University of Rajasthan, Jaipur
JLN Marg, Jaipur

Tel. No. : 0141-2706813 Fax: 0141-2709582 email ID : registrar@uniraj.ernet.in

No.....
Dated:

E-TENDER NOTICE

E-bids under Two-bid system (Technical and Commercial) are invited from REPUTED SUPPLIERS upto 10.03.2015 for the purchase of (1) **Molecular Beam Epitaxy** (2) **Lifetime Spectrofluorometer** (3) **High Temperature Vacuum Sintering Furnace** (4) **Electrodeposition work station** (5) **Differential Themogravimetry** (6) **X-ray Spectrofluorometer** (7) **PECVD synthesis with DC system with load lock** (8) **UV-Vis-NIR spectrometer Equipment** in State DST sponsored 'Centre of Excellence in Nanotechnology' and (9) **Frequency Resonance Energy Transfer set up** under DST-FIST program of Physics-Department. Tenders – separate for the nine Equipment's – should reach the office of the undersigned by 2.00 PM on 10.03.2015 .Tenders will be opened at 3.00 PM on 10.03.2015.Details may be seen in the Bidding Document on our website www.uniraj.ac.in**, http://sppp.raj.nic.in**.Tender form may be seen and downloaded from website **eproc.rajasthan.gov.in** This tender shall be processed through e-procurement portal of Govt. of Rajasthan.

Registrar

Tender Form No. .....

Tender No. 1

Name of the representative Firm and Principal:

Receipt No. and date……

UNIVERSITY OF RAJASTHAN, JAIPUR

CENTRE FOR EXCELLENCE IN NANOTECHNOLOGY PROGRAMME

CENTRE FOR CONVERGING TECHNOLOGIES

TENDER FORM FOR MOLECULAR BEAM EPITAXY EQUIPMENT

Cost of Tender Form: Rs.200/- Form Number: Nanotech/

If this form is down loaded from University Web Site then a DD of Rs. 200/- only, in favour of Registrar, University of Rajasthan, Jaipur, should be enclosed with the completed form.

This Tender form has two parts. Part I is for the technical bid and Part II is for the commercial bid.

TENDER FORM PART I FOR MOLECULAR BEAM EPITAXY EQUIPMENT

TECHNICAL BID FOR SUPPLY OF MOLECULAR BEAM EPITAXY EQUIPMENT

Name of the manufacturer :
Address :
Phone/Fax Numbers/e-mail ID:
Name of Indian representative:
Address :
Phone/Fax Numbers/E-mail ID: :
Tender Form Fee deposited by D.D./cash receipt number ……..
Dated
…….
Demand draft (of nationalized bank) No. ……..and Date (for the earnest money):
……..
Note:

1. Tender complete in all respects should reach Registrar, University of Rajasthan, Jaipur by 2.00 PM on 10.3.2015. Tenders are invited for systems of two different specifications as mentioned below.

2. Only manufacturers or authorized Indian distributor or dealer should apply. (Authorized distributor/dealer should enclose an authorization certificate from the Principals). Tenders will be opened on 10.3.2015 at 3.00 PM in VC Secretariat in the presence of any intending Tenderer or their authorized representative.

3. All the enclosed documents, annexure, certificates etc should be self attested by the

Tenderer with official seal. No documents without self attestation shall be considered.

4. List of User University Departments and Scientific laboratories in India and abroad of Molecular Beam Epitaxy Equipment (particularly of the models quoted) alongwith details of (i) Model number, (ii) time of installation of the Instrument and
(3) contact addresses and e-mail IDs of the user(s) should be provided.

5. Technical bids should be accompanied by earnest money of Rs. 15 lacs in the form of Demand Draft or Bank guarantee of a scheduled commercial/nationalized Bank and in favour of Registrar, University of Rajasthan, Jaipur, payable at Jaipur. If the Technical bid is not accompanied by DD/Bank guarantee of the requisite amount, the Tenders will not be considered.

6. Tenderers should undertake to give a Performance Bank Guarantee (PBG) @ 5% of the CIF value if purchase order is placed with them.

7. Tender should be valid for at least a period of six months from the last date of submission of Tender. It should clearly mention (i) warranty period not less than one year along with the details and (ii) delivery period not exceeding five months.

8. (A) The time specified for delivery in the Tender Form shall be deemed to be the essence of the contract and the successful Tenderer shall arrange supplies within the period on opening of the Letter of credit.

