

 <p>IIT PALAKKAD</p>	<p>भारतीय प्रौद्योगिकी संस्थान पालक्काड  <b>Indian Institute of Technology Palakkad</b>  अहलिया एकीकृत कैम्पस, कोज़िपारा  Ahalia Integrated Campus, Kozhipara  पालक्काड- 678557  Palakkad – 678 557</p>	<p>दूरभाषसंख्या/ Phone no:  04923 – 226 300/590/586</p> <p>ईमेल/ Email :  purchase@iitpkd.ac.in</p>
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Prof. Job Kurian  
Registrar i/c

**Ref : Automated Flow Chemisorption Unit**  
**Date : 28.11.2017**

**Open Tender No: IITPKD/CIF/DJ/075/2017**

**Due Date: 19.12.2017 @ 12.00 PM**

Dear Sir/Madam,

On behalf of the **Indian Institute of Technology, Temporary campus, Palakkad, Quotations are invited for “Automated Flow Chemisorption Unit”**. The Specifications are given in the Annexure.

***Pre-bid meeting – The Pre-bid meeting is scheduled to be held on 11.12.2017 at 10.00 AM in the Conference Room, Academic Block, IIT Palakkad***

***Technical bid Opening: The Technical bid will be opened on 19.12.2017 at 12.00 PM at Conference Room, Academic Block, IIT Palakkad.***

**Instructions to the Bidder**

- (i) **Preparation of Bids:** - The tenders should be submitted **under two-bid system (i.e.) Technical bid and Financial bid in separate envelopes**. The technical bid should consist of all technical details along with commercial terms and conditions. No prices should be included in technical bid. Financial Bid should indicate item – wise prices for the items mentioned in the technical bid. The technical and the financial bids should be put in separate covers and sealed. Both sealed covers should be put into a bigger cover. **Bids must either be spiral bound / stapled together. No loose sheets will be accepted. All pages must be numbered.**
- (ii) The Quotations duly sealed and superscribed on the envelope **with the reference No. and due date, should be addressed to the undersigned so as to reach on or before the due date stipulated above.**
- (iii) **Delivery of the tender:** - The tender shall be sent to the below-mentioned address either by post or by courier so as to reach this office before the due date and time specified in the 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 Academic Block, IIT Palakkad, Ahalia Integrated Campus, Kozhipara, Palakkad-678 557.**

- (iv) **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 bid as per our specifications and requirements. The bidders will be invited for opening of Technical bids. **The Bidder's representative should carry authorization letter from their company empowering them to participate in the Pre-bid and tender opening meetings.** In respect of opening of financial bid, those bidders who are technically qualified only will be called.
- (v) **Prices:** - The price should be quoted in nett per unit (after breakup) and must include all packing and delivery charges indicated separately for each item. **The price indicated should be CIF/CIP Kochi.** The offer/bid should be exclusive of taxes and duties, which will be paid by the purchaser as applicable. The price should be quoted without custom duty. **The custom duty will be paid at concessional rate against duty exemption certificate.**
- (vi) **Agency Commission:** - Agency commission, if any, will be paid to the Indian agents 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 the case of 'Nil' commission. The tenderer should indicate the percentage of agency commission to be paid to the Indian agent. **Terms of Delivery:** - The item should be supplied to our Institute as per Purchase order. The installation and commissioning should be completed as specified **by us in the attached schedule.**
- (vii) **Acceptance & Rejection:** IIT Palakkad reserves the full right to accept / reject any tender at any stage without assigning any reason.

Yours sincerely,

Registrar, IIT Palakkad

## SCHEDULE

### Important Conditions:

- 1) The due date for the submission of the tender is **19.12.2017 @ 12.00 PM**
- 2) 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 (separately), transportation, packing & forwarding charges, installation, guarantee, payment terms, pricing terms etc. The Technical bid and financial bid should be put in separate covers **superscribed clearly as “Technical Bid” and “Financial bid”** and sealed. Both the sealed covers should be put in a bigger cover. Open Tender for “ **Automated Flow Chemisorption Unit**” should be written on the left side of the Outer bigger cover and sealed.
- 3) **EMD: -EMD should be at 2% (two percent) of the tender value quoted by the bidder.** The EMD should be enclosed with the financial bid which will not be opened for Technical evaluation. Enclosing the EMD in the Technical bid will automatically DISQUALIFY the tenderer. EMD should be in the form of DD in favour of “**Indian Institute of Technology Palakkad**” and payable at Palakkad”. The tender without EMD would be considered as UNSOLICITED and will be REJECTED. Photo/FAX copies of the Demand Draft/Banker’s pay orders will not be accepted. No interest will be paid for the EMD and the EMD will be refunded to the successful bidder on receipt of Performance Security.
- 4) **Performance Security:-** The successful bidder will be asked to 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 or FD Receipt from the commercial bank or Bank Guarantee from any nationalized bank of India. **Only after submission of Performance Security, Purchase Order/Work Order will be released / L.C will be opened.**
- 5) **Performance Security in the form of Bank Guarantee:-** 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 has to submit a Bank Guarantee from a Nationalized Bank of India.
- 6) 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.

