INTER UNIVERSITY ACCELERATOR CENTRE

ARUNA ASAF ALI MARG, POST BOX NO: 10502

NEW DELHI-110067

NOTICE INVITING TENDER

NO. IUAC/NIT/04/SRA/2018-2019

Name of the work: Supply and commissioning of **Electron beam based thin film deposition system with accessories** at IUAC

Tender Cost:	**Rs. 500/- by cash/DD (Exempted if down loaded)**
Earnest Money Deposit (EMD)**:**	**Rs. 80,000**/- (Bidder registered with NSIC/SME and foreign bidders quoted directly are exempted from paying EMD).
Last Date and Time of Submission of Tender:	**14/06/2018 at 3.00 p.m.**
Date & Time for opening of Tender: *(Technical bid part-A)*	**14/06/2018 at 3.30 p.m.**
Date & Time for opening of price bid: (Price Bid Part B)	Will be intimated later on to technically qualified bidders.
Address for submission of tender:	Administrative Officer (S&P), Inter-University Accelerator Centre (IUAC) Aruna Asaf Ali Marg, Post Box: 10 502 New Delhi - 110067
Place of Opening of the Tender:	Inter-University Accelerator Centre

Note: Any change/amendment/corrigenda etc. to this NIT before opening the tender will be available in IUAC webpage: www.iuac.res.in only. Bidders are advised to check the website before final submission.

GENERAL CONDITIONS OF TENDER:

I. Submission of Tender: Tenders should be submitted in sealed envelope in two Parts separately, i.e. "Technical bid" (Part-A) and "Price bid" (Part-B). Both the parts should be further sealed in an envelope super-scribing NIT No & name of work, due date for opening, bidders name & address. The tender duly filled in may be sent to above mentioned address either by post or hand delivered in the **tender box kept in the area near west side entrance, after ensuring that due entries are made in the register kept at the counter**. It **should not** be handed over to any employee of the Centre. **No tender shall be accepted later than the time schedule specified above.**

II. Technical Bid (Part-A) : In this, the bidder should submit his company profile, organizational setup, credentials, and copies of successfully executed similar type of work orders for reputed laboratories/institutes during the last three years. No deviations in respect of NIT conditions are acceptable. **The bidders are required to attach entire NIT (except for the price bid part) duly signed & stamped as a token of acceptance to the NIT conditions with this bid. The following specific conditions are essential for pre-qualification:-**

a) Bidder must be the principal suppliers or their authorized agents.

b) They should have some history of supply of electron beam based thin film coating system in any Govt. Institute or university in India (a list of such users with name and contact details should be attached).

c) Service/Technical support should be available in India.

Entire NIT (except Price bid) duly signed & stamped by the bidder.

No deviations from the technical specifications listed above will ordinarily be permitted. However, the IUAC reserves the right of final decision regarding acceptable technical specifications.

III. Price Bid (Part-B):

a) For indigenous suppliers: In this bid, the bidder is required to quote his items rates/prices for the works mentioned in the scope of work & technical specifications. The rates/price should be inclusive of all material cost, labour, services, charges for the plant/machinery/tools & tackles required for completion of work, freight, insurance, octroi, up to IUAC site basis. However Goods & Services Tax (GST) shall be quoted extra as applicable. No charges towards quantity variations, escalation, site difficulties, other hidden cost even though they may not have been explicitly mentioned in the scope and schedule of works shall be payable extra. It is mandatory on bidder to quote all items rate as asked for in the Schedule of Prices. Failure to adhere to this condition will lead to rejection of tender.

The bidders should quote unconditional rates, neatly written without any overwriting and duly signed & stamped on all pages.

b) For imported items: The bidder is required to quote the price of item in FOB basis for the works mentioned in the scope of work & technical specifications for imported items.

c) In addition to total price, the bidder is required to mention the prices of each item in ANNEXURE-A separately, i.e **a break-up of prices** of items should be the part of this bid. In the break-up, the price of each item should be exclusive of taxes and duties which will be paid by IUAC as applicable. However the percentage of taxes & duties shall be clearly indicated.

d) IUAC is exempted from the customs duty. Indian bidders are required to quote the price of imported items excluding customs duty. A duty exemption certificate (CDEC) may be given by IUAC to Indigenous suppliers for importing the items listed in Annexure-A.