(B) Liquidity damages: In case of extension in the delivery period with liquidated damages, the recovery shall be made on the basis of the following percentages of the CIF value which the Tenderer has failed to supply:

(C) (a) Delay upto one fourth period of the prescribed delivery period: 2.5%
(b) Delay exceeding one fourth but not exceeding half of the prescribed period: 5%
(c)Delay exceeding half but not exceeding three fourth of the prescribed period :7.5%

(D) (d) Delay exceeding three foruth of the period: 10%
Fraction of a day in reckoning period of delay in supplies shall be eliminated if it is less than half a day.

Maximum amount of liquidity damages will be 10%.

(C) If the Supplier requires an extension of time in completion of the contractual supply on account of occurrence of any hindrance, he shall apply in writing to the Authority, which has placed the Supply Order, for the same immediately on occurrence of the hindrance but not after the stipulated date of completion of supply.

Delivery period may be extended with or without liquidity damages if the delay in supply of the goods is on account of hindrances beyond the control of the Tenderer.

9. Technical Bid envelope should include: Technical details, catalogues, list of Users with details, Tender Form duly signed in all respects, and Earnest money and Form fee (if downloaded from website) in the form of DD.

10. **Commercial bid of only those Firms will be opened (i) which qualify technically and (ii) whose Technical bid gives detailed list of Users, is accompanied with required earnest money in the form of DD (**in favour of Registrar, University of Rajasthan, Jaipur) **and a DD of Rs. 200/- only** (if the form is down loaded from University Web Site) and **is accompanied with undertaking for providing Performance Bank Guarantee (PBG) @ 5% of the CIF value.**

11. University of Rajasthan, Jaipur, reserves the right to choose/ reject any/ none models/ modes or companies without assigning any reason.

12. If any dispute arises out of contract with regards to interpretation, meaning and breach of terms of contract, the matter shall be referred to the Vice Chancellor, University of Rajasthan, and his decision shall be final.

Required specifications

(Tenders invited for systems of two different sets of specifications (type A and type B) as mentioned below)

(1) For Research Molecular Beam Epitaxy

GENERAL SYSTEM REQUIREMENTS:

Procurement Objective
The purpose of the acquisition of the molecular beam epitaxy (MBE) system is for growth of the state-of-the-art III-V heterostructures, both is the shape of nanowires and other nanostructures and homogeneous and atomically flat active layers on top of substrates.
A multi-technique vacuum deposition system and an organic MBE with separate chambers objective: To set up UHV compatible and up-gradable multi deposition system consisting of multi pocket e-beam sources for metals (Mo, Ta, W, Pt, Ni, Ti, C, Si, Cr etc.); thermal sources (boats type) for metals like (Au, Ag, Al, Zn etc); sputter sources for materials (like AIN, BN, ZnO, SiO2, SiC, ITO, ZnTe etc); and organic MBE system for depositing organic semiconductor materials. The system should be extremely versatile and adaptable.
Technical specifications: Multi deposition system
1. Chamber: UHV Compatible and upgradable compact yet versatile chamber (clearly specify the chamber dimension and the footprint of the system) with quick entry door. This should have ports for:
One CF Port for E-Beam, or additional sources
Dual Gas Injector Port
Optical Ports with shutter
Feed through Ports for Thermal Cells (Boat Style)
Three 4.5" CF Source Ports for sputter and other
Load Lock Port
Five Viewport Locations (Two viewports with shutters included)
Pumping Ports
Gauging Ports
One RGA port
Note: The chamber should be designed for films having co-deposition as well as multilayer deposition capabilities using thermal/e-beam/sputtering sources. Base pressure better than 2x10-7 Torr and leak rate less than 10-9 Torr-lit/s
2. Substrate stage:
The sample stage should be capable of mounting and handling 50 mm wafers.
Provision should be made for loading multiple smaller (say, 1 cm x 1 cm) samples by clips.

