



**INSTITUTE INSTRUMENTION CENTRE  
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE**

ROORKEE-247 667, UTTARAKHAND, INDIA  
FAX: 01332-286303 TELE: 01332-285307(O)

Email: [iic@iitr.ernet.in](mailto:iic@iitr.ernet.in)

**No. IIC/1759/FE-SEM/2012RT**

**Dated: February 1, 2012**

**Tender Notice for Field Emission based Electron Microscope for IIT Roorkee**

**No. IIC/1759/FE-SEM/2012RT**

**Dated: February 1, 2012**

On behalf of the Board of Governors of IIT Roorkee, sealed tenders under Two-Bid (Technical and Commercial) system are invited from reputed firms meeting the eligibility criteria as specified in the Tender Documents, for supply, installation and operation by a site/service Engineer of Field Emission based Electron Microscope at IIT Roorkee.

The detailed Tender document may be obtained from our website <http://www.iitr.ac.in> or by post from the undersigned. The sealed tenders should reach the undersigned by 15.00 hours on 24 February 2012, which will be opened on the same day at 16.00 hours in the Institute Instrumentation Centre.

Address for Communication:

Head, Institute Instrumentation Centre  
IIT, Roorkee, Roorkee-247667 (Uttarakhand)  
Tel: 01332-285307/284350, Fax: 01332-286303  
Email: [iic@iitr.ernet.in](mailto:iic@iitr.ernet.in)

Tender Fees: Rs. 2,000.00  
Issue Date: February 1, 2012  
Closing Date: February 24, 2012



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**DETAILED TENDER DOCUMENT**

On behalf of the board of Governors of IIT Roorkee, sealed tenders under Two-Bid (Technical and Commercial) systems are invited from reputed firms meeting the eligibility criteria as specified in the Tender Documents, for supply, installation and operation by a site/service Engineer of Field Emission based Electron Microscope at IIT Roorkee.

**Tender Document & Tender Fee:**

1. The Tender document may be obtained from the office of the undersigned on any working day, for a tender fee of Rs. 2,000.00
2. The tender document may also be download from the institute website-[www.iitr.ernet.in](http://www.iitr.ernet.in) . In that case, a Demand Draft for Rs.2,000.00 in favor of “The Registrar I.I.T. Roorkee” payable at Roorkee as tender fee must be sent with the tender document.

**1. Tender Process**

The tender will be accepted through a two-bid (Technical & Commercial) system. Thus the tender bid should be submitted in two parts- (i) The Technical bid, and (ii) The Financial Bid – all in duplicate in separate sealed covers. All the four sealed packets should be put in one sealed envelope labeled “Tender Notice **No. IIC/1759/FE-SEM/2012RT** and Due date: **February 24, 2012**.”

The bids complete in all respect must be submitted to the undersigned latest by 15:00 hours on **February 24, 2012**.

The Technical parts of the bids will be opened at 16:00 on **February 24, 2012**.

The representatives of the bidders may be present at the time of opening of Technical bids.

On the basis of Technical bid papers provided, the eligible Bidders will be short listed as Technically Qualified Bidders by the Technical cum Purchase Committee. Such Technically Qualified bidders will be informed by post/e-mail.

The financial bids (of only the Technically Qualified bidders) will be opened for which the dates will be informed in advance.

The final selection of the bidder for the award of the contract will be made on the basis of the lowest commercial bid amongst the Technically Qualified Bidders.

## II. Important Dates for the Tender

Issue Date	: <b>February 1, 2012</b>
Closing Date	: 15:00 hours, <b>February 24, 2012</b>
Opening of Technical bids	: 16:00 Hours <b>February 24, 2012.</b>