IV. Earnest Money Deposit (EMD): Rs. 80,000/- (Bidder registered with NSIC/SME and foreign bidders quoted directly are exempted from paying EMD).

EMD of Rs. 80,000/- has to be enclosed along with the Technical bid (Part-1). The EMD shall be only in the form of ***Bank Draft*** in the name of "***Inter-University Accelerator Centre***" payable at "***New Delhi***". No cheque/cash shall be accepted as EMD. EMD of technically disqualified bidders will be returned within 30 days from the date of evaluation of the technical bids. EMD of successful bidder will be released on successfully delivery of the electron beam based thin film coating system with accessories at IUAC Delhi. Tender received without earnest money from the bidder other than NSIC/SME and foreign bidder will be rejected.

V. Completion time: The offer should accompany a realistic time chart for the completion of jobs. After receiving the order, the vender should initially submit a design for the approval of IUAC within 20 days. The vendor shall convert the design drawings into manufacturing/fabricating drawing and complete it within 30(thirty) days after the approval of design. IUAC personal will review the fabrication drawing and necessary approval will be given to the vendor after thorough discussion/meeting. The vendor needs to complete the fabrication job and it needs to be ready for delivery within 120 days after receiving the final approval of fabrication/manufacturing drawing from IUAC personnel. IUAC personnel will inspect all the components at vendor's site before delivery. The vendor needs to complete the installation and commissioning job within 30 days after completing the final inspection and performance test of items by IUAC personnel at vendor's site. Any delay in completing the work for reasons attributable to the Contractor is liable for liquidated damages as per clause (VI) of NIT. Under the force-majeure condition or any delay due to reason beyond control of the bidder, IUAC may grant suitable time extension for which the supplier has to request along with the justification/reason well in advance to the IUAC for approval within

any prejudice to price escalation. No time extension request shall be consider after expiry of completion period/contract. The decision of the IUAC, will be final and binding on the bidder/supplier.

VI. Liquidate damages: In case of work is delayed beyond the specified completion period for reason attributable to the bidder, deduction on account of liquidated damages @ 1% of the order value per week will be deducted subject to a maximum of 10% of the total work.

VII. Validity of Tender: Tender shall be valid for our acceptance without any change in rates and NIT conditions for a period of **90 (ninety)** days from the date of opening of price bid.

VIII. Escalation: No escalation over and above items rates quoted by the bidder shall be paid during the execution of contract.

IX. Scope of Work: Supply and commissioning of Electron beam based thin film deposition system with accessories at IUAC. Detailed specifications are enclosed with this NIT as Annexure A.

X. Deviations: No deviation from the stipulated commercial terms and conditions will be allowed. Tenders should be unconditional.

XI. Correspondence: All the correspondence in respect of tender/contractual obligation shall be made to A.O.(S&P), Inter-University Accelerator Centre, Aruna Asaf Ali Marg, New Delhi-110067 India

XII. Terms of Payment: For imported items, the payment shall be made through Letter of Credit. 90 % payment shall be through L/C against shipping documents and 10 % on completion of guarantee period of one year. However, 100 % payment may be released, if the supplier provides a Performance Bank Guarantee of equivalent amount of 10 %. For Indigenous supplies, 90% payment shall be made against the successful commissioning and acceptance of the equipment at IUAC in good condition and to the entire satisfaction of IUAC. Balance 10% will be paid after handing over the system to the lab for regular use subjected to submission of bank guarantee of amount equivalent to 10% of total bill value valid for 365days towards the defect liability period.

XII. Guarantee/Defect liability period: Minimum One year.

XIV. Testing: Original copies of the all test report /certificates should be provided to IUAC.

XV. Documents and Manual: All the mechanical, electrical and electronics drawing and circuit details of the supply items should be provided. Hard copies of two sets of the operation and maintenance manual should be provided without additional cost.