All feed through (electrical and rotation) should be UHV compatible.
The substrate stage should have the following optional capabilities and should be quoted accordingly.
a. Provision for sample rotation during deposition and internal Z-motion height adjustment.
b. Radiation heater for heating the sample up to 800°C, with PID programmable multilevel temperature controller and sample surface temperature monitoring by optical pyrometry.
c. Arrangement for loading sample through load lock.
3. Vacuum Pump:
Suitable Turbo Molecular Pump (TMP) giving a base pressure of <5 x 10-8 Torr with scroll type backing pump.
4. Four Pocket Turret Type 2cc Rotary Electron Beam Deposition Sources: Ideally suitable for evaporating high melting point metals (such as Pt, W etc), magnetic materials and dielectrics. A contained permanent magnet design producing a very small, highly dense beam spot. This should be supplied with manual shutters and 3kW power supply
5. Thermal Source:
Three Thermal Boats with Shutters should be built in to the interior of the chamber eliminating interference with any additional deposition sources.
They should be supplied with power supply.
The chamber and the thermal and the e-beam sources should be so designed that sequential/co-deposition could be carried out without cross-contamination.
6. Appropriate lighting: Arrangement to see inside the chamber.
Organic MBE system
1. Chamber: UHV chamber. This should have ports for:
Total six source ports for effusion cells
Dual Gas Injector Port
Optical Ports
Load Lock Port
Five Viewport Locations (Two Viewports with shutters included)
Pumping Ports
Gauging Ports etc
Additional optical windows for illumination of sample from outside.
2. Sample Stage:
Should be capable of mounting and handling 1" (25mm) wafers and smaller wafers.
This should include Stepper Motor Controlled Rotation and Internal X,Y, Z-motion for sample adjustment and rocking for angular adjustments while deposition.
Suitable power supply and temperature controller for heating the substrate up to 850°C.
There should be a master shutter in front of the substrate.
3. Vacuum Pump: To be equipped with turbo molecular pump, ion getter pump to attain a base pressure of 10-8 mbar without load lock.

4. Low Temp 16 cc Effusion Cells:
Low temperature Knudesen (K) cells with temperature range up to 700°C with standard ceramic crucible of suitable size.
Feed through cable for power (heater) and thermocouple (temperature sensor) mounted on a 4.5" CF flange.
A water cooled nipple with integral shutter to maintain the chamber wall temperature.
A suitable temperature controller and 600W DC power supply are to be included.
Unit price for the K-cells should be quoted.
Shared Console/ Electronics Racks for both chamber: Should have Electronics Racks/Vacuum Console Table Top (Stainless) Shared Power Distribution
Shared Cabling
Optional Items:
1. Three 1" HV Magnetron Sputter Sources are to be provided on 4.5" CF flange with Pneumatic source shutters. A 600W DC Power supply and two 600W RF Power supplies with Matching Networks should be included. (Option for the Multi-Deposition)
2. Load Lock Module, Base Pressure 5x10-8 Torr (common for both chambers) Main Chamber Base Pressure (<5 x 10-10 Torr) (System bakeout is included)
Load lock chamber
Quick Hatch Entry Door
Magnetic Transfer Rod and Platen

Manual Gate Valve
70 l/s Turbo Pump and Controller
Magnetic Rod for Cross Transfer
Docking Stage
MicroIon Plus Full Range Gauge
Blanks and View Ports
3. Pre-Heating in Load Lock (Common for both Chambers)
Heating Upgrade to Docking stage
Effusion Cell Power Supply 600W
Eurotherm PID Control, Power Cable
4. 16cc Low Temperature Effusion Cell (Option for Organic MBE)
1000°C Temperature Limit
600W DC Power supply
Eurotherm Temperature Controller
Water Cooled Nipple with Integral Shutter Cabling
5. 10cc High Temperature Effusion Cell (Option for Organic MBE)
1800°C Temperature Limit
1000W DC Power Supply
Eurotherm Temperature Controller
Water Cooled Nipple with Integral Shutter Cabling

6. Cryo/Water Panel Package (for High Temperature Effusion Cell)
Internal Cooling panel and Hardware
7. Quartz Crystal Flux Monitor (Option for both Chambers)

8. 6" Manual Gate Valve with Bypass Port (Option for both chambers) Isolates Turbo Pump from Main Chamber

