



**INSTITUTE OF PHYSICS
SAINIK SCHOOL, BHUBANESWAR**

(An autonomous Research Institute of Dept. of Atomic Energy, Govt. of India)

GLOBAL TENDER NOTICE NO. - 01/2008-09

Last date for submission of tender: 30th June, 2008 up to 15.00 Hrs.

The Institute intends to procure the following items:

Ion Beam Analysis Endstation System and Accessories: 01 Set (against Two Bid format (Technical & Financial separately))

For detail specifications, terms & conditions please visit our website, <http://www.iopb.res.in>.

For both the above items, sealed quotations in **two parts**, superscribed with tender name & number as mentioned above are invited from leading manufacturers and / or their accredited Associates as per following mode:

**Part-I will consist of the Technical bid
and
Part- II will consist of the Financial bid.**

It may be noted that the two bids should be separately sealed in two envelopes, marked with "Technical Bid" and "Financial Bid", which should be further sealed in an envelope superscribing the name of the equipment and the tender number.

Offer for the above tender will be received by the undersigned till 03:00 PM on 30th June, 2008. The Technical bid (Part- I) will be opened at 3:30 PM on 30th June 2008. The Financial bid (Part-II) of only the technically qualified bidders will be opened on a later date with prior intimation.

The technical bid should also contain an item-wise compliance statement against the detailed specifications. Queries related to the technical specifications may be addressed to:

Dr. T. Som, E-mail: tsom@iopb.res.in

The Institute reserves the right to accept / reject any or all offers in full / part without assigning any reasons thereof and the decision of the Director of the Institute shall be final and binding.

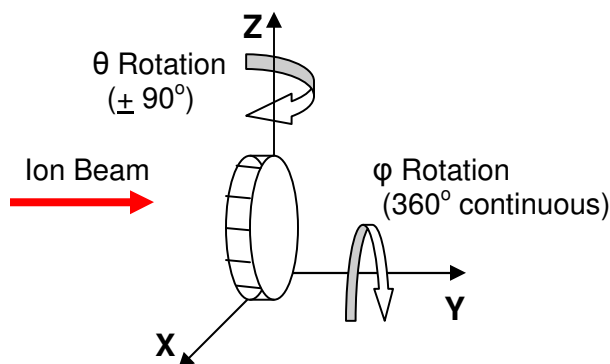
DIRECTOR

Part- I: Technical Specifications

Ion Beam Analysis Endstation System and Accessories – 01 Set

1. **Main chamber:** Chamber should be constructed primarily from aluminum / stainless steel with a 15-20 inch (38.1-50.8 cm) inside diameter and 8-10 inch (20.3-25.4 cm) inside height. The chamber should have a wall thickness of about 1-1.5 inch (2.5-3.8 cm) so that flange and O-ring surfaces can be accurately machined. The base of the chamber should have a thickness of 2 inches (5.1 cm) to provide stable support base for the target manipulator, solid state particle detector, beam collimator, and turbo-molecular pump (as described below). The chamber lid should have a thickness of about $\frac{3}{4}$ -1 inch (1.9 – 2.5 cm) to limit its weight for ease of removal. A target load lock should be placed in the lid to permit quick, less than 5 minutes, changes of target holders while maintaining high vacuum. Chamber base vacuum should be maintained $\sim 1 \times 10^{-7}$ Torr, while the operating vacuum should be $\sim 5 \times 10^{-7}$ Torr. The load lock port should be clearly defined with respect to the beam entrance port (through schematic diagram or in words). The chamber should have 5-7 radial ports and has to mate to the sample manipulator described below. The number of ports, their dimensions, and type (like CFF/ISO/NEC) etc. should be clearly mentioned. Beam line flange should be 4-6 inch (10-15.2 cm) CF. Dimension of the collimators (to be provided with the analysis Endstation) should be clearly mentioned although the preferred collimation range will be 0.5 – 2.5 mm. The chamber should be vacuum sealed with Viton O-rings and contain a view port and target alignment video camera (CCD camera). The chamber should be electrically isolated and possible to be used as a Faraday cup to monitor ion beam current. Height of the centre of the chamber from the ground level should be clearly mentioned and finalized in consultation with the indenter.

2. **Sample manipulator:** Stepper motor driven sample manipulator with motorized rotary drive specimen attachment modules will be required. The manipulator should provide X and Y motions of ± 8.0 mm and Z motion of ± 50 mm with resolution of 0.0025 mm, Z or Theta axis rotations (θ) of $\pm 90^\circ$ with 0.01° resolution. Y axis or Phi (ϕ) rotation should be 360° continuous one with 0.01° resolution. The stepper motor controller should be interfaced to the computer and be able to control all five (5) motors at one time.



3. **Sample holder / Plate size:** Should be compatible to make the best use of the X, Y, and Z movements. The metallic holder should have preferably holes and clips to accommodate multiple samples (ten or more) having following dimensions: Typically 1×1 cm² & 0.5 – 1 mm thick. Its actual dimension and the best sample mounting possibility should be clearly mentioned in the quote.

Material for the sample holder should be mentioned. It should be nonmagnetic and highly conducting material (both electrically and thermally). Its compatibility with the load lock system for easy sample transfer should be clearly mentioned in the quotation.

Sample surface should coincide with the centre axis and the centre of the manipulator should be at the chamber centre. The heights of all ports should be adjusted accordingly to avoid any chance of having any height mismatch. This should be very clearly mentioned in the quotation.

4. Sample cooling and heating: Sample cooling up to LN2 temperature and heating up to 200°C should be available. Minimum step by which temperature can be lowered/raised and stability in the final temperature (with respect to the set temperature) should be mentioned clearly. Reference point of the recorded temperature should be clearly mentioned. Provision for temperature read-out (digitally) and the provision for the temperature controller should be clearly mentioned.

