

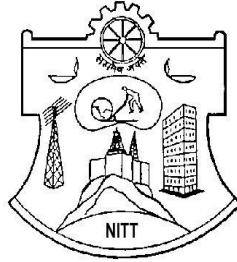
# NATIONAL INSTITUTE OF TECHNOLOGY

## TIRUCHIRAPPALLI – 15

Department of Physics

Web : [www.nitt.edu](http://www.nitt.edu)

Phone : 0431 - 2503613



# TENDER DOCUMENT

Tender Notification No.: **NITT/F-NO: 016/PLAN 2012-13/ PHY**

Dated: **01/02/2013**

- Name of the component : **Secondary Ion Mass Spectrometer (SIMS)**
- Quantity required : One in each (for details refer Section 3)
- EMD Amount : **Rs. 5,00,000/-**
- Cost of the Tender Document : **Rs. 1500**
- Delivery : 6 to 8 Weeks from the date of purchase order
- Last Date of submission of Tender : **06-03-2013 by 3.00 p.m**
- Address for submission of Tender : The Director,  
National Institute of Technology- Tiruchirappalli,  
Tiruchirappalli – 620015, Tamilnadu, India  
Kind ATTN to: **Dr. N.Gopalakrishnan**  
Associate Professor, Department of Physics,  
Tiruchirappalli – 620 015  
Email : [ngk@nitt.edu](mailto:ngk@nitt.edu)  
Mobile: +919894914905
- Date of opening of bid : **06-03-2013 at 3.30 p.m**



**NATIONAL INSTITUTE OF TECHNOLOGY  
TIRUCHIRAPPALLI – 15**

**DEPARTMENT OF PHYSICS**

**Tender Notification No.: NITT/F-NO: 016/PLAN 2012-13/ PHY**

**Dated: 01/02/2013**

**NOTICE INVITING TENDER**

The National Institute of Technology, Tiruchirappalli (NITT) is an autonomous body under MHRD, GOI, imparting Technical Education and engaged in Research Activities. It is proposed to procure the following component for the departmental academic/research activities.

Sealed Quotations under *two cover system* are invited for the following component subject to the following terms and conditions, from the reputed manufacturers or their authorized dealers so as to reach this office on or before scheduled date and time. The technical cover will be opened on the same day in the presence of bidders or their authorized agents who may choose to be present.

Name of the component	: <b>Secondary Ion Mass Spectrometer (SIMS)</b>
Quantity required	: One in each (for details refer Section 3)
EMD	: <b>Rs. 5,00,000/-</b>
Cost of the Tender Document	: <b>Rs. 1500/-</b>
Time for completion of supply after placing purchase order	: 4 to 6 Weeks
Last Date of submission of Tender	: <b>06-03-2013 by 3.00p.m</b>

Tender to be submitted at the following address : The Director,  
National Institute of Technology-  
Tiruchirappalli,  
Tiruchirappalli – 620015, Tamilnadu, India

**Kind ATTN to: Dr. N.Gopalakrishnan**

Associate Professor, Department of Physics,  
Tiruchirappalli – 620 015  
Email : [ngk@nitt.edu](mailto:ngk@nitt.edu)  
Mobile: 9894914905

***Place, Date and time of opening of bid*** :

**Date: 06-03-2013**

**Time: 3.30 p.m**

**Venue: NIT Central Store Room**

**Note :** The Institute shall not be responsible for any postal delay about non-receipt / non delivery of the bids or due to wrong addressee.

1. This document set contains the following:
  - a) Terms and conditions of the Tender
  - b) Details of the Firm offering this Quote
  - c) Technical Compliance Form
  - c) Quotation form (Price Bid)
  - d) Currency Form (quoted on behalf of the foreign suppliers)
  - d) NIT-T's check list copy
2. The bidder's copy is for your future records. Please fill in and return only NIT-T's copy.
3. The bidder should give details of their technical soundness and provide list of customers of previous supply of similar items to Universities, Institutes or Government Departments/Undertakings/public sectors with contact details. The details of the agency/profile should be furnished along with the copy of all related documents.
4. Read through the terms and conditions given and affix your signature and seal if you find them acceptable. Any deviations may be recorded. Read carefully list of specifications that we have enclosed.
5. Fill in the questionnaire regarding the Firm.
6. The downloaded documents '**Technical Compliance Form**' and '**Quotation Form (Price Bid)**' should be **TYPE WRITTEN USING CAPITAL LETTERS ONLY**. At the time of filling the "**Quotation Form (Price Bid)**" make sure that you have not missed anything. Specify the model number & specification for each item. The form should be filled item-wise. Do not leave blank fields. If you are not quoting for a specific item, you should specify "**NOT QUOTING**".
7. **Do not use** ambiguous terms like "**yes**", "**complied**" or "**available**". Specifically mention the matching specification of the product offered by you. Make sure that you have affixed your signature with date and seal on all the documents.
8. Please send the tenders in a sealed envelope super scribed as "**QUOTATIONS AGAINST TENDER NOTIFICATION NO: NITT//F.No.: 016/PLAN 2012-13/PHY**" so as to reach "The Registrar, National Institute of Technology, Tiruchirappalli - 620 015, India" on or before **06.03.2013 at 3 pm along with a Softcopy of the Technical Compliance form and Quotation Forms in MS-Excel file format in a CD/DVD or USB drive.**
9. For any further clarifications, contact by E-Mail: ngk@nitt.edu or by written request to "The Registrar, National Institute of Technology, Tiruchirappalli - 620 015, India"