9. 2.75" Manual Throttling Bypass Kit (Option for the Multi-Deposition)
Increases Gas Control for the sputter sources
10. Mass Flow Controller (Option for the Multi-Deposition)
Manual Control
Shut off Valve
Gas Lines
Gas Injector Flange
Manual Control as well as automatic feedback control for chamber pressure
11. Shadow Mask holder which mounts with each substrate holder and external manipulators should be provided to move the mask holder during deposition (Option for Organic MBE)
12. Titanium Sublimation Pump Package (Option for Organic MBE)
Titanium Sublimation Pump
TSP Controller
Water/LN2 Shroud
Pumping Tee (Allows both TSP and Turbo Pump on Chamber)
13. 150°C System Bakeout Package (Option for both Chambers)
Main Chamber Base Pressure (<5 x 10-10 Torr) (Load Lock is Included)
Table Top Heaters
Bakeout Blanket
Bakeout Controller
Cabling
Differential Plumbing for Quick Hatch Door
14. Reverse View LEED Package (Mounts on Load Lock Chamber)
Retractable 4-grid optics on (8.0 in.) CF flange with integral viewport.
Standard LEED control electronics (without Auger control option)
Modification to Load Lock Chamber to mount LEED
15. Spectroscopic Ellipsometer (Option for both Chambers)
Optical Viewports, Mounting and Alignment Gimbles
Installation and Training
16. Differential Reflectance Spectrometer (Option for Organic MBE)
UV-Visible Light Source

Fiber Optics
Monochromater
Mounting and Alignment Gimbles Software

17. In-Situ Transport Measurement in presence of light illumination (Option for Organic MBE)
Four In-Vacuum Probes
Three XYZ Stages with Micrometers
Electrical Feedthroughs
Installed in Load Lock
Viewport and Camera
18. Linear Mask for Contacts (Option for Organic MBE)

19. Full computer controlled mechanism for the following for both the modules
PLC Controller
Recipe Generator and control
Control temperature and rotation
Automated Pumpdown and Venting
Mass Flow Control/Gas Control
Compute Rate & Thickness using QCM Output
System Bakeout
Load Lock Pressure Monitoring, Auto Pumpdown and Venting
Computer
20. Sputter Target Materials:
Carbon (Graphite) [99.999%], 2 in. dia., 0.125-0.25 in. thick Copper [99.99% or better], 2 in. dia., 0.25 in. thick Cobalt [99.95% or better], 2 in. dia., 3 mm thick Chromium [99.95% or better], 2 in. dia., 0.25 in. thick
Germanium [99.999% or better], 2 in. dia., 0.125-0.25 in. thick
Gold [99.99% or better], 2 in. dia., 0.125-0.25 in. thick
Manganese [99.9% or better], 2 in. dia., 0.125-0.25 in. thick
Nickel [99.99% or better], 2 in. dia., 3 mm thick
Platinum [99.99% or better], 1-2 in. dia., 0.125-0.25 in. thick
Silicon [99.999%], 2 in. dia., 0.25 in. thick
Silver [99.99%], 2 in. dia., 0.25 in. thick
Zinc [99.95% or better], 2 in. dia., 0.25 in. thick
AIN [99.8% or better], 2 in. dia. 0.25 in. thick
AI203 [99.99% or better], 2 in. dia., 0.125-0.25 in. thick
BN [99.99% or better], 2 in. dia., 0.125-0.25 in. thick
CdS [99.99% or better], 2 in. dia., 0.125-0.25 in. thick
CdSe [99.99% or better], 2 in. dia., 0.125-0.25 in. thick
CdTe [99.99% or better], 2 in. dia., 0.125-0.25 in. thick
CoO [99.7% or better], 2 in. dia., 0.125-0.25 in. thick
CuO [99.7% or better], 2 in. dia., 0.125-0.25 in. thick Cr2O3 [99.8% or better], 2 in. dia., 0.125-0.25 in. thick
ITO [99.99% or better], 2 in. dia., 0.125-0.25 in. thick
MgO [99.95% or better], 2 in. dia., 0.125-0.25 in. thick
NiO [99.99% or better], 2 in. dia., 0.125-0.25 in. thick
PZT [99.95% or better], 2 in. dia., 0.125-0.25 in. thick
SiO2 [99.995% or better], 2 in. dia., 0.125-0.25 in. thick
Si3N4 [99.9% or better], 2 in. dia., 0.125-0.25 in. thick
TiO2 [99.5% or better] Rutile, 2 in. dia., 0.125-0.25 in. thick
TiN [99.5% or better], 2 in. dia., 0.125-0.25 in. thick ZnO [99.99% or better], 2 in. dia., 0.125-0.25 in. thick

