchase Order• All Forms/Annexures• equipment/items and their requirement• Supplier's Bid• Tender Documentc. No amendment or other variation of the Contract shall be effective unless it is in writing, is dated, expressly refers to the Contract and is signed by a duly authorized representative of each party to the Contract.

REGISTRAR

Name of the Item :	Experimental Setup for the Measurement of Thermal Contact Conductance at Cryogenic Temperatures
Quantity:	1
Warranty Period:	Standard warranty of 1 year

TECHNICAL SPECIFICATION OF
VACUUM CHAMBER AND VACUUM
PUMPING SYSTEMS

S. No.	Items	Quantity	IIT PKD required Specification
1	Vacuum chamber with support table		The vendor shall submit the 3D design for our approval before commencing fabrication.
a.	Cryocooler feedthrough	1 Nos	Port with suitable dimensions with vacuum O-ring should be provided
b.	Electrical feedthrough	1 Nos	Suitable no. of pins must be provided to support all required electrical & signal connections.
c.	Temperature sensor feedthrough	2 Nos	<ul style="list-style-type: none"> • One for connecting silicon diode/germanium RTD type temperature sensors to the DAQ • Another one is for connecting T-type thermocouple (20Nos) to the DAQ (Refer Appendix 3., provided at the end of this document)
d.	Vacuum bellow with push rod for mechanical loading	1 Nos	With suitable dimensions
e.	Dummy port	2 Nos	<ul style="list-style-type: none"> • KF-25(One no.) and • KF-55(One no.)
f.	Front door with glass window	1 Nos	With suitable size.
g.	Support table	1 Nos	<ul style="list-style-type: none"> • The structure should be robust enough to support the entire setup, and its height must allow an average person (5–6 feet tall) to stand comfortably and perform the experimental assembly inside the chamber. • Provision for placing the hydraulic/screw jack
h.	LED lights	As required	Suitable LED lights to increase the visibility inside the chamber with ON/OFF control.

2	Vacuum pumping and measurement system		
	a.	Dry Scroll Pumps	1 Nos
	b.	Turbomolecular Pumps	1 Nos
	c.	Pirani gauge	1 Nos
	d.	Penning gauge	1 Nos

TECHNICAL SPECIFICATION OF
HEATING AND COOLING SYSTEM

S. No.	Items	Quantity	IIT PKD required Specification
1	Heating system		
	a.	Cartridge heater embedded in copper or appropriate enclosing material.	<ul style="list-style-type: none"> a) Should be able to apply 50mW to 500mW at 4K b) Cross section area should be sufficient enough to accommodate specimen diameter of 10 mm to 25 mm c) Controlled by programmable DC power supply. (Refer SN: 1 in Appendix 1 provided along Technical Specifications document)
	b.	Programmable DC power supply.	<ul style="list-style-type: none"> a) To control the heater and should be able to apply variable heat load as a function of time. b) Suitable graphical interface or LabVIEW based GUI
	c.	Temperature sensor to monitor the heater temperature	<ul style="list-style-type: none"> a. To monitor the heater temperature b. Calibrated diode type sensors or Germanium RTDs - 1 nos <p>(Refer SN: 2 in Appendix 1 provided at the end of this document)</p>
	d.	Thermal insulation block	<ul style="list-style-type: none"> (a) To isolate the experimental stack, thermally from the structure, so that heat infiltration to the stack is minimized. (Refer Appendix 2., provided at the end of this document) (b) With high compressive strength at 4K (Materials like G10CR (Refer SN: 3 in Appendix 1 provided at the end of this document), Vespel SP-22, Zirconia and Glass fiber can be considered)