**Last Date for receipt of tender at NIT-T : 06-03-2013 by 3.00p.m**  
**Opening Date for Tender : 06-03-2013 by 3.30p.m**

#### CHECKLIST TO BE FILLED IN BY BIDDER

List of documents to be enclosed	Completed & Signed
1. Terms and Conditions form	YES / NO
2. Details of the Firm offering this Quote	YES / NO
3. NIT-T's Quotation form (Technical & Price Bid)	YES / NO
4. Currency Form(quoted on behalf of the foreign suppliers)	YES / NO
5. Other technical specifications & pamphlets	YES / NO

- Note:** 1. "Cover" should contain the following:
- a. Form of "**Acceptance of Terms and Conditions**".
  - b. Form of "**Firms details**"
  - c. Pamphlets, if any (in a separate sealed cover)
2. Quotation Form (Technical, Price Bid and Currency Form)

Please retain this page with you for your future reference.

Section 1. IN THE CASE OF TWO BID TENDERS

1.1 *Bids are to be submitted under two cover system.*

1.2 Cover 1:

Cover 1 should contain the following:

- a. *EMD - Earnest Money Deposit (EMD) is to be remitted by way of Demand Draft/FDR/BANK Guarantee drawn on any Nationalised bank in India by Demand Draft drawn on any scheduled bank in favour of “The Director, NIT, Trichy” payable at Trichy should be submitted. EMD shall bear no interest. Any bid not accompanying with EMD is liable to be treated as non-responsive and rejected. If EMD is more than 1Lakh and less than 5 lakhs FDR (Fixed Deposit Receipt) is also acceptable. . If EMD more than 5Lakhs bank guarantee is also accepted.*
- b. *Technical pamphlets*
- c. *Detailed technical specification*
- d. *The agency should furnish copy of license certificate for manufacture/supply of the item\**
- e. *The agency should furnish Income Tax PAN number & TIN number.\**
- f. *The agency should furnish the last three years balance sheet approved by the CA and the IT clearance certificate.\**
- g. *Warranty period offered for the tendered item to be specified. If the warranty period is not conforming with the schedule of requirements given in section 3 of the document, the bid is liable to be treated as non-responsive and rejected.*
- h. *Duly filled up technical questionnaire, if any*
- i. *Duly filled up deviation schedules to technical specification*
- j. *Copy of supply orders completed during the last three years*
- k. *If the prices are revealed in the cover 1, the offer will be summarily rejected*

1.3 *The cover 1 shall be super scribed as ‘Technical cover’ duly indicating the Tender reference No. and the due date of opening.*

*\* Appropriately pertaining to the country of origin.*

1.3 Cover 2:

Cover 2 should contain the following

*Cover 2 shall contain Price only and shall be super scribed as ‘Price Cover’ duly indicating the Tender Reference No. and the due date of opening.*

*Each Cover shall be sent in a double sealed cover. The inner covers (Cover 1 and Cover 2) should be sealed individually with the Sellers’s distinctive seal and super scribed with the tender reference no. and due date of opening. Both the inner covers shall be placed in a common outer cover which shall also be sealed with seller’s distinctive seal and super scribed with the tender reference no. and due date of opening.*

*Mention “Kind Attention: Dr.N.Gopalakrishnan, and submit at the address given in the Notice Inviting Tender.*

*Cover 1 will be opened on the scheduled date and time mentioned in the tender enquiry.*

*Cover 2 of the technically and commercially suitable offers alone will be opened on a date which will be intimated to the qualified bidders.*