XVI. IUAC reserves the right to reject any or all the tenders in full or in part without assigning any reasons whatsoever, and the decision of the IUAC in this regard will be binding on all the bidders. Tenders not complying with any of the provisions stated in this tender document are liable to be rejected. **Director, IUAC reserves the right to accept or reject any tender without assigning any reason and does not bind himself to accept the lowest tender.**

XVII. Any dispute arising out of this contract will be subjected to jurisdiction of New Delhi/Delhi.

Accepted

(Signature of bidder)

Place:

Date:

Name:

Seal:

Note: - Entire NIT (except price bid) is to be attached with 'Technical bid (Part-A)" duly signed & stamped by the bidder

ANNEXURE-A

"Supply and commissioning of Electron beam based thin film deposition system with accessories at IUAC" as per the following technical specifications.

01) Vacuum Chamber

A S.S-304 vacuum chamber of appropriate size with tight leak rate of better than $1x10^{-10}$ mbar liter/sec is the essence of this order. The ultimate pressure in the deposition system should be better than $2x10^{-7}$ mbar after attaching all the accessories viz; electron gun, substrate heater, thickness monitor and feedthroughs. All the ports should have conflat flanges (CFF) with OFHC copper gasket. However appropriate viton gasket may be used wherever frequent opening will be required for accessing the chamber. The inner surface of the chamber and parts inside the chamber should be easily accessible for frequent cleaning and setting-up the different sources and substrates to meet the various requirements of users. The chamber should be compatible for baking at 150^{o}C or better. The chamber body should also have the provision for water cooling. Electro polishing or suitable surface treatment should be done on the inner surface of the chamber.

The supplier can choose the appropriate size for the chamber. However the chamber design should provide adjustable source to substrate distance up to 20cm and easy access to the parts inside the chamber; especially sources and substrates. The location and the orientation of the sources on the base plate of the chamber should ensure homogenous thin film growth on the rotating substrate of 200 mm diameter. The design should also provide the holding arrangements for substrate viz; threaded holes on the base plate, clamps, stand and other accessories. The requirements of the ports in the chamber are as following.

a) Port for turbo-molecular pump,
b) Ports for e-beam assembly, water cooling and accessories,
c) Ports for two pressure gauges,
d) Ports for two view ports,
e) Port for substrate heater,
f) Port for thickness monitor,
g) Port for venting valve,
h) Ports for three high voltage feedthroughs,
i) Ports for two thermal evaporation sources,
j) Ports for dedicated shutters for sources and substrate,
k) Minimum four spare ports of DN40 CFF.

02) Substrate heater with radiant heating with planetary motion of substrate

a) Substrate temperature: 300 °C or above,
b) Thermocouple for measurement,
c) Programmable PID temperature controller,
d) Area of heating: 200 x200 mm^2 or more,
e) Temperature homogeneity- ±10°C,
g) Compatible to vacuum requirement as specified above.

03) Quartz crystal thickness monitor and its accessories by M/s Inficon or equivalent internationally reputed product

a) Compatible to vacuum requirement as specified above,
b) Dual sensor with shutter,
c) Crystal pack of 50 numbers,
d) Controller/electronics module for thickness monitoring and display with software,
e) It should be capable of storing multiple values of density and acoustic impedance in the memory for repeated use,
f) It should have a thickness resolution of 0.1 nm or better,
g) Adjustable length of crystal head with water cooling.

04) Electron beam assembly and its accessories by M/s Telemark or M/s MDC or equivalent internationally reputed product

a) Compatible to vacuum requirement as specified above.
b) Electron gun with single pocket and scanner
c) Power supply: 6 kW or higher.
d) Water cooling with flow switch interlock.
e) Compatible high voltage feedthroughs.
f) Dedicated shutter.
g) Mo crucible liner

05) Two thermal evaporation set-up with one power supply unit

a) Water cooled feedthroughs and electrodes.
b) Power supply (3kW) having output options of 5 volts@ 600Amps or 10 volts @ 300Amps or equivalent power supply to evaporate material having melting points up to 1500^{o}C
c) Dedicated shutter for each source.