21. Evaporation Materials:
Metal Al, Ni, Au, Ag, Ti, Co, Cr, Cu, Fe, Mn

NOTE:
The below mentioned items must be incorporated as the essential features

1. The alloy composition, thickness and doping uniformity for all the four chambers must be ±2% across 6" wafer diameter.
2. The MBE chamber design should have correctly placed ports for in-situ process monitoring instruments such as optical temperature and flux measurements. These in-situ instruments are important to ensure growth parameters are stable and reproducible. The wafer temperature should be controlled within 0.1 °c and reproducibil ity of 1°C. Source flux should be controlled to less than 0.002 nm per sec.
3. All cells operate upto 1,350° C. The doping cells s hould be having hot lip filament heater.
4. 200 ml (cc) Antimony cracker with separate appropriate PID and corresponding power supply.
5. Precision controlled N2 Plasma source in the "As" chamber and Phosphorus chamber with zero ion content flux including optical plasma sensor and monitoring.
6. Special clean K-cell outgassing attachment chamber with water cooling for up to 3x Kcell sources to facilitate change of crucibles and other items without exposing the main chambers or breaking the vacuum
7. Isolation vapor barrier between cluster and other chambers to minimize vapor crosstalk between Nitrides, Arsenide, Phosphide and SiGe modules. The base pressure of the cluster chamber should be better than 1 x 10^{-10} Torr. During each transfer between chambers the cluster chamber vacuum (~3 minutes after growth stop) should not deteriorate more than 50% of its base pressure.
8. To ensure vacuum integrity and minimize unintentional background contamination, the cluster tool is also required to be bakeable to 250°C. Circulating fan should distribute heated air uniformly throughout the tool to achieve a high uniformity temperature of +/- 10°C.
9. The robotic arm should be housed inside a round chamber of OD 48 inches to ascertain 6 inch diameter wafers can be transferred into and out of each of the six modules. The cluster chamber should also have a 7^{th} port for wafer storage. Wafer transfer is fully automated with position sensor and feedback control with linear tolerance and repeatability of less than 50 microns. Communication between the robot arm and the process software utilizes RS 485 connections.

Financial bid must give prices separately for the main system and for different accessories.

The Tenderer is required to sign and put a stamp on every page of this document.
This document must be placed in a sealed envelope and marked **"Technical Bid for Molecular Beam Epitaxy Equipment"** addressed to Registrar, University of Rajasthan, Jaipur. This envelope, together with the **sealed envelope** containing the "Commercial Bid" must be placed in a larger envelope marked **"Technical and Commercial Bids for Molecular Beam Epitaxy Equipment"** and addressed to Registrar, University of Rajasthan, Jaipur, should reach latest by 2.00 PM on 10.3.2015. **Incomplete Tender Form or Form where the quoted system does not meet the laid down requirements will be summarily rejected and their commercial bid will not be opened.**

Certified that the quoted system meets all the requirements specified in the document

Date: Signature with seal of the authorized person of the Firm

TENDER FORM PART II FOR MOLECULAR BEAM EPITAXY EQUIPMENT

COMMERCIAL BID FOR SUPPLY OF MOLECULAR BEAM EPITAXY EQUIPMENT

Name of the Company/Firm :

Address
:
Phone/Fax Numbers/E-mail ID:
Name of Indian representative:
Address :

Phone/Fax Numbers/E-mail ID: :

Price of the system conforming to required specifications of type (A):

Price of the system conforming to required specifications of type (B):

(prices of the main system and of different accessories must be quoted separately; insurance and air-freight charges upto Delhi should be mentioned, warranty period should be mentioned)

Note:

1. Tender complete in all respects should reach Registrar, University of Rajasthan, Jaipur by 2.00 PM on 10.3.2015.
2. Only manufacturers or authorized Indian representatives should apply. (Authorized representatives should enclose an authorization certificate from the Principals). Tenders will be opened at 10.3.2015 at 3.00 PM in VC Secretariat in front of the Tendering parties.
3. **Commercial bid of only those Firms will be opened (i) which qualify technically and (ii) whose Technical bid gives detailed list of Users, is accompanied with required earnest money in the form of DD (**in favour of Registrar, University of Rajasthan, Jaipur) **and a DD of Rs. 200/- only** (if the form is down loaded from University Web Site) and **is accompanied with undertaking for providing**
   Performance Bank Guarantee (PBG) @ 5% of the CIF value.
4. University of Rajasthan, Jaipur, reserves the right to choose/ reject any/ none models/ modes or companies without assigning any reason
5. If any dispute arises out of contract with regards to interpretation, meaning and breach of terms of contract, the matter shall be referred to the Vice Chancellor, University of Rajasthan, and his decision shall be final.