## Section 2. “TERMS AND CONDITIONS FORM”

### IMPORTANT: READ ALL THE FOLLOWING TERMS AND CONDITIONS AND SIGN THE ACCEPTANCE CLAUSE FOLLOWING IT

1. The offers should be addressed to “The Registrar, National Institute of Technology, Tiruchirappalli 620015, India” and should be sent in a sealed envelope super scribed “**QUOTATIONS AGAINST TENDER NOTIFICATION No.: NITT//F.No.: 016/PLAN 2012-13/PHY**” so as to reach us **on or before 06.03.2013 by 3.00 pm**
2. Each offer should be sent in a sealed cover with the tender documents. Tenders received through email or FAX will not be considered. **Softcopy of the Technical Compliance form and Quotation Forms should be submitted along with the tender in MS-Excel file format in a CD/DVD or USB drive. However, if there is any dispute between Hard copy and Soft copy, Hard copy will be taken.**
3. The tenders will be opened on **06.03.2013 by 3.30 pm** in the presence of the vendors present with authorization letter from the respective companies / firms. Suppliers intending to attend the tender opening should intimate us in advance.
4. Full technical specifications and pamphlets should be sent along with the tenders. **Offers without proper technical specifications will be rejected.**
5. The rate quoted should be on unit basis excluding Taxes. Taxes and other charges should be quoted separately, considering exemptions if any.
6. All offers should indicate the taxes and duties applicable, if any. Additional charges for packing, forwarding, freight, insurance etc., if any, should be clearly mentioned. Clearance at Customs will be arranged by us.
7. NIT-T is paying concessional Customs & Excise duty under Government of India Notification No.51/96 for Central Customs and 10/97 for Central Excise Duty vide Certificate No.TU/V/RG-CDE(183)/2011 dt.10.10.11. Currently the purchaser is paying 5% Basic Customs Duty, 2% Educational Cess on Basic Customs Duty, 1% Higher Education Cess on Educational Cess, and 4% Import Additional Duty.
8. The Institute is not authorized to issue C and D forms of Sales tax certificate.
9. In case the offered items are to be imported, the rates should be quoted in foreign currency on C.I.F. Chennai Airport basis, and it should include the Freight up to Chennai airport and the insurance cover should be up to National Institute of Technology, Tiruchirappalli. NIT-T shall pay Customs duty if any.
10. If the price quoted is in foreign currency and if the order value is more than US\$10,000 then 100% payment will be made through **Letter of Credit (LC) at sight on acceptance**. If the order value is less than US\$10,000 , then 100% payment will be through a Telegraphic Transfer (TT). **The bank charges outside India should be borne by the Supplier / Beneficiary. Part shipment not allowed.** If the price quoted is in Indian Rupees, then 100% payment will be made only after installation and commissioning. **No advance payment will be made.**
11. No revision of the price bid will be allowed once the price bids are opened. In case of foreign currency, the agency should mention the % of currency fluctuations they can bear.
12. No increase in price will be allowed after our firm orders are placed.
13. **Payment of excise duty and sales tax / VAT (on ultimate products)** as applicable on the closing date of tender will be to the supplier’s / contractor’s account. Any statutory variation (both plus and minus) in the rate of excise duty/sales tax/VAT after closing date of tender/revised price bid but before the expiry of the contractual delivery / completion period will be to the account of the office.  
The bidder(s) will indicate, in their bid, the amount with exact rate of the Excise and Sales tax/VAT on ultimate finished product, as applicable at tendering stage, separately in the bid. In case the above information subsequently proves wrong, incorrect or misleading (a) this Institute will have no liability to reimburse the excess in the difference in rates of the item under which the duty/tax assessed finally (b) this Institute will have the right to recover the difference in case the rate of duty / tax finally assessed is on the lower side.  
Any increase in excise duty, sales tax / VAT during extended period of the contract / supply order will be to supplier’s / contractor’s account where such extension in delivery of the materials/completion of the project was on the request of supplier / contractor. However, any decrease in excise duty/sales tax/ VAT during extended period of the contract / supply order, will be to the account of this Institute.