5. Current Integrator: A digital current integrator should be provided to measure total ion current and provide gate signals for the RBS/ERDA/NRA measurements by monitoring total ion current on the target. If required, the provision for a preset counter (to compare with the desired counts) should be clearly mentioned in the quote. The target chamber should be electrically insulated from ground potential so that all ion current passing through it can be integrated. **There should be a specific mention about the current measurement facility during high and low temperature experiments.** The collimator at the chamber entrance should also be insulated from the target chamber and the lead should be possible to be brought out of the chamber for grounding or monitoring.

Secondary electron suppressor: Possible need for a secondary electron suppressor before the sample holder (plate) should be clearly mentioned. In this regard, any clarification may be addressed to the contact person.

6. Pumps and Valves: A turbo-molecular pump with a minimum rating of 250 l/s for air and forepump with a minimum rating of 190 l/m should be furnished to pump the target chamber and beamline near the chamber. Solenoid operating and/or pneumatic valves with appropriate controllers and gauges should be provided to automatically pump out or vent the chamber. This system should be interlocked to the gate valve above the turbo pump and the beam line gate valve so that these valves will close or open dependent on the vacuum status in the target chamber.

7. Particle Detector and Ancillary Electronics: A Silicon surface barrier detector of 50 mm² area, preamplifier, amplifier, and high voltage bias power supply should be provided. There should be some provision for putting a user-defined aperture in front of the surface barrier detector. **All the electronic modules (including current integrator, preamplifier, amplifier, detector bias supply, etc.) should be compatible to NIM standard. This should be clearly stated in the offer.**

8. ERDA measurements: An additional solid state detector and insulated feedthrough should be quoted as an optional item for Elastic Recoil Detection Analysis (ERDA) measurements. Support electronics (including detector preamplifier, amplifier, detector bias supply, and MCA/ADC 2000 channel card) for the additional detector should be quoted as an optional item. In addition, a movable detector support arm should be available in the chamber to allow movement of this additional detector from 30° to 170° (with a clear mention of the rotational precision). This should also be quoted as an optional item.

ERDA Foil Holder mounted on the movable detector with positions for six (6) foils should be quoted as an optional item. Foil position should be possible to be controlled (manual / automated) from outside of vacuum chamber.

Optional extended beam line assembly for RBS-Channeling measurements should be mentioned clearly.

9. NRA measurements: 2 x 2 inch NaI(Tl) Scintillation detector, preamplifier, amplifier, and High Voltage Bias Power Supply with target chamber insertion pocket (to allow detector solid angle at target to be maximized) should be quoted as an optional item for NRA analysis. A re-entrant tube should allow the detector to be closely placed directly behind the target. Additional MCA/ADC 1000 channel card (integrated into system) should be quoted as optional item.

10. Control Console: The ion beam analysis system should be equipped with computer controlled sample positioning and data acquisition. The analytical system controller should have an IBM compatible microcomputer, Pentium PC or better (equipped with Intel Centrino Duo Core) with 160 GB HDD, USB drive, CD and DVD R/W driver (with software), floppy disk drive, a 17" (or bigger) TFT color monitor, mouse, key board, a color printer, and a MCA/ADC board with 1000 channels or better. The computer should have a preloaded WINDOWS-XP Professional OS and the main software package for data analysis should be the RUMP program by L. R. Doolittle of Cornell University. There should be suitable software programs to allow automatic data collection and automated RBS-Channeling analysis. A second display monitor should be provided for remote sample viewing and alignment.

Dimensions of the control console should be mentioned very clearly.

11. Power Requirement: Power line compatibility with 220 VAC, 50 Hz input supply should be clearly mentioned

12. Manual: You need to supply **the latest operational manual of the equipment, service manual with circuitry diagrams (hard copies and soft copies) written in English along with the consignment.**

Part-II : Commercial Terms & Conditions

- 1. Price:** The price required to be quoted on Ex-works (inclusive of necessary export packing cost). This does not include the applicable duties & taxes. The price quoted in the tender required to be quoted in ink, both in figures & words. In case of any discrepancy, the rate quoted in figures will be accepted.
- 2. Price Validity:** - The price validity of the system should not be less than six months from the date of opening of the tender.
- 3. Specification and quantity:** - The specification as well as the configuration and quantity of the equipment are required to be strictly as per the requirement of the indenter.
- 4. Payment:** - The payment will be made against letter of credit (L/C). 90% of the L/C value will be released against successful delivery of the consignment at IOP site and balance 10% will be released after successful installation, commissioning of the system against submission of performance bank guarantee of equivalent amount valid for the entire warranty period. The bank guarantee required to be issued by a nationalized bank.
- 5. Delivery:** - The delivery of the system is required to be made within **24 weeks** from the date of establishment of L/C.
- 6. Bank charges:** - The bank charges inside India to the applicant account and outside India to the

beneficiary account.

7. **Warranty:** - The system required to be warranted against manufacturing and functional defects for **3 years** from the date of completion of installation, commissioning.
8. **Liquidated damage:** -The liquidated damage is to be collected @ 0.5% of the total value per delayed week or part thereof or 5% (aggregate) of the total order value if such case arises.
9. **Installation and testing:** - Installation and testing of the system at our site with your instruments, accessories, tools & tackles; deploying appropriate manpower as required, at your cost.
10. **Supply of spares:** Supply of spares should be ensured for at least for 3 years from the date of supply.
11. **Experience:** Details of the client list for supplying similar type of instruments have to be submitted.
12. **Agent:** An Indian agent, if any, who will participate in this Tender on behalf of one manufacturer, will not be eligible to present another manufacturer.

DIRECTOR