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.
- 7) The offer/bids should be sent only for a system or equipment 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.
  - 8) 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.
  - 9) Compliance or Confirmation report with reference to the specifications and other terms & conditions should also be obtained from the principal.
- 10) Validity:** Validity of Quotation not less than 90 days from the due date of tender.
- 11) Delivery Schedule:-** 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.
- 12) 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.
- 13) Payment:-** No Advance payment will be made for Indigenous purchase. 100% Payment after supply and successful installation and commissioning and certification by the end user. In case of import supplies the payment will be made only through **100% Letter of Credit i.e. (50% payment will be released against shipping documents and 50% after successful installation and meeting acceptance criteria wherever the installation is being done).** Advance payment may be considered on submission of Bank Guarantee equal to the amount of advance payment.
- 14) On-site Installation:** - The equipment or machinery has to be installed and commissioned by the successful bidder within 15 to 20 days from the date of receipt of the **item at site of IIT Palakkad.**

- 15) Warranty/Guarantee:** - The offer should clearly specify the warranty or guarantee period for the machinery/equipment. Any extended warranty offered for the same has to be mentioned separately. (For more details please refer our Technical Specifications).
- 16) 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.
- 17) Loading and unloading charges will be borne by the bidder/Supplier.**
- 18) Acceptance and Rejection:** - I.I.T. Palakkad 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.
- 19) Do not quote the optional items or additional items unless otherwise mentioned in the Tender documents / Specifications.**
- 20) Disputes and Jurisdiction:** - 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 Palakkad in Kerala.
- 21) All Amendments, time extension, clarifications etc., will be uploaded on the institute 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**

## Specifications for Tender

S.No	Item	Specifications
1	Name of the equipment	Automated Flow Chemisorption and Reactivity Analyzer
2	Description of the equipment	A fully automated dynamic flow adsorption/desorption analyzer capable of performing pulse chemisorption and temperature programmed desorption studies of reactive gases and vapors on solids.
3	Gas inlet ports	4 ports for carrier gas, 4 ports for treatment and atleast 2 ports for gas blending
4	Sample size	Must be able to analyze 0.1 to 1 g of sample
5	Temperature range	Ambient to 1100 °C
6	Temperature ramp rate	10 °C/min to 30 °C/min
7	Measurement capability	The equipment must be capable of carrying out following studies in an automated fashion Temperature Programmed Desorption (TPD), Temperature Programmed Oxidation (TPO), Temperature Programmed Reduction (TPR) and Quantitative Pulse Titration.
8	Operating pressure	Atmospheric
9	Gas flow rates	5 to 50 cm <sup>3</sup> /min
10	Sample cell	Quartz U tubes and bubble tubes
11	Seals	The material used as O rings and seals must be resistant to chemical corrosion in H <sub>2</sub> , NH <sub>3</sub> , CO, CO <sub>2</sub> , O <sub>2</sub> , H <sub>2</sub> O, hydrocarbons.
12	Flow tubings	Software controlled heating (as much as 150 °C) of all the internal tubings and valves upto detectors to prevent condensation. The material of construction must be 316 SS.
13	Mass Flow Controllers	The gas flow systems must be accurately controlled by standard high precision mass flow controllers with flow rates of 5 to 50 cm <sup>3</sup> /min
14	Consumables and spares	Quartz U tubes 1/4" (3 Nos), Quartz U tubes 3/8" bubble (3 Nos) Quartz U tubes 1/2" bubble (3 Nos), Quartz U tubes BET style (3 Nos), Fuses spare set, Septa . 25 numbers of chemically resistant O-rings must be provided as spares.
15	Primary detector	4 gold coated tungsten filament Thermal Conductivity Detector chemically resistant to all the gases to be analyzed.
16	Secondary detector	Upgradability of equipment with attachment of Mass Spectrometer as secondary detector is preferred and therefore MS with all the necessary accessories must be quoted separately.
17	Weight	Should not weigh more than 60 Kg
18	Computer	Equipment should be interfaced with the computer. The specifications of the computer are as follows. The quote must also include 1 unit of desktop with 6 <sup>th</sup> generation Intel core™ i5-7500T processor (6MB Smart