## III. General Guide-Lines, terms & Conditions

1. The Tender should be submitted in duplicate duly signed by an authorized signatory and on a printed pad preferably with sales tax number of the firm. The duplicate copy of the tender must bear original signature as it will be kept safely in the custody of the Head of Centre for any future reference.
2. All the specifications and technical details claimed in the tender should be supported by the printed original literature of the principal firm.
3. While sending quotations the firm shall give an undertaking to the effect that the terms/conditions mentioned in the tender document against which the rates are being given are acceptable to the firm. In case the firm does not give this undertaking, their bids will not be considered.
4. Foreign and Indian currency components must be quoted clearly and separately excluding custom/excise duty as IITR is exempted of these.
5. The rates must be quoted both in figures and words and over-writing should be avoided. Cuttings/corrections if any must be duly authenticated.
6. For any Proprietary item, a Certificate to this effect issued by the manufacturer should be submitted.
7. If the supplier firm is manufacturer/authorized dealer/sole distributor of any item, the certificate obtained from principal firm to this effect should be attached.
8. The whole supply as per order shall have to be completed within the time mentioned in the order failing which the Center shall have the right to accept or reject any quality of goods ordered.
9. The supply shall be made within the time mentioned in the order. In case of imports the delivery period will start from the date of opening of L.C.
10. The rates should be quoted F.O.B for imported items and F.O.R. for indigenous items. Any applicable taxes, levies, duties etc. should be clearly mentioned.
11. The quotations should preferably be given for the items in the same order and in the same measurement units, wherever applicable, as in the tender document.
12. Quality Assurance: After the contract/order is negotiated, the firm may be required to provide the standard Acceptance Test Procedure (ATP). Inspecting Authority appointed by IIT Roorkee reserves the right to modify the ATP as and when necessary. Items would be accepted subject to evaluation and clearance by the Inspecting Authority. Firm would be required to provide all test facilities on site for inspection and acceptance by the inspecting Authority. The details in this regard will be coordinated during the negotiation of contract. The items should be of latest manufacture conforming to the current production standards having 100% defined life at the time of delivery.
13. A comprehensive warrantee for five years for all the components including any third party component of the system from the date of installation is required.

14. In case of any dispute, the same shall be subject to the jurisdiction of the Roorkee and / or Uttarakhand state.
15. The supplied equipment should be a complete system in itself to perform all the specifications as given in the **ANNEXURE-1**.
16. Certification: All hardware provided is to be tested for its performance as per the specifications of the tender document and a certificate to this effect is to be submitted to the IIC.
17. The bidder shall supply the Hardware, Software and other related components, in totality/entirety as per the requirements.
18. The rates quoted should be applicable to educational institutions, and any cost advantage received in lieu thereof should be passed on to the Institute.
19. The Tender should be valid for at least a period of 90 days from the date of opening.
20. IIT Roorkee may revise or amend the specifications and other conditions prior to the date notified for receiving the tenders. Such revision and amendments, if any, will be communicated to all prospective bidders. It will be notified through the website of the institute <http://www.iitr.ernet.in>. In such a case, IIT Roorkee will have the discretion to extend the last date and time for receiving and opening of the tender, if considered necessary.

## **V. Technical Bid**

The Technical bid (in a separate sealed envelop) must be submitted in an organized and structured manner as per the format in **ANNEXURE – I in hard as well as soft copy**. No brochures/leaflets etc. should be submitted in loose form. The technical offer should provide compliance statement along with documentary evidence for the technical compliance.

The technical bid should necessarily accompany the following documents/instruments:

- (i) **Earnest Money Deposit:**  
Each bid must be accompanied by Earnest Money Deposit of Rs. 4 Lacs in the form of Demand Draft only of any Indian nationalized bank drawn in favour of “Registrar, I.I.T. Roorkee” No other mode is permissible including equivalent amount of B.G or cheque. The bids received without Earnest Money Deposit will be summarily rejected.
- (ii) A letter of authority duly signed by an authorized signatory.
- (iii) Complete bill of Material along with Make, Model, Manufacturer & Part Number should be given.
- (iv) Delivery and installation schedule.
- (v) Any deviation in Compliance of any of the terms or conditions should be clearly indicated in remarks & explained in a separate deviation sheet.
- (vi) Soft copy of technical compliance statement.