06) Turbo molecular Pump by M/s Edwards or M/s Pfeiffer make or equivalent product

a) Pumping speed (N2)	600-800lps
b) Inlet connection	DN160 CFF
c) Outlet connection	DN 25 ISO-KF
d) Cooling method	Air/water Cooling
e) Mounting orientation	in any orientation
f) Power input	230-240VAC/50Hz, single phase
g) Ultimate vacuum	<1x10^{-8}mbar

h) Electronics	Integrated on-board/controller, cable and display unit
i) Interfaces	RS232/RS485
j) Type of bearing	Magnetically levitated
k) High vacuum side of Bearing	Maintenance free, magnetic bearing

07) Dry scroll Pump by M/s Edwards or M/s Pfeiffer make or equivalent product

a) Pumping Speed (N2)	20 M 3/ h or above
b) Inlet Connection	KF-25 type
c) Outlet connection	KF- 25 type
d) Power input	230-240 VAC / 50Hz, Single Phase
e) Ultimate Vacuum/ pressure	<0.03 mbar
f) Gas Ballast and silencer	required
g) Noise level 50/ Hz	$\leq$ 52 Dba
h) Other requirements	Vacuum region inside the pump should be free from grease and lubricants. Bearing should be outside the vacuum region. Gas Ballast option should be adjustable with no leak.

08) Pirani gauges by M/s Edwards or M/s Pfeiffer make or equivalent internationally reputed product

a) Type of Gauge	Pirani (With integral electronics and replaceable Tube)
b) Connection	CFF
c) Accuracy	+/_15% over the nominal value over entire range
d) Output signal	Linear, 1 volt per decade
e) Vacuum measurement range	1 atm. – 10^{-3} mbar
f) Quantity	2Nos

09) Cold cathode gauges by M/s Edwards or M/s Pfeiffer make or equivalent internationally reputed product

a) Type of gauge	Cold cathode gauge head, with integral electronics. PLC compatible
b) Connection	CFF
c) Measuring range	$8x10^{-2}$ to $1x10^{-9}$ mbar (Full range cold cathode gauge not acceptable)
d) Accuracy level range	+/-15% over the nominal value over $2x10^{-6}$ to $2x10^{-8}$ mbar
e) Output signal	Linear, 1 volt per decade
f) Calibration	Certificate should be provided along with the gauge

10) Gauge controller (compatible to gauges) by M/s Edwards or M/s Pfeiffer make or equivalent product

a) Gauge controller	3 channels rack mount controller with RS232 interface, Operating voltage 230-240 Vac, 50Hz. All channels (3) should be independent of gauge type and all vacuum reading should display simultaneously. Controller should have adjustable set point output with potential free contact for all channels.

11) Vacuum compatible valves

a) Vacuum compatible gate valve between chamber and turbo molecular pump.

b) Vacuum compatible electro-magnetic valve at the inlet of dry pump.

c) Vacuum compatible electro-magnetic valve at the outlet of turbo molecular pump.

d) Vacuum compatible manual inline valve in roughing line for controlling the pumping.

e) Vent valve for venting the chamber with dry gas. It should also have the appropriate tubing or piping to connect the gas cylinder with the vent valve in case of dry gas venting.

12) All vacuum components should be compatible with ultimate vacuum and baking temperature.

13) Shutter for all the sources and substrate.

14) Two view ports of DN 63 CFF with shutter. The view ports should be compatible with baking temperature. The position of the view ports should be such that the e-gun source and thermal evaporation sources should be clearly visible during the evaporation.

15) Appropriate frame for mounting the chamber body.

16) Appropriate rack for mounting the power supplies and controllers.

17) Dedicated manifolds, piping and tubing for cooling water and gas.

18) Suppliers of the vacuum pumps and gauges should provide services in India.

19) Appropriate bake out heating tape (like silicone based heating tape), temperature display and power supply to adjust the temperature.

20) The deposition unit should be equipped with safety interlocks for vacuum pumps, electron-gun, thermal evaporation set-up, substrate heater and valves.

Accepted
(Bidder's Signature)

Place:

Date:

Name:

Seal: