

	<p style="text-align: center;">INDIAN INSTITUTE OF TECHNOLOGY MADRAS Chennai 600 036</p> <p>Telephone: [044] 2257 9798/9723 FAX: [044] 2257 4899 E-mail: arpp@iitm.ac.in</p>	 <p style="text-align: center;">TUV CERT EN ISO 9001 Certificate : 041009423 RWTUV</p>
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V. Sathyanarayanan
Senior Manager (Project Purchase)

Ref: PHY/DKST/001/2018
Date: 20.11.2018

Open Tender No: PHY/DKST/001/2018

Due Date: 10th December 2018, 3pm

Pre-Bid meeting: - Not required.

Technical Bid opening meeting on 10th December 2018, 4:00 PM at Department of Physics, IIT-Madras.

Dear Sir/Madam,

On behalf of the Indian Institute of Technology Madras, offers are invited for the supply of “**Seebeck and Electric Resistivity Measurements**” conforming to the specifications given in Annexure I.

Vendor who can supply and integrate the above equipment alone need to respond to the tender please.

Instructions to the Bidder

- I. Preparation of Bids:** - The tenders should be submitted under two-bid system (i.e.) Technical bid and Financial bid.
- II. Delivery of the tender:** - The tender shall be sent to the addresses mentioned below, either by post or by courier so as to reach our office before the due date and time specified in our schedule. The offer/bid can also be dropped in the tender box on or before the due date and time specified in the schedule. The tender box is kept in the office of the:

**Senior Manager,
Project Purchase,
IC & SR Building 2nd floor,
I.I.T. Madras,
Chennai – 600 036.**

III. Opening of the tender: - The offer/bids will be opened by a committee duly constituted for this purpose. The technical bids will be opened first and will be examined by a technical committee which will decide the suitability of the bids as per our specifications and requirements. All bidders will be invited for opening of the technical bids. With respect to opening the financial bid, only technically qualified bidders will be called.

IV. Prices: - The price should be quoted in net per unit (after breakup) and must include all packing and delivery charges to the **Department of Physics**. The offer/bid should be exclusive of taxes and duties. The percentage of tax & duties should be clearly indicated separately. Kindly note that IIT Madras is eligible for concessional GST and relevant certificate will be issued.

In case of import supply, the price should be quoted without custom duty. IIT Madras is exempted from levy of IGST on Imports and eligible for concessional custom duty (not exceeding 5%) and the price should be quoted on EX-WORKS and CIP basis indicating the mode of shipment.

V. Agency Commission: - Agency commission, if any, will be paid to the Indian agents in rupees after receipt of the equipment and its satisfactory installation. Agency Commission will not be paid in foreign currency under any circumstances. The details should be explicitly shown in the tender document even in the case of 'Nil' commission. The tenderer should indicate the percentage of agency commission to be paid to the Indian agent. The foreign Principal should indicate the percentage of payment and it should be included in the basic price quoted originally (if any)..

VI. Terms of Delivery: - The item should be supplied to the **Department of Physics, IIT Madras** as per the Purchase Order. In case of import supply, the item should be delivered at the cost of the supplier to our Institution. The Installation/Commissioning should be completed as specified in our important conditions.

VII. Technical Bid Opening: The technical bid will be on 10th December 2018, 4:00 PM at the **Department of Physics, IIT-Madras**. The financial bids of those tenders who are technically qualified will be opened at a later date under intimation to them.

VIII. IIT Madras reserves the full right to accept / reject any tender at any stage without assigning any reason.

Yours sincerely,

V. Sathyanarayanan
Senior Manager (Project Purchase)
IC&SR Building, I.I.T. Madras,
Chennai - 600 036.

SCHEDULE

Important Conditions of the tender

1. The due date for the submission of the tender is **10.12.2018, 3 pm.**

The offers / bids should be submitted in two bids systems (i.e.) Technical bid and financial bid. The Technical bid should consist of all technical details / specifications only. The Financial bid should indicate item-wise price for each item and it should contain all Commercial Terms and Conditions including Taxes, transportation, packing & forwarding, installation, guarantee, payment terms, pricing terms etc. The Technical bid and financial bid should be put in separate covers and sealed. Both the sealed covers should be put in a bigger cover. The Open Tender for supply of **“Seebeck and Electric Resistivity Measurements”** should be written on the left side of the Outer bigger cover and sealed.