			<p>(c) One insulation block above the heater (top side) another insulation block below the cryostrap (bottom side)</p> <p>(d) Dimension needs to be fixed after the final design.</p>
e.	Heat flux meter	1 Nos	<p>Either a high thermal conductivity material block instrumented with temperature sensors or flexible heat flux sensors embedded in high thermal conductivity material (copper).</p> <p>(Refer SN: 4 in Appendix 1 provided at the end of this document)</p>
f.	Suitable connectors and feedthroughs	NA	As per requirement.
2	Cooling system		
a.	Two Stage GM type cryocooler with compressor and other required components.	1 Nos	<p>a. Second stage: 1.5 W at 4K, First stage: $\approx 50\text{W}$ at 40–60K</p> <p>b. Make: SUMITOMO/SHI cryocooler, Leybold Cryocoolers, Cryomech Cryocoolers</p> <p>(Refer SN: 5 in Appendix 1 provided at the end of this document)</p>
b.	Thermal strap to cool the stack (Heat sink)	1 Nos	<p>a) Connect the second stage of the cryocooler to the experimental stack (should be flexible)</p> <p>b) Placed below the lower test specimen in the stack, act as a heat sink in the stack</p> <p>c) Total conductance of the strap should be 1.5 W/K or more at 4K.</p> <p>d) Cross section area should be sufficient enough to accommodate specimen diameter of 10 mm to 25 mm</p> <p>(Refer SN: 6 in Appendix 1 provided along with the Technical Specifications document)</p>
c.	Radiation shield with active temperature control	1 Nos	<p>(a) Preferably polished aluminium (emissivity less than 0.15)</p> <p>(b) Use a two-part longitudinal split design, to enable easy insertion of specimens, and anchor it to the structure with a hinged joint to allow rotation.</p>

			<p>(c) Actively cooled using the first stage of the cryocooler.</p> <p>(d) Provision to place Multi Layer Insulation with minimum inner diameter 50-60 mm (MLI will be under the scope of IIT Palakkad)</p>
d.	Thermal strap to connect the radiation shield	1 or 2 Nos (Suitable number may be selected to meet the requirement of active cooling(40-60K))	<p>a. To connect the radiation shield to the first stage of cryocooler, (should be flexible)</p> <p>Total conductance of the strap should be 10-12 W/K or more at 50K. (Refer SN: 6 in Appendix 1 provided at the end of this document)</p>
e.	Suitable connectors and feedthroughs	NA	As per requirement.
f.	Temperature sensor to monitor the thermal strap temperature.	2 Nos	Calibrated diode type sensors or Germanium RTDs (under the scope of IIT Palakkad) (Refer SN: 7 in Appendix 1 provided along with the Technical Specifications document)
g.	Temperature sensors instrumented to the specimens	10 Nos	Calibrated diode type sensors or Germanium RTDs (under the scope of IIT Palakkad). sufficient number of pins should be provided in the temperature sensor feedthrough.
3	Data acquisition system	1 Nos	To record and monitor the temperature, (LabVIEW based GUI preferred)
4	Lead wires and temperature sensor extension wires	As per requirement.	<p>a. High electrical conductivity and very low thermal conductivity</p> <p>b. Preferably Phosphor bronze wires (Refer SN: 8 in Appendix 1 provided at the end of this document)</p>