## **VI. Financial Offer**

The financial bid (in a separate sealed envelope) should be submitted in the format given at Annexure – I. The general guidelines for submitting the financial offer are as follows:

- (i) Cost (with unit rates) of all individual items and components must be shown separately, and taxes, as required should be mentioned.
- (ii) All costs should be given in figures and Words. All the Govt. Levies like sales tax, Octroi, Excise Duty, and Educational Cess, Service Tax etc, if any, should be clearly and separately mentioned for each item or component. However all taxes will be paid at actual rates applicable at the time of delivery.
- (iii) The rates quoted should be applicable to educational institutions and any cost advantage received in lieu thereof should be passed on to the institute.
- (iv) Prices once quoted shall not be subject to escalation of any nature.
- (v) The successful bidder will have to provide a Performance Bank Guarantee of 5% of the total order value for the entire period of warranty starting from the date of installation.

#### **VII. Procedure for short Listing of Technically Qualified Firms for opening of Financial Bids.**

All technical bids will be evaluated by the Technical cum Purchase Committee. The financial bids of only those bidders who are found technically qualified by the Technical cum Purchase Committee will be opened and compared for selecting the lowest commercial bid.

The bidders may send their representative at the time of opening of the commercial bids.

#### **VIII. Earnest Money Deposit**

- (i) Each bid must be accompanied by Earnest Money Deposit as mentioned above in the form of a Demand Draft in favor of "The Registrar, I.I.T Roorkee
- (ii) The words Earnest Money Deposit should be written on the envelope containing the draft.
- (iii) The bids received without Earnest Money Deposit will be summarily rejected.
- (iv) Earnest Money is liable to be forfeited and bid liable to be rejected, if the bidder withdraws or amends or impairs or derogates from the tender in any respect within the period of validity of the tender.
- (v) The Earnest Money Deposit of unsuccessful bidders shall be returned within one month of the placement of Purchase Order.
- (vi) No interest will be payable by I.I.T. Roorkee on the Earnest Money Deposit returned to the unsuccessful or successful bidders.

#### **IX. Rejection of Bids:**

- (i) The institute reserves the right to reject any or all tenders, wholly or partly without assigning any reason whatsoever.
- (ii) If any of the bidders give wrong information in his bid, IIT Roorkee reserves the right to reject such bids at any stage and forfeit the Earnest Money Deposit / Performance Bank Guarantee and cancel the order, if awarded.
- (iii) Incomplete bids are liable to be rejected.
- (iv) If the technical offer contains any price information the offer will be summarily rejected.

- (v) Canvassing in any form in connection with the tender is strictly prohibited and the bids submitted by the bidder who resort to canvassing are liable for rejection.
- (vi) IIT Roorkee shall not pay any costs incurred towards preparation and submission of the bids or any other expenditure in this regard.
- (vii) Unsigned tenders/bids, unattested corrections and over writing by bidders are also liable for rejection.
- (viii) Bids not adhering to the specifications will be out rightly rejected.
- (ix) The schedule for accepting the tenders shall be strictly followed- late tenders shall not be accepted.

**X. Payment Terms:**

- (i) The payment term will be 100% after satisfactory installation of equipment and commissioning or 100% advance against a Bank Guarantee of 110% amount valid for six months or 100% through a Letter of Credit.
- (ii) The bidder should clearly specify the payment terms.

**XI. Supply and Installation :**

- (i) The bidder will provide all the documentation and testing reports of the materials and equipments.
- (ii) The bidder will have to arrange for all the testing equipment & tools required for installation and testing at his own cost.
- (iii) I.I.T. Roorkee will have the right to reject the component/equipment installed, if it does not comply with the specifications at any point of installation/inspections.

**XII. Penalty Clause:**

- (i) The supply and installation of the equipment should be completed within the maximum period specified in the conformed order. A penalty of 0.5% of total order value per week shall be levied for the delay in supplying the equipment, excluding the delays due to Force Majeure conditions, subject to a maximum of 5% of total order value. IIT Roorkee shall reserve the right to cancel the Contract/Purchase Order under these circumstances.
- (ii) In case of the non-supply of the equipment after the acceptance of the Purchase Order. Earnest Money Deposit and Performance Bank Guarantee will be forfeited by the Institute and the supply order shall be placed with the next bidder who has quoted the next lowest rates, at the risk and cost of the defaulting bidder and difference in prices shall be chargeable to the defaulting bidder. In case the defaulting bidder fails to pay the differential cost, legal action shall be taken against the defaulting bidder.