Date: Signature with seal of the authorized person of the Firm

Tender Form No. .....

Tender No. 2

Name of the representative Firm and

Principal: Receipt No. and

date……

UNIVERSITY OF RAJASTHAN, JAIPUR

CENTRE FOR EXCELLENCE IN NANOTECHNOLOGY PROGRAMME
CENTRE FOR CONVERGING TECHNOLOGIES

TENDER FORM FOR LIFETIME SPECTROFLUOROMETER

Cost of Tender Form: Rs.200/- Form Number: Nanotech/

If this form is down loaded from University Web Site then a DD of Rs. 200/- only, in favour of Registrar, University of Rajasthan, Jaipur, should be enclosed with the completed form.

This Tender form has two parts. Part I is for the technical bid and Part II is for the commercial bid.

TENDER FORM PART I FOR LIFETIME SPECTROFLUOROMETER

TECHNICAL BID FOR SUPPLY OF LIFETIME SPECTROFLUOROMETER

Name of the manufacturer :

Address :

Phone/Fax Numbers/e-mail ID:

Name of Indian representative:

Address:

Phone/Fax Numbers/E-mail ID:
:
Tender Form Fee deposited by D.D./cash receipt number …….. Dated ……

Demand draft (of nationalized bank) No. …….and Date (for the earnest money):
Note:…….

1. Tender complete in all respects should reach Registrar, University of Rajasthan, Jaipur by 2.00 PM on 10.3.2015.

3. Only manufacturers or authorized Indian distributor or dealer should apply. (Authorized distributor/dealer should enclose an authorization certificate from the Principals). Tenders will be opened on 10.3.2015 at 3.00 PM in VC Secretariat in the presence of any intending Tenderer or their authorized representative. All the enclosed documents, annexure, certificates etc should be self attested by the Tenderer with official seal. No documents without self attestation shall be considered.

4. List of User University Departments and Scientific laboratories in India and abroad of Lifetime Spectrofluorometer (particularly of the models quoted) alongwith details of (i) Model number, (ii) time of installation of the Instrument and (iii) contact addresses and e-mail IDs of the user(s) should be provided.

5. Technical bids should be accompanied by earnest money of Rs. 2% of CIF value in the form of Demand Draft of a scheduled commercial/nationalized Bank and in favour of Registrar, University of Rajasthan, Jaipur, payable at Jaipur. If the Technical bid is not accompanied by DD of the requisite amount, the Tenders will not be considered.

6. Tenderers should undertake to give a Performance Bank Guarantee (PBG) @ 5% of the CIF value if purchase order is placed with them.

7. Tender should be valid for at least a period of six months from the last date of submission of Tenders. It should clearly mention (i) warranty period not less than one year along with the details and (ii) delivery period not exceeding five months.

8. (A) The time specified for delivery in the Tender Form shall be deemed to be the essence of the contract and the successful Tenderer shall arrange supplies within the period on opening of the Letter of credit.

(B) Liquidity damages: In case of extension in the delivery period with liquidated damages, the recovery shall be made on the basis of the following percentages of the CIF value which the Tenderer has failed to supply:

(a) Delay upto one fourth period of the prescribed delivery period: 2.5%
(b) Delay exceeding one fourth but not exceeding half of the prescribed period: 5%
(c) Delay exceeding half but not exceeding three fourth of the prescribed period :7.5%
(d) Delay exceeding three foruth of the period: 10%

Fraction of a day in reckoning period of delay in supplies shall be eliminated if it is less than half a day.

Maximum amount of liquidity damages will be 10%.

(C)If the Supplier requires an extension of time in completion of the contractual

supply on account of occurrence of any hindrance, he shall apply in writing to the Authority, which has placed the Supply Order, for the same immediately on occurrence of the hindrance but not after the stipulated date of completion of supply.

Delivery period may be extended with or without liquidity damages if the delay in supply of the goods is on account of hindrances beyond the control of the Tenderer. Technical Bid envelope should include: Technical details, catalogues, list of Users with details, Tender Form duly signed in all respects, and Earnest money and Form fee (if downloaded from website) in the form of DD.