14. The warranty period should be clearly mentioned. The maintenance charges (AMC) under different schemes after the expiry of the warranty should also be mentioned.
15. Quote should come from authorized dealer or distributor or reseller for each of the product quoted. An authorization letter should accompany your quote for each product quoted; otherwise it may lead to rejection.
16. The delivery period and other terms should be clearly mentioned.
17. Eligibility: Quotation from registered firms/company's / manufacturer under TNGST/CST / other statutory bodies alone be considered. Any Manufacturer / Supplier / Dealer who has been declared ineligible by World Bank/government of India shall not be eligible to participate in this bid. Any fraudulent practices including concealing of facts at the time of submission of bid and there after shall lead to disqualification. List of beneficiaries especially from Educational Institutions / R & D Institutions should also be enclosed with the quotations.
18. For those instruments Cost exceeding 5,00,000/- the company should have (i) Three similar works, each of value not less than 40% of the estimated cost put to tender, or (ii) Two similar works, each of value not less than 50% of the estimated cost, or (iii) One similar work of value not less than 80% of the estimated cost, all amounts rounded off to a convenient full figure, in the last 7 years ending on the last day of the month previous to the one in which the tenders are invited.
19. Complete user, technical and service documentation, and spare parts catalogue are to be provided along with the supply of the item.
20. The vendors are informed that they should not call us over phone or contact us in person. All clarifications can be obtained through E-Mail/FAX/Post. Vendors shall not make attempts to establish unsolicited and un-authorized contact with us after the opening of the offers and prior to the notification of the award. Any attempt by any vendor to bring to bear extraneous pressures on us shall be sufficient reason to disqualify the vendor.
21. Delay / loss in postal transit or due to other reasons will not be NIT-T's responsibility.
22. We are not responsible for accidental opening of the covers that are not properly super scribed and sealed before the time scheduled for opening.
23. The tender should be made only on the "Technical compliance form" & "Quotation form" which is available in our website, otherwise it shall lead to rejection. The technical compliance form & PRICE BID FORM should be duly filled up (preferably **TYPE WRITTEN IN CAPITAL LETTERS**) and should clearly mention the features offered by the bidder against each specification.
24. Authorized signatory should sign on all the pages. Bids without authorized signatures will be rejected.
25. The manufacturers of the quoted make of the product must be of national / international repute and having ISO /BIS certificate.
26. **Liquidated damages:** If the bidder/supplier, after accepting the Purchase Order, fails to deliver any or all of the Goods within the period specified in the Order, NIT-T shall, without prejudice to its other remedies under the Rules of Purchase, proceed to cancel the order or agree to accept a delayed delivery on the condition of payment of liquidated damages by the bidder / supplier a sum equivalent to 0.50% of the total cost as indicated in the Purchase Order (which will be deemed as agreed price) for each week or part thereof of delay until actual delivery or performance is completed and such penal charges shall be limited to a maximum of 5% of the total cost. Once the maximum is reached NIT-T may proceed on its own to consider the termination / cancellation of the order.
27. **The vendors are informed that they should sign a stamp paper agreement with us, for Warranty, AMC, etc. before placing the final purchase order as per our terms & conditions and 5% -10% of purchase order value in the form of bank guarantee towards performance security. The bank guarantee will be returned to the supplier after the successful completion of supply, installation, and the warranty period.**
28. Failure to comply with all the terms and conditions mentioned herein would result in the tender being summarily rejected.
29. Vendors are informed that once the companies are shortlisted based on the technical specification, only then the price bids of the firms that meet NIT-T's Technical specification / requirements would be compared.
30. The order will be based on the actual requirement at the time of ordering, optional items may also be ordered based on the actual requirements at the time of ordering. Not quoting for this may result in disqualification.

31. NIT-T reserves the right to modify or alter the specifications after short listing of tenderers.
32. NIT-T reserves the right to change the order quantity or split the orders among multiple vendors without assigning any reason(s) whatsoever.
33. NIT-T reserves the right to reject any or all the tenders without assigning any reasons whatsoever.
34. NIT-T reserves the right to purchase decreased number of quantity of the item to be purchased
35. The agencies should submit their rate as per the format given in Section 4 of the Notice Inviting Tender in this cover. All the pages of the bid should be signed affixing the seal. All corrections and overwriting should be initialed.
36. The tender will be acceptable only from the manufacturers or its authorized supplier.
37. The bid shall be in the format of price schedule given in Section 4. The contract form as per format given in section 5 shall be submitted. Incomplete or conditional tender will be rejected.
38. Details of quantity and the specifications are mentioned in Section 3 appended to this Notice Inviting Tender
39. The item to be used is strictly according to the specification and subject to test by the Institute/concerned authorities. It must be delivered and installed in good working condition.
40. The Contractor/Supplier shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the work/supply in full but he did not derive in consequence of the foreclosure of the whole or part of the works.
41. In case of dispute, the matter will be subject to Tiruchirappalli, Tamil Nadu Jurisdiction only.

**Release of EMD:** The EMD shall be released after receipt of performance security from successful bidder.

**Validity of bids:** The rate quote should be valid for a minimum of 120 days. No claim for escalation of rate will be considered after opening the Tender.

**Imports:** In case, goods are to be imported, the Indian agent should furnish authorization certificate by the principles abroad for submission of the bid in response to this Notice Inviting Tender.

**Clarification of Tender Document:** A prospective bidder requiring any clarification of the Tender document may communicate to the contact person given in this notice inviting tender.

**Amendment of tender document:** At any time prior to the last date of receipt of bids, Institute may for any reason, whether at its own initiative or in response to a clarification requested by prospective bidder, modify the Tender document by an amendment.

***The Institute may at its own discretion extend the last date for the receipt of bids.***

The bids shall be written in English language and any information printed in other language shall be accompanied by an English translation, in which case for the purpose of interpretation of the bid, the English translation shall govern.

The Institute reserves the right of accepting any bid other than the lowest or even rejecting all the bids without assigning any reasons there for. The decision of the Institute Purchase Committee is final in all matters of tender and purchase.

The bidder should give the following declaration while submitting the Tender.

**ACCEPTANCE**

We accept the above terms and conditions and shall comply with them strictly.

**NAME OF THE VENDOR:**

**ADDRESS :**

**“DETAILS OF THE FIRM OFFERING THIS QUOTE”**

**(Write or print or type in block letters and please answer all the questions)**

1. Name of the firm?  2. Date of incorporation?
3. Nature of the company - Government / Public / Private Company / Partnership / Proprietorship:
4. Specify the number of years in this line of activity by the Company:

5. Quantity of sales in the last three years for the “.....” (same model that you have quoted)?

2009-2010	2010-2011	2011-2012
<input type="text"/>	<input type="text"/>	<input type="text"/>

6. Turn over in the last three years (Figures should be in Indian Rupees in Lakhs):

2009-2010	2010-2011	2011-2012
<input type="text"/>	<input type="text"/>	<input type="text"/>

7. Provide the postal address, telephone & fax numbers, and email address of the nearest service center.

8. A) Number of service engineers in the above location trained on the product quoted along with their educational qualification, certification and designation (applicable only for instruments) and B) Assured response time for service calls in hours:

A)

B)

9. What would be the delivery period in days from the date we place an official purchase order.

2. Enclose the list of customers to whom you have supplied “.....” during the last 3 years ending 31/03/2012 with full postal address and name of the contact person with phone, FAX numbers, and E-Mail id. Certificate regarding satisfactory performance of the “.....” from the minimum three end users should be furnished.

3. Are you the authorized dealer or distributor or reseller for the products quoted:

4. Have you supplied “.....” to National Institute of Technology, Tiruchirappalli in the last 3 years? If yes, specify the quantity supplied in the last 3 years and last PO reference



5. Was there any elapse or delay in supplying the goods ordered or any service related issue during the warranty period for the products ordered by NIT-T with your firm? If yes, provide details.

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6. On Manufacturer's Side to whom NITT have to contact in case of delayed supply and other issues committed by the authorized dealer / distributor / reseller :

Contact Person Name :	
Address :	
E-mail ID :	Telephone / Cell Phone :

**DECLARATION**

I/we have not tampered/modified the tender forms in any manner. In case, if the same is found to be tampered/modified, I/we understand that my/our tender will be summarily rejected and full Earnest Money Deposit (EMD) will be forfeited and I/we am/are liable to be banned from doing business with NIT, Trichy and /or prosecuted.

**Signature of the Bidder** : .....

**Name and Designation** : .....

**Business Address** : .....  
.....  
.....

**Place :**

**Date :**

**Seal of the Bidder's Firm**

### SECTION : 3 SCHEDULE OF REQUIREMENTS, SPECIFICATIONS AND ALLIED DETAILS

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Name of the Component to be procured	: “Secondary Ion Mass Spectrometer (SIMS)”
Specifications	: Refer Annexure I
Quantity	: One in each
Any other details/requirement	: Refer Annexure I
Warranty period required	: Two years or more from the date of acceptance and inspection at NIT, Trichy.
Delivery schedule expected after release of purchase order (in weeks)	: 4 to 6 Weeks from the date of receipt of purchase order, the order are to be dispatched to NIT, Tiruchirappalli.
EMD (in Rupees)	: <b>Rs. 5,00,000/-</b>
Performance Security to be given by Successful bidder after release of purchase order (in Rupees)	: <b>10 % of the equipment Cost</b>

**SECTION : 4 PRICE SCHEDULE**

[ To be used by the bidder for submission of the bid ]

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- 1. Component Name :
  
- 2. Specifications (confirming to Section 3 of Tender document-enclose additional sheets if necessary) :
- 3. Currency and Unit Price(excluding Taxes) :
- 4. Quantity :
  
- 5. Item cost (Sl.No.3 & Sl.No.4) (in Indian Rupee) :
  
- 6. Taxes and other charges :
  - (i) Specify the type of taxes and duties in percentages and also in figures
  - (ii) Specify other charges in figures :
  
- 7. Warranty period (confirming to the Section 3 of Tender document. This should be mentioned in Technical bid also in order to get qualified for Financial bid) :
- 8. Delivery Schedule (confirming to the Section 3 of Tender document) :
- 9. Name and address of the firm for placing purchase order :
  
- 10. Name and address of Indian authorized agent (in case of imports only) :

**Signature of the Bidder** : .....

**Name and Designation** : .....

**Business Address** : .....  
.....  
.....

**Place :**

**Date :**

**Seal of the Bidder's Firm**

**SECTION : 5 CONTRACT FORM**

[ To be provided by the bidder in the business letter head ]

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1. {Name of the Supplier's Firm) hereby abide to deliver the .....by the delivery schedule mentioned in the Section 3 tender document for supply of the items if the purchase order is awarded.
2. The item will be supplied conforming to the specifications stated in the tender document without any defect and deviations.
3. Warranty will be given for the period mentioned in the tender document and service will be rendered to the satisfaction of NIT, Trichy during this period.