2. **EMD: - The EMD in the form of account payee DD for 2% value of the item in favor of Registrar IIT Madras should be enclosed in the cover containing financial bid.** Any offer not accompanied with the EMD shall be rejected summarily as non-responsive.

The EMD of the unsuccessful bidders shall be returned within 30 days of the end of the bid validity period. The same shall be forfeited, if the tenderers withdraw their offer after the opening during the bid validity period. The Institute shall not be liable for payment of any interest on EMD. EMD is exempted for Micro and Small Enterprises (MSE) as defined in MSE Procurement Policy issued by Department of Micro, Small and Medium Enterprises (MSME).

When no local agent, the foreign vendor can submit demand draft equal to 2% or wire transfer the amount to our account as detailed in the attachment (Annexure II) and enclose the proof with the financial bid.

3. **Performance Security: -** The successful bidder should submit Performance Security for an amount of 5% of the value of the contract/supply. The Performance Security may be furnished in the form of an Account Payee DD, FD Receipt from the commercial bank, Bank Guarantee from any nationalized bank in India. **The performance security should be furnished within 21 days from the delivery of the purchase order.**

Performance Security in the form of Bank Guarantee:- In case the successful bidder 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 has to submit a Bank Guarantee from a Nationalized Bank of India.

The Bank Guarantee should remain valid for a period of sixty days beyond the date of completion of all contractual obligations of the supplier including the warranty obligations.

4. **Indian agent:** If an Indian agent is involved, the following documents must be enclosed:

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.

5. The offer/bids should be sent only for a machine 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.
6. 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.
7. Compliance or Confirmation report with reference to the specifications and other terms & conditions should also be obtained from the principal.
8. **Validity:** Validity of Quotation not less than 90 days from the due date of tender.
9. **Delivery Schedule:** - The tenderer should indicate clearly the time required for delivery of the item (subjected to the executive committee-IITMadras approval). 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. If there is delay, the penalty will be @1% per week of delay subject to a max of 10% of the value of purchase order and if the delay is more than accepted time frame by IITM, the PO would be cancelled and liquidated damages will be enforced.
10. **Risk Purchase Clause:-** In the 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 other sources on the total risk of the supplier under risk purchase clause.
11. **Payment:-**
 - (i) No Advance payment will be made for Indigenous purchase. However 90% Payment against Delivery and 10% after installation are agreed to wherever the installation is involved. In case of import supplies the payment will be made only through 100% Letter of Credit i.e. (90% payment will be released against shipping documents and 10% after successful installation wherever the installation is being done).
 - (ii) **Advance Payment:** No advance payment is generally admissible. In case of specific percentage of advance payment is required, the Foreign Vendor has to submit a Bank Guarantee equal to the amount of advance payment and it should be routed through the Beneficiary Bank to the end user Bank. Otherwise, the Indian Agent of the foreign vendor has to submit a Bank Guarantee through a Nationalized Bank of India.
12. **On-site Installation:** - The equipment or machinery has to be installed or commissioned by the successful bidder within 15 to 20 days from the date of receipt of the item at site of IIT Madras.
13. **Warranty/Guarantee:** - Warranty/Guarantee should be as per the tender requirement. (For more details please refer our Technical Specifications).
14. **Late offer:** - The offers received after the due date and time will not be considered. The Institute shall not be responsible for the late receipt of Tender on account of Postal, Courier or any other delay.
15. **Acceptance and Rejection:** - I.I.T. Madras has the right to accept the whole or any part of the Tender or portion of the quantity offered or reject it in full without assigning any reason.

16. **Do not quote the optional items or additional items unless otherwise mentioned in the Tender documents / Specifications.**

17. **Disputes and Jurisdiction:**

Settlement of Disputes: Any dispute, controversy or claim arising out of or in connection with this PO including any question regarding its existence, validity, breach or termination, shall in the first instance be attempted to be resolved amicably by both the Parties. If attempts for such amicable resolution fails or no decision is reached within 30 days whichever is earlier, then such disputes shall be settled by arbitration in accordance with the Arbitration and Conciliation Act, 1996. Unless the Parties agree on a sole arbitrator, within 30 days from the receipt of a written request by one Party from the other Party to so agree, the arbitral panel shall comprise of three arbitrators. In that event, the supplier will nominate one arbitrator and the Project Coordinator of IITM shall nominate an arbitrator. The Dean IC&SR will nominate the Presiding Arbitrator of the arbitral tribunal. The arbitration proceeding shall be carried out in English language. The cost of arbitration and fees of the arbitrator(s) shall be shared equally by the Parties. The seat of arbitration shall be at IC&SR IIT Madras, Chennai.

- a. **The Applicable Law:** This Purchase Order shall be construed, interpreted and governed by the Laws of India, Court at Chennai shall have exclusive jurisdiction subject to the arbitration clause.
- 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 the city of Chennai in Tamil Nadu.

20. All Amendments, time extension, clarifications etc., will be uploaded on the website only and will not be published in newspapers. Bidders should regularly visit the above website to keep themselves updated. No extension in the bid due date/ time shall be considered on account of delay in receipt of any document by mail.

Acknowledgement: - It is hereby acknowledged that the tenderer has gone through all the conditions mentioned above and agrees to abide by them.

**SIGNATURE OF TENDERER
ALONG WITH SEAL OF THE
COMPANY WITH DATE**

ANNEXURE-I

Equipment description Instrument capable of simultaneously measuring electrical resistivity and Seebeck co-efficient and other accessories herein after referred to as “thermoelectric property measurement system”, complying with the specifications listed below.

A. Minimum technical specifications for one unit of thermoelectric property measurement system:

S.No.	Parameter	Specification
1.	Nature of Sample	a) Instrument must be capable of measuring resistivity and Seebeck coefficients of polymers, ceramics, inorganic materials and their composites. b) Instrument must be capable of measuring thin film samples having minimum 10 µm thickness in rectangular geometry and coated on a solid substrate. c) The equipment should be capable measuring the resistivity and Seebeck coefficients for rectangular bulk samples with thickness more than 1 mm
2.	Temperature Range	Starting form -100 °C to 800 °C with a temperature Measurement Accuracy of ± 2 °C or less .
3.	Temperature Controller	PID control; Programmable temperature controller with facility to control temperature at both ends of the sample.
4.	Seebeck Co-efficient Measurement	Range: 50 µV/K to 1 mV/ K Resolution: 10 nV/K or less Repeatability: ± 5 % or better Accuracy: ± 10 % or better
5.	Resistance Measurement	Four Probe Method Range: 50 µΩ to 100 kΩ Resolution: atleast 15 nΩ Repeatability: ± 5 % or better Accuracy: ±10 % or better
6.	Measurement atmosphere	He, Ar and N ₂ atmosphere and Vacuum (10 ⁻² bar or better)
7.	Contact checking	I-V measurements should be possible to check the contact between probe and sample.

8.	Software	<ul style="list-style-type: none"> a) Graphical user interface for automatic measurement. b) Programmable temperature difference at a specified temperature. c) Programmable measurement steps up to a minimum of 100 in the entire temperature range (-100 °C to 800 °C). d) Latest licensed version of the software for control, operation and analysis.
9.	Display Language	English
10.	Power Supply	AC 230 V, 50 Hz
11.	Safety features	Instrument should be in compliance with international norms for safety and environment.
12.	Calibrations and Standards	<ul style="list-style-type: none"> a) Reference sample/samples must be provided for the entire temperature range from -100 °C to 800 °C. b) The measurement unit must be pre-calibrated. c) Extent of calibration and validity must be specified.
13.	Instruction Manual	Hard copy of detailed technical manual must be provided.
14.	Consumables and Peripherals	<ul style="list-style-type: none"> a) Separate detachable and reusable sample holder for thin films measurements. b) The coated thin film along with the substrate must be loadable on the thin film sample holder for measurements. c) Separate electrode plates for the thin film sample holder must be provided for better contact with the current probes. d) All essential consumables (voltage electrodes, thermocouples, current probes, electrode plates, thin film sample holder) and peripherals such as heater, chiller, cryostat, pump, etc., should be included in the quotation.
15.	Installation, commissioning and training	<ul style="list-style-type: none"> a) The delivery should be considered complete only after successful commissioning of the instrument. b) The pre-installation requirements should be communicated to IIT Madras well in advance of the installation. c) The installation, commissioning and training must be done only by well trained personnel. d) The vendor should provide training to at least 3 persons at the installation site to make them familiar with the smooth operation of the instrument. e) Demonstrate all the specified accuracy, resolution and repeatability of the measurement on the standard sample.
16.	After-sales service	The supplier should provide prompt service, regular maintenance, troubleshooting and fixing.
17.	Annual Maintenance Cost	Mention the cost of annual maintenance for each year for five years after the completion of warranty period.
18.	Required Documents	Bidders must submit the details of the service engineers and their locations in India who are competent to service the equipment being quoted.