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11. If any dispute arises out of contract with regards to interpretation, meaning and breach of terms of contract, the matter shall be referred to the Vice Chancellor, University of Rajasthan, and his decision shall be final.

Required specifications for Lifetime Spectrofluorometer with Time Correlated Single Photon Counting (TCSPC) Lifetime Measurement

1.Excitation Source: 450W CW Xenon Arc Lamp Source
2. Excitation Monochromator: Double Czerny Turner Design Grating Facility with computer Controlled Wavelengths selection
3. Resolution : up-to 0.05 nm
4. Emission Monochromator: Double Czerny Turner Design Grating Facility with computer Controlled Wavelengths selection
5. Excitation Range: 200-900 nm, Band pass: 0-15 nm
6. Emission Range: 200-900 nm, Band pass: 0-30 nm
7. Wavelength Accuracy: at least +/- 0.5 nm
8.Scan Speed: vary a wide range (・0-75 nm/sec)
9.Band pass:0-15 nm
10.Spacious Sample Compartment with Reference Detector for Lamp Correction
11.Signal Detection: Photon Counting Detector, preferably covering the range (200 – 850 nm) UV-VIS-NIR along withanother detector covering the NIR region up to at least 1700 nm. The sensitivity should be as high as possible.

TCSPC Fluorescence Lifetime Measurement
Nanosecond Lifetime Measurement
Life time range: 100 ps – 0.1ms
Excitation Sources: Nano LED (265nm, 390nm, 605nm)
Nano LED Laser (375L, 785L)
Necessary Hardware & Software compatible with Steady State Spectrofluorometer for TCSPC Measurement

Including all accessories such as Solid Sample Holder and Front Face Viewing Mirror (liquid and solid), Cut-On Filter with Filter Holder, Integrating Sphere to measure quantum yield, Sphere must have 6 Inch Dia, Automated Dual Polarization Accessory, Liquid Nitrogen Cryostat for low temperature measurements.

Financial bid must give prices separately for the main system and for different accessories.

The Tenderer is required to sign and put a stamp on every page of this document.
This document must be placed in a sealed envelope and marked **"Technical Bid for Lifetime Spectrofluorometer"** addressed to Registrar, University of Rajasthan, Jaipur. This envelope, together with the **sealed envelope** containing the "Commercial Bid" must be placed in a larger envelope marked **"Technical and Commercial Bids for Lifetime Spectrofluorometer"** and addressed to Registrar, University of Rajasthan, Jaipur, should reach latest by 2.00 PM on 10.3.2015. **Incomplete Tender Form or**
Form where the quoted system does not meet the laid down requirements will be summarily rejected and their commercial bid will not be opened.

Certified that the quoted system meets all the requirements specified in the document

Date: Signature with seal of the authorized person of the Firm

TENDER FORM PART II FOR LIFETIME SPECTROFLUOROMETER

COMMERCIAL BID FOR SUPPLY OF LIFETIME SPECTROFLUOROMETER

Name of the Company/Firm :

Address
:
Phone/Fax Numbers/E-mail ID:

Name of Indian representative:

Address :

Phone/Fax Numbers/E-mail ID:

Price of the system conforming to required specifications:

(prices of the main system and of different accessories must be quoted separately; insurance and air-freight charges upto Delhi should be mentioned, warranty period should be mentioned)

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1. Tender complete in all respects should reach Registrar, University of Rajasthan, Jaipur by 2.00 PM on 10.3.2015.

2. Only manufacturers or authorized Indian representatives should apply. (Authorized representatives should enclose an authorization certificate from the Principals). Tenders will be opened at 10.3.2015 at 3.00 PM in VC Secretariat in front of the Tendering parties.

3. **Commercial bid of only those Firms will be opened (i) which qualify technically and (ii) whose Technical bid gives detailed list of Users, is accompanied with required earnest money in the form of DD (**in favour of Registrar, University of Rajasthan, Jaipur) **and a DD of Rs. 200/- only** (if the form is down loaded from University Web Site) and **is accompanied with undertaking for providing Performance Bank Guarantee (PBG) @ 5% of the CIF value.**

4. University of Rajasthan, Jaipur, reserves the right to choose/ reject any/ none models/ modes or companies without assigning any reason.

5. If any dispute arises out of contract with regards to interpretation, meaning and breach of terms of contract, the matter shall be referred to the Vice Chancellor, University of Rajasthan, and his decision shall be final.