**Signature of the Bidder** : .....

**Name and Designation** : .....

**Business Address** : .....  
.....  
.....

**Place :**

**Date :**

**Seal of the Bidder's Firm**

## *Annexure I*

### **SIMS Accessories and Specifications:**

- SIMS Workstation must be a versatile high performance quadrupole based system designed for surface analysis and depth profiling applications of a wide range of materials including polymers, superconductors, semiconductors, alloys, optical and functional coatings and dielectrics, with measurement of trace components to sub-ppm levels.
- The SIMS workstation must include a 9mm triple filter quadrupole mass analyser, gas primary ion gun, Caesium source Cs<sup>+</sup> ion gun, and an electron flood gun, fully integrated and optimised for high performance SIMS analysis, with precision sample manipulator stage, load lock and sample transfer mechanism.

In addition, the UHV system must be of a flexible nature so that additional full UHV components such as detector probes, sample handling and research devices may be easily fitted.

- The SIMS Workstation PC data system, must be included, providing automated measurement of positive ions, negative ions and neutral species. The software must include a simple user-configurable interface for control and data acquisition, including set up and control of the primary ion beam rastering for surface analysis and depth profile applications.
- The raster control should provide ion beam steering over a 16mm<sup>2</sup> sample area. Data acquisition should be controllable within the rastered area using the integral signal gating facility; which limits signal acquisition to the centre of the raster area, excluding crater edge signals and maintaining high dynamic range depth profiling.
- An oxygen jet flood system must be included for increasing sensitivity and control of sample topography in specific types of analysis.
- High sensitivity SNMS mode must be included for quantitative analysis of metallurgical thin films, conductive and non-conductive oxides and other alloy materials and coatings.
- In addition, ESM SIMS imaging program must be included to provide for mapping with 2D and 3D view capability over the sample area.
- 

The SIMS

Workstation must be supplied in a compact bench unit. A fine focussed elemental SIMS imaging option must be included for additional comprehensive engineering for optimum suppression of vibration from the surrounding environment.

### **The detailed specifications must meet:**

#### **1. UHV system:**

- The Vacuum Chamber Module with:

Multiport (18 off CF type flanged ports) stainless steel spherical UHV analysis chamber including large view port, bakeout heaters and tent, flanges and fittings.

- The Analysis Chamber UHV Turbomolecular Pumping Set providing an ultra high vacuum environment for SIMS and SNMS operation, comprising:-
  - 240 L/S Turbomolecular pump
  - Turbo controller
  - Auto vent valve with delay timer
  - Splinter shield
  - Oil free, dry UHV pumping
  - Stainless steel foreline
- Total pressure wide range Penning gauges for monitoring vacuum pump-down, vacuum integrity confirmation and interlock protection of the SIMS analyser in case of overpressure.
  - Fast sample transfer system, sample holder and manipulator comprising:
    - Sample transfer magnetic glide system.
    - 2 axis X,Y UHV manipulator for optimum sample positioning.

Sample load lock including UHV gate valve, turbo pump, stainless steel foreline and sample transfer mechanism.

- UHV  $<5 \times 10^{-9}$  torr
- Bakeable to 150°C
- Loadlock (turbo-molecular pumped) pressure  $<10^{-7}$  torr
- Spare ports for system upgrade/expansion using standard CF flanges

**Sample manipulation**

- typical sample size from 5mm x 5mm to 30x30mm (max thickness 10mm)
- Multiple samples (typically 10 of 6x6mm) on one sample holder
- customizable sample holders
- samples should be able to mount from beneath the holder to ensure accurate alignment in the analysis plane (required for accurate quantification)

**2.SIMS Analyser**

SIMS Analyser Specification

Mass Range	- 510 amu standard.300amu and 1000amu mass ranges optional.
Resolution	- 5% valley between adjacent peaks of equal height throughout the mass range.
Detector	- Ion Counting detector, positive and negative ion detection, 4kV post acceration for positive ions.
Detection Range	- 1 : $10^7$
Maximumcount rate	- $10^7$ counts per second
Minimum count rate	- 1 count per second
Sensitivity	- $> 3 \times 10^6$ c/s per nanoamp (5keV Ar, primary ion detecting Al+ from Al target at 20mm working distance, 300amu system)
Energy Filter	- Parallel plate - 30° off axis injection.
Ion Source	- Integral SNMS ion source - Electron impact 4 – 150eV Suitable for residual gas analysis - RGA
Mass Filter	- 3 stages each of 4 poles.
Pole diameter:	- 9.0mm - high performance system
Bakeout Temperature	- 250°C.