### **XIII. Arbitration Clause:**

In the event of any difference or dispute arising out this purchase, all effort shall be made by both the parties to settle the same amicably. Failing an amicable settlement, the dispute shall be finally settled through arbitration conducted under the Arbitration and Conciliation Act 1996, by arbitrators appointed in accordance with the said Act. The arbitration shall give reasoned and speaking award. All disputes are subject to Roorkee jurisdiction only.

### **XIV. Force- Majeure**

For the purpose of and within the scope of contract by way of indication and not of limitation, the term 'Force Majeure' shall mean acts of nature, strikes, Lockouts, or other industrial disturbances, act of public/enemy, wars, blockades, insurrection, riots, epidemics, landslides, earthquakes, storms, lightening, flood, washouts, civil disturbances, explosions and any other similar event not within the control of either party and which by exercises of due care and diligence neither party is able to prevent or overcome.

### **XV. Address for Communication:**

Head, Institute Instrumentation Centre  
IIT, Roorkee, Roorkee-247667 (Uttarakhand)  
Tel: 01332-285307/284350, Fax: 01332-286303  
Email: [iic@iitr.ernet.in](mailto:iic@iitr.ernet.in)

**Note: All the quotations submitted against the Tender should be complete in all respect, incomplete bids will be rejected.**

**The Head,  
IIC, IITR**

#### **Copy to:**

1. O.C. Purchase for his information and necessary action.
2. Central Purchase Officer, I.I.T., Roorkee for information.
3. Notice Boards of the Centre.
4. Head, ISC for displaying on I.I.T. website.

**The Head,  
IIC, IITR**

## ANNEXURE – I

### Technical Specifications for the required items:

#### UHR- FESEM SPECIFICATIONS

S.No.	Item Name	Specifications
1	<b>Source Gun:</b>	Schottky Field Emission Electron Source
2	<b>Resolution</b>	1.0 nm or better @ 15 kV 1.6 nm or better @ 1 kV
3	<b>Probe Current</b>	100 nA or higher (continuously adjustable)
4	<b>Acc. Voltage</b>	≤ 50V and to 30 KV continuously adjustable
5	<b>Magnification</b>	≥ 800,000
6	<b>Electron optical system:</b>	Suitable high-resolution field emission scanning electron microscope column with beam deceleration/beam booster/Gentle beam/Soft Landing or equivalent technology. Design for high resolution and high brightness
7	<b>Detectors:</b>	(a) In-lens Secondary Electron Detector (b) In-lens Back-scattered Electron Detector (c) Everhart-Thornley secondary Electron detector (d) Retractable or Lens mounted high angle or angle selective Back-scattered Electron solid state detector
8	<b>Charge Compensation:</b>	Suitable Charge compensation or Charge Neutralization or Low/High Vacuum facility for seamless and distortion free, non invasive (without any sample preparation) Imaging of variety of nonconducting samples. The FESEM should provide excellent resolution in Charge compensated High/Low Vacuum mode. Please specify the ultimate resolution under Charge compensated High/Low Vacuum mode conditions
9	<b>Specimen Size</b>	≥ 100 mm dia with full rotation
10	<b>Specimen Type:</b>	Suitable for imaging of Ceramics, thin films, polymers at high resolution and without any charging effects. Capability to image Magnetic samples without magnetic interference
11	<b>4 Nos. Schottky Field Gun</b>	<b>4 Nos.</b> Schottky Field Emission Electron Source should be included in the main equipment quotation and to be supplied as and when required.
12	<b>Chamber:</b>	Large chamber with at least 10 or more accessory ports. Chamber design should allow changing of the specimens quickly. One port should be configured with the existing or with a New CL image attachment. Specifications of the existing CL imaging attachment can be obtained from the Head, IIC, IIT Roorkee. One port of WDS compatibility. Facility for In-situ, active removal of hydrocarbons using an Integrated Plasma Cleaner.
13	<b>STEM :</b>	With BF, DF and HAADF Imaging
14	<b>Specimen Stage:</b>	PC Controlled Eucentric 5-axis Motorized Stage Stage movements (mm) X ≥ 125, Y ≥ 125, Z ≥ 10, Tilt = -5° to +60° Repeatability : ≤ 1.5 μm (@ 0° Tilt) Rotation: 360 Degrees Quick-fit specimen holder for holding at least 7 suitable pin-type stubs
15	<b>Built in Camera:</b>	Built in CCD camera with IR illumination for real time specimen chamber viewing.