19.	Installations in the country	a) The bidders should provide a list of installations of thermoelectric property measurement systems or similar equipment at centrally funded institutes such as IITs, IISc, NISER, IISERs, Central Universities, DRDO laboratories, CSIR Laboratories, ISRO, DAE institutions etc in India during last five years . Submit the list of installations with the name(s) of the user. b) Provide customer satisfaction certificates from the end users where the instruments are installed in last five years .
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B. Other requirements

1.	On-site installations and testing at IIT Madras Lab, Chennai is required.
2.	CIF/ CIP price (Chennai) is only acceptable and to be quoted.
3.	Warranty should be 24 months from the acceptance of the equipment or 27 months from the delivery whichever is later.
4.	Manufacturer should be in a position to supply the accessories on demand for the next 10 years after installation of the equipment.
5.	Bidders must submit the point-wise technical compliance statement supported with the relevant technical literature along with the bid (use Annexure II).
6.	The original equipment manufacturer (OEM) is encouraged to quote. If the OEM chooses to quote through the Indian representative they must provide a valid authorization certificate.

C. Optional Requirements

1.	Spares and Accessories	a) Six pairs of Thermocouples b) Six pairs electrodes c) Camera for measuring the distance between probes d) Other relevant spare parts must be included.
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ANNEXURE-II

Equipment description: Instrument capable of simultaneously measuring electrical resistivity and Seebeck co-efficient and other accessories herein after referred to as “thermoelectric property measurement system”, complying with the specifications listed below.

A. Minimum technical specifications for one unit of thermoelectric property measurement system, please tick wherever applicable:

S.No.	Parameter	Specification	Compliance	
			Yes	No
1	Nature of Sample	a) Instrument must be capable of measuring resistivity and Seebeck coefficients of polymers, ceramics, inorganic materials and their composites.		
		b) Instrument must be capable of measuring thin film samples having minimum 10 μm thickness in rectangular geometry and coated on a solid substrate.		
		c) The equipment should be capable measuring the resistivity and Seebeck coefficients for rectangular bulk samples with thickness more than 1 mm		
2.	Temperature Range	Starting form -100 °C to 800 °C with a temperature Measurement Accuracy of ± 2 °C or less.		
3.	Temperature Controller	PID control; Programmable temperature controller with facility to control temperature at both ends of the sample.		
4.	Seebeck Co-efficient Measurement	Range: 50 $\mu\text{V/K}$ to 1 mV/ K		
		Resolution: 10 nV/K or less		
		Repeatability: ± 5 % or better		
		Accuracy: ± 10 % or better		
5.	Resistance Measurement	Four Probe Method		
		Range: 50 $\mu\Omega$ to 100 k Ω		
		Resolution: atleast 15 n Ω		
		Repeatability: ± 5 % or better		
		Accuracy: ± 10 % or better		
6.	Measurement atmosphere	He, Ar and N ₂ atmosphere and Vacuum (10 ⁻² bar or better)		