- positive and negative ion SIMS
- electron impact ionizer for SNMS
- SNMS electron bombardment energy 10eV to 150 eV
- 9mm triple filter with RF only pre and post filters quadrupole mass spectrometer
- sensitivity (SIMS)  $<3 \times 10^6$  cps/nA (27Al signal with 5keV Ar)
- sensitivity (SNMS)  $<80$ cps/nA (107Ag signal with 5keV Ar)
- detection limit for SIMS better than  $1 \times 10^{17}$  atoms  $\text{cm}^{-3}$  for B on silicon
- detection limit for SIMS better than  $1 \times 10^{17}$  atoms  $\text{cm}^{-3}$  for As on silicon

### 3. Ion Gun system:

With turbomolecular pumping set configured for operation with Oxygen/Argon , and including Penning gauge, mechanical adjuster, gas inlet flow control valve and scan generator.

Features:

- \* Dual mode PC controlled operation with spot size:
  - 50 microns for imaging
  - 120 microns for depth profiling
- \* High Current Density
- \* Oxygen or Inert Gas
- \* Neutral Dump
- \* Easily Replaceable Twin Filaments
- \* 70mm Conflat Flange Mounting
- \* Software control includes current and beam profile measurement system (suppressed Faraday cup)

#### **Oxygen/ Argon Ion Gun Specification:**

Twin lens Gas Ion gun running Oxygen and Argon with >600nA sample current @5keV

Variable ion energy from 500eV to 5keV

LN2 cold finger for enhanced water vapour pumping (when making sensitive hydrogen measurements)

Ion Beam:	Energy	0.5 to 5.0 keV
	Spot diameter	50 microns for imaging
		100 microns for depth profiling
	Current	0.1 to 800 nA
	Species:	Oxygen or inert gases
	Deflection Field	+/- 4 mm
Ion Source:	Electron Impact	Twin Filament
	Electron Emission	0 to 20 mA
	Electron Energy	0 to 100 volts
Ion Column:	Condenser:	3 element lens
	Objective	3 element lens
	Alignment:	Independent X and Y alignment plates
	Scan Deflection:	Independent X and Y deflection plates
	Fast Neutral Dump:	3 degree bend in the ion column
	Beam blanking:	Single deflector plate
Deflection Amplifiers:	Minimum Sweep Time:	64 $\mu$ s
	Flyback Time:	15 $\mu$ s
Beam Blanking:	Rise Time:	3 $\mu$ s
	Fall Time:	3 $\mu$ s
Mounting Port DN-35-CF (2.75" OD) Conflat type		
	Column Tip to Mounting Flange Distance:	282.5 mm
	Column Tip to Sample Working Distance:	20 to 50 mm
Mechanical Adjustment:	Mechanical Spot Alignment : +/- 3 mm	



Differential pumping and Penning gauge must be included comprising:

A reactive-gas version turbomolecular pump set, suitable for application to pumping of oxygen comprising:

- 60 l/sec turbomolecular pump with gas purge valve
- Pump controller
- Splinter shield
- Oil free UHV dry pumping
- Auto-vent valve

**Caesium Ion Gun with Turbomolecular pumping set, Penning gauge and Mechanical adjuster.**

A high-brightness caesium ion gun for SIMS depth profiling, surface physics and surface modification.

Specifications must meet:

- 20 Micron Minimum Spot Size
- High Current Density
- Neutral Dump
- Replaceable air stable surface ionisation source
- DN-35-CF Conflat Flange Mounting

Cs Ion Gun Specification:	
Ion Beam	
Species	Caesium
Energy	0.5 to 5.0 keV
Spot diameter	20 microns minimum 80µm typical
Deflection Field	+/- 4 mm
Current	0.1 to 150 nA
Etch rate	Maximum 30 nm/min for a silicon target
Ion Source	Thermal decomposition surface ionisation
	Typically 10-20W
Ion Column	3 element lens
	Independent X and Y alignment plates for upper and lower column
	Independent X and Y deflection plates
	Double bend before objective lens
	Single deflector plate after condenser
Mounting	DN-35-CF (2.75" OD) Conflat type
	35 mm minimum internal diameter
Column Tip to Mounting Flange Distance	200 mm
Column Tip to Sample Working Distance	10 to 50 mm (10-20mm for small spot applications)
Differential Pumping	60 l/sec turbomolecular pump set included
Maximum Recommended Temperature	200°C