16	<b>Electrostatic beam blanker</b>	High speed Electrostatic beam blanker for Lithography use with high voltage Amplifier (Beam Blanker driver electronics: TTL to High Voltage)
17	<b>Vacuum System:</b>	Fully automatic vacuum system consisting of Turbo molecular pump, dry rotary pump, Ion pump in appropriate quantity along with suitable accessories, suitable for generating desired vacuum level in microscopic column, source gun chamber and specimen chamber. The vacuum system should be computer Controlled with pneumatic valves having full safe protection for mains / high voltage and vacuum failures. It should have Digital vacuum gauges with readouts, Isolation valves for specimen chamber and high vacuum system during sample loading and Automatic venting with dry nitrogen <b>Scan Modes:</b> Fast mode, spot mode, line scan, line profile, scan rotation, Raster rotation, Tilt compensation, Dynamic focus
18	<b>Image processor:</b>	Maximum resolution 3072X2034 pixels or better. Continuous averaging for up to 256 frames. Frame averaging up to 256 frames. Line averaging up to 256 lines. Pseudo color displays. Image post-processing. Clip board facility for transferring any screen display to other with latest windows application. Output file formats: TIFF, BMP and JPG. Images should also be recorded to movie format (AVI).
19	<b>Image/Data display:</b>	19" or bigger flat panel LED/LCD monitor for image displayed at 1024X884 pixels or better, configurable for single frame display or 4-quadrant display. Data-Accelerating voltage, Magnification, Micron marker with value, Film No, WD, date/time, detector, and user comments etc. Latest MS Windows based system (graphical user interface, key board, optical mouse). Line profile display. Comprehensive image annotation facilities with desirable fonts and colors.
20	<b>Workstation/computer for microscope:</b>	A 32-bit graphical user interface with Windows 2007 (or latest available version), microscope control software, storage of images on compact disk, DVD or hard disk in various formats (TIFF, JPG, BMP, etc.). The microscope should be controlled from Windows graphical user interface running at a 1280x1024 screen resolution. The SEM work station/computer system should be fully compatible with and be able to (seamlessly) talk to the EDS system so that machine parameters are automatically updated during analysis. The workstation should include a 19" LED/LCD monitor, standard keyboard and optical mouse, and HP colour laser printer (CP 2025 or higher version). Manual joystick for stage axis control. A manual control panel to adjust major parameters like mag. Focus, stig etc
21	<b>Software:</b>	Original licensed software for the comprehensive operation of the microscope, computer, motorized stage / stage control, CCD camera and vacuum interlocks. Software for acquiring BSE and SE images. Software for reduction of noise & improvement in contrast with drift correction during image acquisition. The software should be embedded in the microscope control software.
22	<b>Calibration standards</b>	Calibration standards for calibration of magnifications, dimensional and resolution
23	<b>Working table :</b>	Anti-vibration table for chamber, the microscope column and support for monitor, optical mouse, keyboard.
24	<b>Support Kit:</b>	Specimen handling tools, stage tools and specimen preparation materials
25	<b>Safety devices:</b>	Safety devices against power/vacuum/water/air/gas failures
26	<b>Manuals:</b>	Operations & service manuals complete with full electronics, vacuum and