		Cache, Intel HD Graphics 530 or Higher) RAM – 8GB DDR4. HDD – 500GB 7200 RPM SATA Motherboard – OEM Logo should be embedded, No sticker allowed. Operating System – Original Windows 7 or above 64 bit that is completely compatible with the equipment software. Monitor – 24 inch full HD IPS LED 1600X900 resolution with anti glare coating. Optical mouse wired. Standard keypad – wired. Ports – USB 2.0 ports (two numbers), USB 3.0 (one number) for seamless interface with the equipment and data download. The software must be installed and all the features must be useable. If the above configuration is not compatible with the software, then the vendor must specify the configuration.
19	Air compressor	0 – 100 psi air compressor must be quoted as an option to facilitate rapid cooling of the furnace.
20	Electrical	1100 VA, operating max. 220 V, 50 Hz.
21	Mass Flow controller	Additional one No. Of Mass flow controller with 0 – 100 cm <sup>3</sup> /min for gas blending
22	Gas tubings	SS gas tubings, Nuts and Ferrules for gas connections to the equipment
23	Weighing balance	A high precision four digit digital weighing balance capable of measuring upto 0.0001 g. Max limit of weight is 25 g. Accuracy of weight measured must be
24	Software	Software must be able to control the hardware components, flowrates and analysis. It must also have features to analyze BET, Langmuir isotherms and calculate total pore volume, Pulse chemisorption, Percentage dispersion, metal surface area, crystallite size, first order kinetics, heat of desorption, activation energy and full integration of mass spectrometer data.
25	Gas regulator and assemblies	High quality two stage gas regulator 0-100 psi with dual gauges, cylinder connectors, isolation valves and gas line connectors must be provided. The gas regulator must have CGA fitting appropriate to accommodate specific gases such as He, CO, H <sub>2</sub> , O <sub>2</sub> , Ar, N <sub>2</sub> , CO <sub>2</sub> and NH <sub>3</sub> .
26	Reference materials	Standard reference material for the measurement of surface area, pore size and chemisorption standards must be provided.
22	Warranty	<ul style="list-style-type: none"> <li>• 3 years warranty for the complete instrument and additional 2 year warranty for TCD.</li> <li>• Warranty for computer must be 3 years</li> <li>• AMC for additional 3 years must be quoted separately</li> </ul>
27	Acceptance criteria	<ul style="list-style-type: none"> <li>• Inspection of the items including accessories as per the P.O.</li> <li>• Successful installation of the equipment.</li> <li>• Demonstration of the chemisorption of CO and calculation of active metal dispersion on standard porous material.</li> <li>• Demonstration of TPD and TPR techniques using TCD as well as MS detectors (if purchased).</li> </ul>

		<ul style="list-style-type: none"><li>• Demonstration Pulsed chemisorption technique.</li><li>• Demonstration of changing the operation modes if any.</li><li>• The training of a personnel in all the above features must be carried out at least 40 man hours.</li></ul>
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### **Who can participate in the bid?**

Only those bidders fulfilling the following criteria should respond to the tender.

1. The bidder should be either an Original Equipment Manufacturer (OEM) of **Automated flow chemisorption unit** or should be an authorized representative (provide documentary proof ) of an OEM.
2. The bidder should be a company registered under the Companies Act, 1956/2013 OR a Limited Liability Partnership /a registered partnership firm OR a sole-proprietorship entity. Appropriate Registration incorporation certificate must be submitted.
3. The bidder must have a registered office in Karnataka/Tamil Nadu/Telangana/Andhra Pradesh/Maharashtra or Kerala. Certificate of registration for the offices to be provided.
4. The bidder must also have a service center in Karnataka/Tamil Nadu/ Telangana/Andhra Pradesh or Kerala. Certificate of registration for the centers to be provided. Details about scope of service activities provided by the service centres must be provided. The contact details of the service engineers must be provided.
5. The bidder must be in existence in the business of **Automated flow chemisorption unit** or allied fields for a minimum period of 5 previous financial years (before or since 01 April 2012). Documentary evidences of experience must be provided.
6. The bidder should have implemented orders of **Automated flow chemisorption unit** worth exceeding INR 25 Lakhs during previous three financial years (01 April 2014 – 31 March 2017). Copies of the most recent purchase orders and certificates of successful implementation must be included. Copies of financial statements or evidence of turnover must be furnished.
7. The bidder should have documentary evidence of having supplied at least 5 Nos of **Automated flow chemisorption unit** to a Centrally Funded Technical Institution (e.g., IIT, NIT, IISc, IISER, etc.) in the recent past. The bidder must provide a certificate of satisfactory performance of the supplied equipment from the institute to which they have recently supplied. Contact details of the faculty-in-charge of the installed setup must also be provided.
8. The bidder must provide detailed specification of each equipment/item. Model numbers, data sheets and brochures must be included for each quoted equipment/accessories/item. Specifications corresponding to quoted model number must be available publicly via OEM's website for scrutiny. If not, bid can be disqualified on technical grounds.
9. **Compliance sheet for the technical specification and OEM Brochure have to be attached along with the Technical bid. Vendor has to fill the compliance sheet and mention page number or reference number in OEM brochure. Unfilled / partially filled sheets lead to disqualification.**
10. **Service and warranty for a minimum period of three years for the equipment must be provided. AMC for additional three years must be quoted separately.**