Deflection Amplifiers	
Minimum Sweep Time	64 $\mu$ s
Flyback Time	15 $\mu$ s
Beam Blanking	
Rise Time	3 $\mu$ s
Fall Time	3 $\mu$ s
Displays	
PC based control	Ion Energy, Condenser Lens, Objective Lens, Heater Current, Upper X-Align, Upper Y-Align, Lower X-Align, Lower Y-Align X-Deflection, Y-Deflection, X-Scan Amplitude, Y Scan Amplitude.
Diagnostics measurement /	Built in diagnostic linescan scan (X and Y), including supplies for electron suppressed beam current measurement and spot shape, (incorporated electrometer displays beam current profile on PC). A simple line flyback raster generator must be also included.
Controls	Control of all beam steering plates, scan amplitudes, offsets and lenses with settings saved to PC for future recall.
External inputs	The control unit accepts an external scan input. A gain control is provided to optimise amplification of the scan signal.External target bias input (max 350V) that is switched via the beam diagnostics control.
Power Requirements	240/220V, 120/110V, 50/60Hz, 0.25KVa
Dimensions	
Control Unit	311 mm (12.25") height, 343 mm (13.5") deep, 19" Rack Mounting.
Beam steering module	Mounts directly to the ion gun 63 mm (2.5") x 127 mm (5.0") x 368 mm (14.5") length

#### **Electron Flood Gun Specifications:**

- An electron flood gun must be included to provide for charge neutralisation, necessary when working with electrically insulating materials
- The electron flood gun is mounted on a DN-35-CF 70mm OD Conflat port, with optimised position for charge neutralization of the sample surface.
- The electron flood gun includes supplies, control unit and gun with electron energies variable up to 500 eV and with beam currents of up to 50 micro Amps.The electron gun power supplies are integrated into the SIMS Workstation rack.
- 500eV electron gun for charge compensation of insulators

#### **4.Software Operation- must incorporate:**

- Histogram display of any user selected atomic mass span
- Trend display of signals from of up to 70 mass channels vs. time, for depth profiling applications.
- Peak Profile display of any user selected atomic mass span with user selectable mass increment from 0.02 AMU.
- Ion Gun raster scan control, with integral signal gating control for acquiring data from the central region of the depth profile crater to avoid edge effects.
- Surface scan mode to acquire data at each raster point across the surface for surface profile applications
- Comprehensive data export facilities including DDE, ASCII and clipboard exchange for other detailed graphical data presentations.
- Automatic SIMS ion optics lens tuning, and automatic mass alignment for optimum SIMS performance.

### **ESM LabVIEW SIMS Imaging program**

Acquires, displays and stores SIMS elemental maps with 2D and 3D view capability.  
Includes scale calibration facility.

### **SIMS Workstation mounted Colour CCD camera for optical sample imaging :**

- 50mm High resolution lens
- Polarising filter
- Connection USB 2.0
- Software, drivers and documentation

### **5. Standard spares kit for SIMS system – suitable for 3 years**

### **7. Static SIMS Library including 100's of standard static SIMS spectra :**

- to aid SIMS spectra interpretation.
- to provide new users with information to improve their understanding of static SIMS and the origin of the diagnostic peaks.

**Training :-** The user has to be fully trained on the use and routine trouble shooting of the system and its components during installation followed by a refresher after 6-8 months.

**UPS:** Compatible UPS with back up of one hour to run the entire system.

**Warranty:** The equipment should be supplied with at least Two years warranty from the date of installation of the equipment.

Two copies of operation and maintenance manuals or 2 soft copies in English language should be supplied with the equipment.

**After sales:-** Service should be available locally in India and promptly rendered. Application support also to be provided by the supplier.

***Note: Tie bars and castors should be included in the offer. The system quoted should have all the necessary details and datasheet for the same.***

# NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPALLI

Annexure-B

## PRICE BID FORMAT FOR INDIAN BIDDERS

Tender No. & Date:

Sl No.	Description of item	Unit (SET /No)	QTY	Rate /Qty in Rs. (excluding of all taxes)	ED in %	VAT/CST IN %	Service Tax in %	Total Value in Rs. (inclusive of all taxes)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	<b>Supply portion</b> (The price indicated shall be exclusive of all accessories, spares etc. as given in the scope of supply)							
2	Other accessories / spares etc as given in scope of supply (Individual item-wise break-up price shall be attached as an annexure to this price bid format.)							
3	Installation & Commissioning (extra, if any)							
4	Packing & Forwarding charges (extra, if any) in percentage (or) Lumpsum							
5	FOR Dispatching station value in Rs.							
6	Freight & Transit insurance charges, extra, if any (Lumpsum or %)							
7	Total all inclusive price delivered, installed and commissioned at NITT							

Signature & Seal of Vendor

**The price bid should be submitted only as per the above format. No row shall be left blank. Please indicate NA, in case the item is "not applicable". The price bid will be rejected if any column is left empty.**