TECHNICAL SPECIFICATION OF
MECHANICAL LOADING SYSTEM

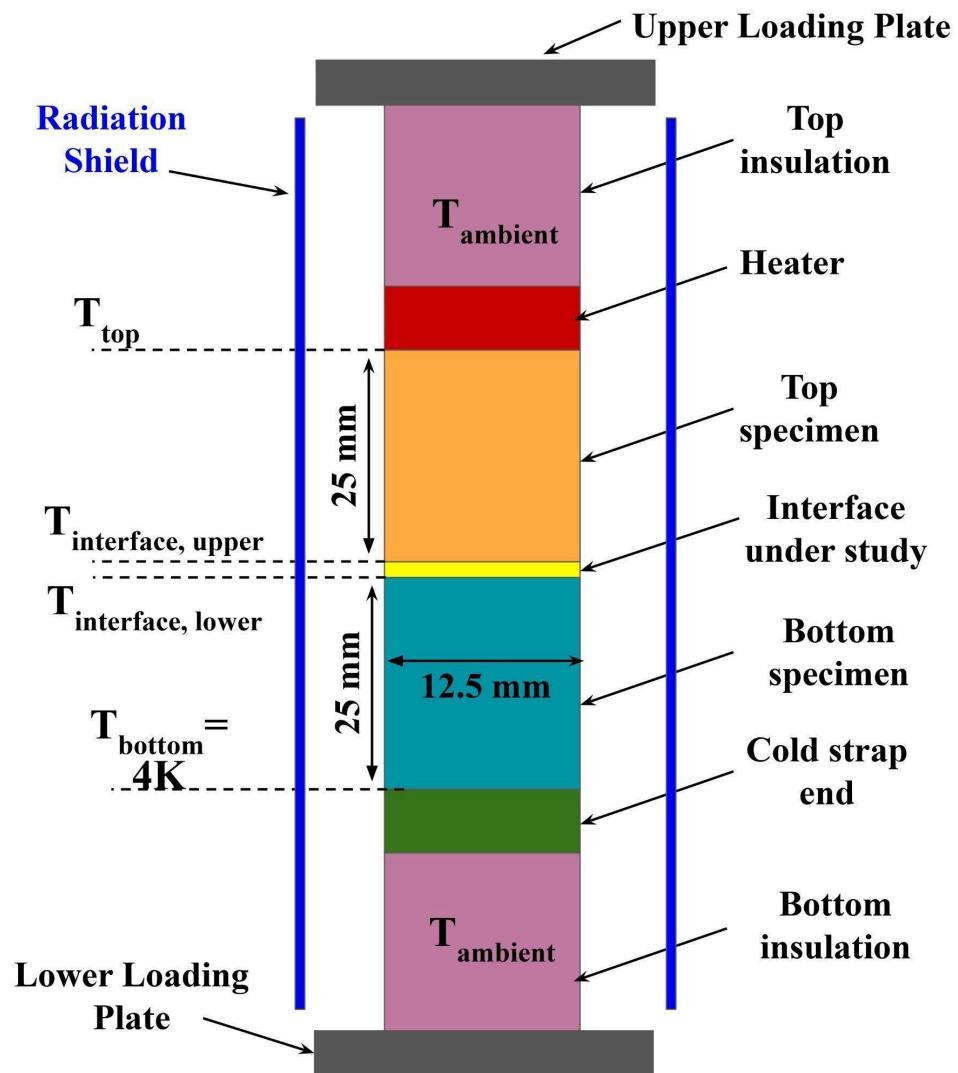
S. No.	Items	Quantity	IIT PKD required Specification
1	Loading mechanism		
a.	Screw jack with a ball screw linear actuator (or) Hydraulic jack with pump and accumulators	1 Nos	<ul style="list-style-type: none"> a) Force range: 0.2 kN to 10 kN b) Computer controlled actuation mechanism. c) The loading should be able to automated using a software and precise adjust should be possible (steps of 0.1kN) d) Should be feedback based system to maintain constant load e) Should be able to apply time varying mechanical load f) Monitoring and control using LabVIEW based GUI (Refer Appendix 4 provided at the end of this document)
b.	Push rod with vacuum bellow	(1 Nos)	As per the requirement. (Refer Appendix 4 provided at the end of this document)
c.	Loading structure with top and bottom loading plate	(1 Nos)	Adjustable height using spring and lock nut arrangement. (Refer Appendix 4 provided at the end of this document)
2	Compression type load cell	(1 Nos)	<ul style="list-style-type: none"> a. Capable of measuring a force of 0.2 kN to 10 kN b. Sensitive to 0.01 kN c. Monitoring using LabVIEW based GUI

FUNCTIONAL REQUIREMENT OF EXPERIMENTAL SETUP FOR THE MEASUREMENT OF THERMAL CONTACT CONDUCTANCE AT CRYOGENIC TEMPERATURES	
1	Controlling of heater, controlling and monitoring of mechanical load and, temperature monitoring and recording should be done through LabVIEW based GUI
2	The whole system should be able to operate for a prolonged duration of time continuously (Approximately 1-2 days)
3	Should be able to maintain a high vacuum of the order of 1×10^{-6} mbar for prolonged duration continuously (Approximately 1-2 days)
4	Compatibility of all the components and material to cryogenic temperature should be confirmed.
5	The calibration report of all the components should be provided at the time of installation
6	Pre-delivery inspection should be carried out and the trial test data should be provided before dispatch of the equipment.
7	3 year standard warranty and optional 2 year Annual Maintenance Contract (AMC) for fourth and fifth year should be provided.