7.	Contact checking	I-V measurements should be possible to check the contact between probe and sample.		
8.	Software	a) Graphical user interface for automatic measurement.		
		b) Programmable temperature difference at a specified temperature.		
		c) Programmable measurement steps up to a minimum of 100 in the entire temperature range (-100°C to 800°C).		
		d) Latest licensed version of the software for control, operation and analysis.		
9.	Display Language	English		
10.	Power Supply	AC 230 V, 50 Hz		
11.	Safety features	Instrument should be in compliance with international norms for safety and environment.		
12.	Calibrations and Standards	a) Reference sample/samples must be provided for the entire temperature range from -100°C to 800°C		
		b) The measurement unit must be pre-calibrated.		
		c) Extent of calibration and validity must be specified.		
13.	Instruction Manual	Hard copy of detailed technical manual must be provided.		
14.	Consumables and Peripherals	a) Separate detachable and reusable sample holder for thin films measurements		
		b) The coated thin film along with the substrate must be loadable on the thin film sample holder for measurements.		
		c) Separate electrode plates for the thin film sample holder must be provided for better contact with the current probes.		
		d) All essential consumables (voltage electrodes, thermocouples, current probes, electrode plates, thin film sample holder) and peripherals such as heater, chiller, cryostat, pump, etc., should be included in the quotation.		
15.	Installation, commissioning and training	a) The delivery should be considered complete only after successful commissioning of the instrument.		
		b) The pre-installation requirements should be communicated to IIT Madras well in advance of the installation.		
		c) The installation, commissioning and training must be done only by well trained personnel.		
		d) The vendor should provide training to at least 3 persons at the installation site to make them familiar with the smooth operation of the instrument.		
		e) Demonstrate all the specified accuracy, resolution and repeatability of the measurement on the standard sample.		
16.	After-sales service	The supplier should provide prompt service, regular maintenance, troubleshooting and fixing.		

17.	Annual Maintenance Cost	Mention the cost of annual maintenance for each year for five years after the completion of warranty period.		
18.	Required Documents	Bidders must submit the details of the service engineers and their locations in India who are competent to service the equipment being quoted.		
19.	Installations in the country	a) The bidders should provide a list of installations of thermoelectric property measurement systems or similar equipment at centrally funded institutes such as IITs, IISc, NISER, IISERs, Central Universities, DRDO laboratories, CSIR Laboratories, ISRO, DAE institutions etc in India during last five years . Submit the list of installations with the name(s) of the user.		
		b) Provide customer satisfaction certificates from the end users where the instruments are installed in last five years .		

B. Other Requirements

1.	On-site installations and testing at IIT Madras Lab, Chennai is required.		
2.	CIF/ CIP price (Chennai) is only acceptable and to be quoted.		
3.	Warranty should be 24 months from the acceptance of the equipment or 27 months from the delivery whichever is later.		
4.	Manufacturer should be in a position to supply the accessories on demand for the next 10 years after installation of the equipment.		
5.	Point-wise technical compliance statement supported with the relevant technical literature along with the bid is submitted using Annexure II.		
6.	The original equipment manufacturer (OEM) is encouraged to quote. If the OEM chooses to quote through the Indian representative they must provide a valid authorization certificate.		

C. Optional requirements

1.	Spares and Accessories	a) Six pairs of Thermocouples		
		b) Six pairs electrodes		
		c) Camera for measuring the distance between probes		
		d) Other relevant spare parts must be included.		



CENTRE FOR INDUSTRIAL CONSULTANCY & SPONSORED RESEARCH (IC&SR)
INDIAN INSTITUTE OF TECHNOLOGY MADRAS
CHENNAI 600 036



B NAGARAJAN
JOINT REGISTRAR (IC & SR)

Project Accounts
July 22, 2016

TO WHOMSOEVER IT MAY CONCERN

In connection with project, **US currency may be transferred to CANARA BANK, IIT - MADRAS Branch** with the following details.

FOR TRANSFER OF CURRENCY US DOLLAR

Please Credit in USD

(THROUGH)

JP MORGAN CHASE, NEW YORK
SWIFT CODE: CHASUS33

For Credit to

USD ACCOUNT No: 001-1395969, of CANARA BANK INTERNATIONAL DIVISION
MUMBAI

For Further Credit to

ACCOUNT NO: **2722101001741** of IIT Chennai – Swift Code: **CNRBINBBIIT**
OF THE REGISTRAR, IIT, MADRAS


JOINT REGISTRAR (IC & SR) i/c
சீயுக் குலசரீபி (आई.सी. एव एस्.आर.)
JOINT REGISTRAR (IC & SR)
आई.आई.टी. मद्रास
IIT, MADRAS

This is to certify that the particulars furnished are correct.
For Canara Bank

Senior Manager
Senior Manager
Canara Bank - IIT Madras branch



एस. अरविंदन
S.ARVINDAN
सिनिऑर प्रोविन्सिओनल सेनियर मैनेजर
ए.अ.सं. S.P.No.31649