		pneumatics diagrams.
27	<b>Spares:</b>	Availability of spares for ten years at the current price should be ensured.
28	<b>Consumable &amp; spares:</b>	List of the consumables and spares to be supplied with the system.
29	<b>Accessories:</b>	(i) Suitable gas compressor <b>2 No's</b> (ii) Water chiller from internationally reputed company as per system requirement <b>2 No's.</b>
30	<b>Power supply:</b>	230V, 50 Hz
		<b>Specifications for new EDS</b>
31	<b>EDS for FESEM with advanced microanalysis software</b>	<p><b>Quantity:– 2 No's</b></p> <p>Liquid nitrogen free dry Silicon Drift Detector (SDD) vacuum sealed for better light- element analysis. The detector area should be at least 30 mm<sup>2</sup> or larger, for handling high count rates, covering larger solid angle and working at low x-ray signal</p> <p>The detector should have Energy resolution: <math>\leq 129</math> eV or better at Mn-K<math>\alpha</math> at <math>\geq 75,000</math> cps as per established ISO norms</p> <p>Detection from <b>Be</b> to <b>U</b>, Quantification from <b>B</b> to <b>U</b></p> <p>The provided EDS system should have the capability to be upgraded to simultaneous Upgradability to EBSD and WDS attachment for future research requirements (<b>Optional</b>)</p> <p>The detector should be capable of handling a count rate of at least 800,000 cps or higher.</p> <p><b>EDS software:</b> Ability to carry out qualitative and quantitative analysis for material characterization.</p> <ul style="list-style-type: none"> <li>• Windows 7 and 64 bit operating system compatible</li> <li>• Automated detector parameter diagnostics with system optimization</li> </ul> <p>EDS software should begin to make a provisional analysis of EDS data being collected at each point/pixel and assign a phase according to the combination of elements being measured. The chemistry should be represented in a pie chart. The software should display Phase to Element maps – Phase maps with supporting Elemental information</p> <p>Element to Phase maps – Element maps with supporting Phase data</p> <p>Drift Correction feature for localized and accurate EDS of beam sensitive materials</p> <p>Correction method for Quantification under Low Vacuum/ Environmental Mode atmosphere which should be able to correct both X ray decrement (typically for Light elements) and Skirt effect(broadening of electron probe).</p> <p>User interactive Qualitative and Standard less/ Standards based Quantification with K, L,M, N line database. Real Time elemental mapping with auto elemental identification,</p> <p>Quantification based on ZAF, PhiZAF. Should have quantification algorithm for Uneven surfaces and under Tilted conditions</p> <p>Supplied EDS software should be capable of performing data acquisition, storing and transfer in common Windows based application format, Software</p>

		<p>capable of selecting a Region of interest for analysis in the form of rectangle/ square / circle / point / line / ellipse /grid. The capabilities should be applicable for polished flat specimens, fractured Samples and nanostructured particulate systems.</p> <p>Pile up correction and background noise reduction, simultaneous imaging and analysis should be possible. A separate display monitor should be provided along with the EDS system with suitable colour laser printer.</p> <p>Detector Resolution should be shown on standard sample on site for Carbon Fluorine and Manganese K alpha line</p> <p><b>Calibration standard (Preferably from NIST) – 1 No's with 36 element standard materials suitable for use with either WDS or EDS systems. The materials should be mounted on a 1" or 1.25" diameter stub with a Faraday cup for Beam Current measurements. The elements are: Be, B, BN, C, Mg, Al, Si, SiO<sub>2</sub>, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, As, Ge, Zr, Nb, Mo, Rh, Pd, Ag, CdS, InP, Sn, Sb, Ta W, Os, Pt, Au, Bi, U. Traceable High Resolution Multichannel Au Particle Standard Sample – 1 No's</b></p> <p><b>Warranty – 5years</b></p>
		<b>Sputter Coater:</b>
32	<b>Sputter Coater:</b>	<p>Sputter Coater system that should be able to sputter samples with carbon and gold for FE-SEM examination. All with necessary rotary pump, starter kit for sample preparation, One Au (purity 99.9%) Sputter Target of <b>size 54 mm dia (or as per dia of the cathode) and 3 mm thick</b> and list of spares.</p> <p><b>Specifications:</b></p> <p>Power requirements (input): 230V AC, 50/60 Hz ;</p> <p>Target to sample distance ≤ 45 mm(adjustable)</p> <p>Pumping Requirements: The chamber should be evacuated to &lt; 10<sup>-2</sup> mbar in shortest possible time with suitable rotary pump fitted with exhaust filter.</p>
33	<b>Warranty:</b>	Comprehensive <b>warranty for 60 months</b> for the main system and all accessories along with site/service engineer for operation for 5 years should be quoted with terms & conditions and be abided by the Institute's norms.
34	<b>Compliance statement</b>	With soft copy point wise according to our document as per IIT Roorkee specs