Appendix 1

SN	Similar Products/ Remarks
1	https://www.lakeshore.com/products/categories/specification/temperature-products/cryogenic-accessories/miscellaneous-cryogenic-accessories
2	https://www.lakeshore.com/products/categories/temperature-products/cryogenic-temperature-sensors?srsltid=AfmBOoplK3bsHixnn65baWG6pzkZM1kTFbhtVbnVkeLhlZhRjkalD1WI
3	https://www.atlasfibre.com/the-advantage-of-g10-composite-in-advanced-cryogenic-equipment/#:~:text=Cryogenic%20grade%20G%2D10%27s%20composition,to%20maintain%20ultra%2Dlow%20temperatures.
4	https://in.omega.com/pptst/UHF-HFS-SERIES.html
5	https://shicryogenics.com/product/rdk-415d2-4k-cryocooler-series/
6	https://thermal-space.com/copper-thermal-straps/
7	https://www.lakeshore.com/products/categories/temperature-products/cryogenic-temperature-sensors?srsltid=AfmBOoplK3bsHixnn65baWG6pzkZM1kTFbhtVbnVkeLhlZhRjkalD1WI
8	https://www.lakeshore.com/products/categories/specification/temperature-products/cryogenic-accessories/cryogenic-wire

Appendix 2
SCHEMATIC OF THE EXPERIMENTAL STACK



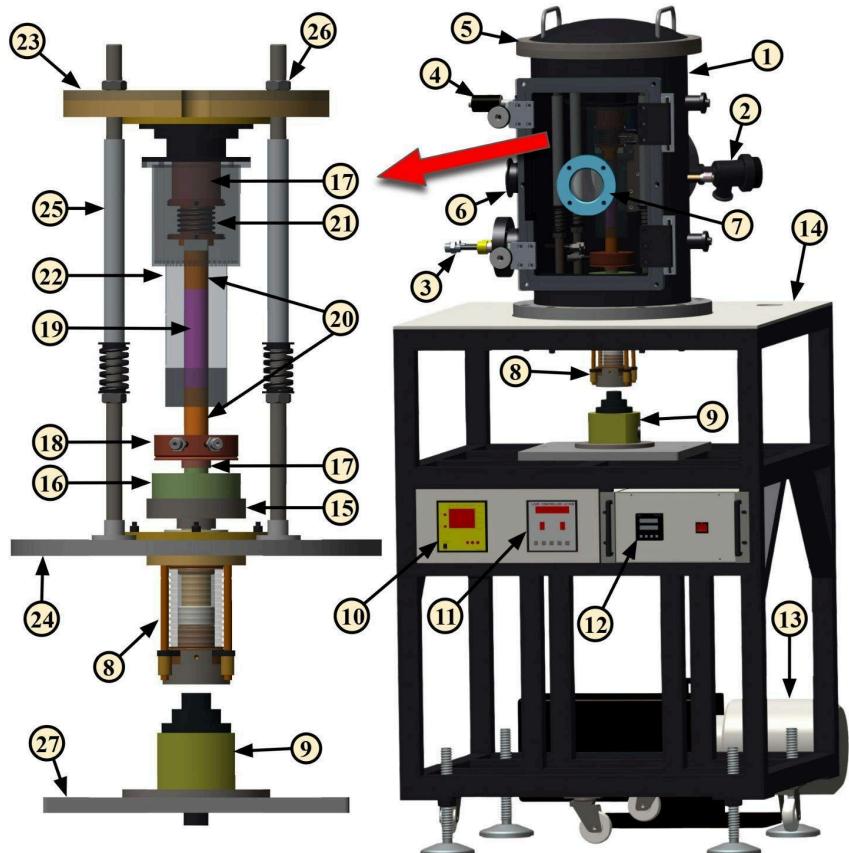
Appendix 3

T-TYPE THERMOCOUPLE VACUUM FEED THROUGH WITH 40 PIN



Appendix 4

SIMILAR EXPERIMENTAL SETUP ALREADY EXISTING AT IIT PALAKKAD

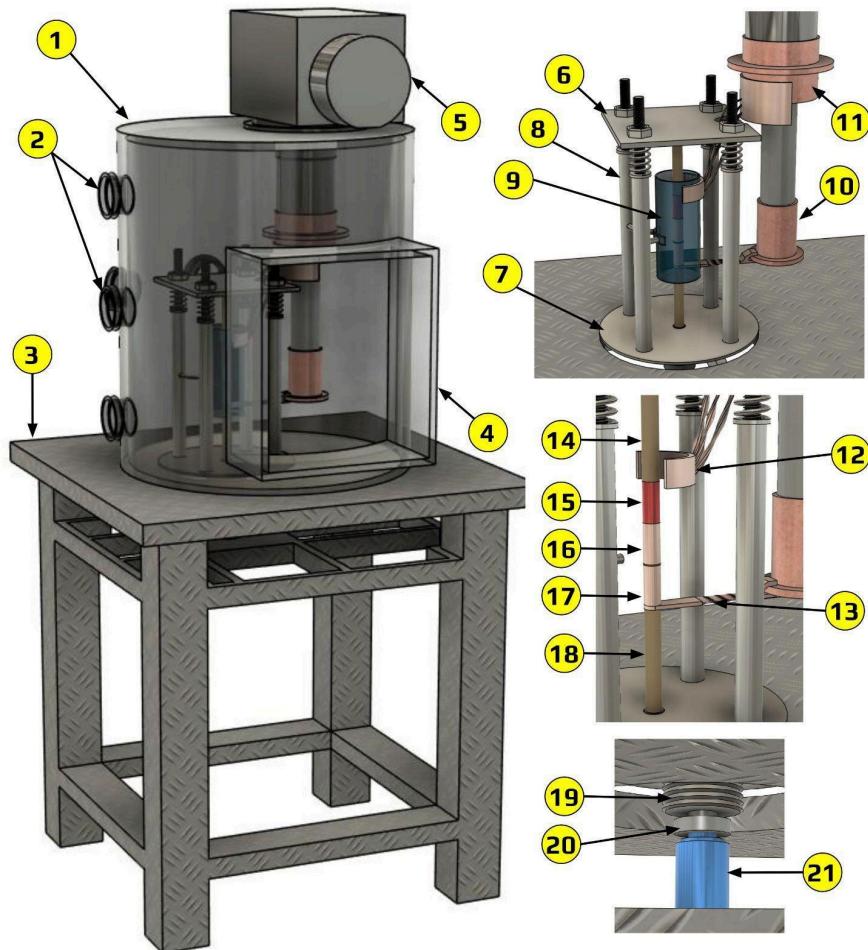


- 1. Vacuum chamber
- 2. Vacuum valve
- 3. Liquid feedthrough
- 4. PIRANI Gauge
- 5. Top flange
- 6. Thermocouple feedthrough
- 7. Glass window
- 8. Vacuum bellow
- 9. Screw jack
- 10. Heater PID controller
- 11. Load cell display
- 12. Pirani gauge display
- 13. Rotary pump
- 14. Supporting table
- 15. Load cell support
- 16. Load cell
- 17. ISOMAG 175 insulation
- 18. Copper heat sink
- 19. Test specimens
- 20. Copper isothermal block
- 21. Heater
- 22. Radiation insulation
- 23. Top loading plate
- 24. Bottom loading plate
- 25. Guide sleeve
- 26. Locking nut
- 27. Jack resting plate

Appendix 5

Conceptual design of the experimental setup and its components

Conceptual Design of Experimental Setup



1. Vacuum Chamber	8. Supporting columns	16. Upper specimen
2. Vacuum, electrical, thermocouple feedthrough ports	9. Radiation shield	17. Lower specimen
3. Supporting table	10. Cryocooler 2 nd stage	18. Bottom insulation block
4. Front transparent door	11. Cryocooler 1 st stage	19. Vacuum bellow with push rod
5. RDK-415D Cryocooler	12. Thermal strap (radiation shield)	20. Load cell
6. Top loading plate	13. Thermal strap (2 nd stage)	21. Hydraulic / Screw jack
7. Bottom loading plate	14. Top insulation block	
	15. Heater	

UNDERTAKING BY THE BIDDER
(TO BE SUBMITTED ONLY THROUGH ONLINE MODE IN APPROPRIATE FORMAT)

We here by accept all the Terms and Conditions of the Tender Document and strictly adhere to the same in the event of getting Purchase order. We also declare that the Technical and Financial Bids submitted by us has NO DEIVATION from the Tender Terms and Conditions.

We hereby accept that the PRICES OF THE EQUIPMENTS/ITEMS QUOTED ARE AS PER THE INCOTERMS 2022 - DDP MODE, IIT PALAKKAD AND CLAUSE NO.6 OF THE TENDER DOCUMENT.

We hereby undertake that there are _____ pages, serially numbered, in the submitted tender including the supporting documents. (Please serially number all the pages including blank page, if any).

We have submitted our principal's exclusive authorization letter which is specific for this tender No. _____ dated _____.

Note: This letter should be on the letterhead of the quoting firm and should be signed by a Competent Authority.

FALL CLAUSE NOTICE CERTIFICATE
(TO BE SUBMITTED ONLY THROUGH ONLINE MODE IN APPROPRIATE FORMAT)

This is to certify that we have offered the maximum possible discount to you in our Quotation No. _____ dated _____ **(Please do not reveal the prices here, which will lead to outright rejection of your bid).**

The prices charged for the Stores supplied under tender should under no event be higher than the lowest prices at which the party sells the items of identical description to any other Govt. organization/PSU's/Central Govt., /State Govt. Autonomous bodies/Central/state Universities/Central/State Educational Institutions, failing which the "FALL CLAUSE" will be applicable. The institute will look into a reasonable past period to ensure this.

In case, if the price charged by our firm is found to be more, **IIT Palakkad** will have the right to recover the excess charged amount from the subsequent/unpaid bill of the supplier.

Note: This letter of authority should be on the letterhead of the quoting firm and should be signed by a Competent Authority and having the power of attorney.

UNDERTAKING REGARDING BLACKLISTING / NON – DEBARMENT

Tender No. _____

To,
M/s. Indian Institute of Technology Palakkad
Kanjikode, Palakkad, Kerala 678623.

We hereby confirm and declare that we, M/s _____ are not blacklisted/ De-registered / debarred by any Government department/ Public Sector Undertaking/ Private Sector/ or any other agency for which we have Executed/ Undertaken the works/ Services.

For
Company Name and Seal
Authorised Signatory

Note: This letter should be on the letterhead of the quoting firm and should be signed by a Competent Authority.

FORMAT FOR SELF-CERTIFICATION UNDER PREFERENCE TO MAKE IN INDIA
(TO BE SUBMITTED ONLY THROUGH ONLINE MODE IN APPROPRIATE FORMAT)

Format for Affidavit of Self-Certification regarding Minimum Local Content in line with “Make in India” Policy vide GoI Order no. P-45021/2/2017-PP (B.E.-II) dated 15.06.2017 (subsequently revised vide orders dated 28.05.2018, 29.05.2019 and 04.06.2020)

Date: _____

I/We _____ S/o, D/o, W/o, _____

Resident of _____

Hereby solemnly affirm and declare as under:

That I will agree to abide by the terms and conditions of the Public Procurement (Preference to Make in India) Order, 2017 (hereinafter PPP-MII order) of Government of India issued vide Notification No:P-45021/2/2017-BE-II dated 15/06/2017, its revision dated 28/05/2018 and any subsequent modifications/Amendments, if any and

That the local content for all inputs which constitute the said goods/services/works has been verified by me and I am responsible for the correctness of the claims made therein.

Tick (✓) and Fill the Appropriate Category	
<input type="checkbox"/>	I/We _____ [name of the manufacturer] hereby confirm in respect of quoted items(s) that Local Content is equal to or more than 50% and come under “ Class-I Local Supplier ” category.
<input type="checkbox"/>	I/We _____ [name of the manufacturer] hereby confirm in respect of quoted items(s) that Local Content is more than 20% but less than 50% and come under “ Class-II Local Supplier ” category.
<input type="checkbox"/>	I/We _____ [name of the manufacturer] hereby confirm in respect of quoted items(s) that Local Content is less than or equal to 20% come under “ Non-Local Supplier ” category.

For and on behalf of..... (Name of firm/entity)

Authorized signatory (To be duly authorized by the Board of Directors)
 <Insert Name, Designation and Contact No.>

[Note: In case of procurement for a value in excess of Rs. 10 Crores, the bidders shall provide this certificate from statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.]