### Optional Items:

#### 1. Advanced Nanolithography system for SEM:

**Dedicated Pattern Generator Hardware** in DSP technology (no PC card solution)

- 6 MHz max. writing speed with <2ns dwell time control
- 2 x high speed DACs (16 bit, 25 MHz bandwidth, deglitched) for X and Y main beam deflection
- 6 multiplying 16-bit DACs for overlay alignment and write field calibration with sub-nm step size control
- All DACs should be thermally stabilized and rf noise shielded
- Synchronized beamblanker control circuit, TTL output
- 1 x Video ADC with 14 bit, 360ns min pixel acquisition time
- all connection cables to SEM and PC included (switch for EDS option must be also included)

Pattern Generation Software Suite with

- multi-user management:  
separate design and parameter files for each user
- hierarchical GDSII CAD editor with large file handling capability
- data import formats DXF, ASCII, CIF, etc
- extensive task list generation with SEM remote control functionality (stage & column)
- automation package for step and repeat exposure mode
- pattern alignment, user assisted, fully automated
- fast image acquisition with zooming and overlay techniques
- integrated metrology functionality
- user specific automation capabilities using Microsoft scripting language
- job control functionality with parameter and system information logging

**Documentation:** extensive operation and reference manuals and online help  
PC data set with  $\geq 22$  inch Flat Panel Display (LED) including preinstalled and tested with Windows 7 or higher and lithography application software.

**Training and support:**

Installation and training on site included (training must be provided by experienced lithography engineer).

System supplier must provide hotline (phone and email) to answer questions about HW, SW and lithography applications.

- Electron beam lithography starter kit with resist coated samples.
- Universal lithography sample holder including Faraday cap and high quality calibration sample.
- Additional training must be possible any time after the purchase.

**-EBL Starter Kit & Universal sample holder along with calibration standards**

**Spin Coater & Electrobeam resist---950K Mol Wt. (1 Litre)**

2. **On-line UPS of 120 KVA with 1/2 hour back up** (Standard make such as Emersion Libert etc) with **5 years warranty of UPS Unit** and a minimum of **2 Years warranty for Battery Bank**

3. **ALL-IN-ONE-PC**

**Qty: 10 Nos.**

For offline data analysis ALL-IN-ONE-PC of standard make e.g. SONY, Dell, hp, with latest standard configurations. Intel Core i7-2720, 8GB DDR3 RAM, 1GB Graphic NVIDIA, 2TB Hard Disk Drive, 24" Full HD, LED Screen, with built in wireless technology, Windows7 Home Premium and

**Work Station**

**Qty: 1 Nos.**

Workstation (mobile) to connect all the laboratories to provide online booking and billing towards analytical charges collected from the users, with the following specs;

Intel Core i7-2620, 8GB DDR3 RAM, 1GB Graphic ATI RADEON, 512GB SSD

4. **Split Air conditioners** of (2Ton cooling capacity (Min 3\* rating): **Qty: 12 Nos.**

(Standard make such as Hitachi), Total Volume of the Lab space is approx. 44,000 cubic feet

**Compliance statement:** With soft copy point wise according to our document

**User List:** Provide user list for last 3 years

**Note: All the quotations submitted against the Tender should be complete in all respect, incomplete bids will be rejected.**