Date: Signature with seal of the authorized person of the Firm

Tender Form No. .....

Tender No. 3

Name of the representative Firm and Principal:

Receipt No. and date……

UNIVERSITY OF RAJASTHAN, JAIPUR

CENTRE FOR EXCELLENCE IN NANOTECHNOLOGY PROGRAMME
CENTRE FOR CONVERGING TECHNOLOGIES

TENDER FORM FOR HIGH TEMPERATURE SINTERING FURNACE (HTSF)"

Cost of Tender Form: Rs.200/- Form Number: Nanotech/

If this form is down loaded from University Web Site then a DD of Rs. 200/- only, in favour of Registrar, University of Rajasthan, Jaipur, should be enclosed with the completed form.

This Tender form has two parts. Part I is for the technical bid and Part II is for the commercial bid.

TENDER FORM PART I FOR HIGH TEMPERATURE VACUUM SINTERING FURNACE (HTSF)"

TECHNICAL BID FOR SUPPLY OF HIGH TEMPERATURE VACUUM SINTERING VACUUM FURNACE (HTSF)"

Name of the manufacturer :

Address :

Phone/Fax Numbers/e-mail ID:

Name of Indian representative:

Address:

Phone/Fax Numbers/E-mail ID:
:
Tender Form Fee deposited by D.D./cash receipt number …….. Dated ……

Demand draft (of nationalized bank) No. ……..and Date (for the earnest money):

Note:…….

1. Tender complete in all respects should reach Registrar, University of Rajasthan, Jaipur by 2.00 PM on 10.3.2015.

2. Only manufacturers or authorized Indian distributor or dealer should apply. (Authorized distributor/dealer should enclose an authorization certificate from the Principals). Tenders will be opened on 10.3.2015 at 3.00 PM in VC Secretariat in the presence of any intending Tenderer or their authorized representative. All the enclosed documents,

annexure, certificates etc should be self attested by the Tenderer with official seal. No documents without self attestation shall be considered.

3. List of User University Departments and Scientific laboratories in India and abroad of High temperature vacuum sintering Furnace (particularly of the models quoted) alongwith details of (i) Model number, (ii) time of installation of the Instrument and (iii) contact addresses and e-mail IDs of the user(s) should be provided.

4. Technical bids should be accompanied by earnest money 2% of CIF value in the form of Demand Draft of a scheduled commercial/nationalized Bank and in favour of Registrar, University of Rajasthan, Jaipur, payable at Jaipur. If the Technical bid is not accompanied by DD of the requisite amount, the Tenders will not be considered.

5. Tenderers should undertake to give a Performance Bank Guarantee (PBG) @ 5% of the CIF value if purchase order is placed with them.

6. Tender should be valid for at least a period of six months from the last date of submission of Tenders. It should clearly mention (i) warranty period not less than one year along with the details and (ii) delivery period not exceeding five months.

7. (A) The time specified for delivery in the Tender Form shall be deemed to be the essence of the contract and the successful Tenderer shall arrange supplies within the period on opening of the Letter of credit.

(B) Liquidity damages: In case of extension in the delivery period with liquidated damages, the recovery shall be made on the basis of the following percentages of the CIF value which the Tenderer has failed to supply:

(a) Delay upto one fourth period of the prescribed delivery period: 2.5%
(b) Delay exceeding one fourth but not exceeding half of the prescribed period: 5%
(c) Delay exceeding half but not exceeding three fourth of the prescribed period :7.5%
(d) Delay exceeding three foruth of the period: 10%

Fraction of a day in reckoning period of delay in supplies shall be eliminated if it is less than half a day.

Maximum amount of liquidity damages will be 10%.

(C)If the Supplier requires an extension of time in completion of the contractual supply on account of occurrence of any hindrance, he shall apply in writing to the Authority, which has placed the Supply Order, for the same immediately on occurrence of the hindrance but not after the stipulated date of completion of supply.

Delivery period may be extended with or without liquidity damages if the delay in supply of the goods is on account of hindrances beyond the control of the Tenderer. Technical Bid envelope should include: Technical details, catalogues, list of Users with details, Tender Form duly signed in all respects, and Earnest money and Form fee (if downloaded from website) in the form of DD.

8. **Commercial bid of only those Firms will be opened (i) which qualify technically and (ii) whose Technical bid gives detailed list of Users, is accompanied with required**

earnest money in the form of DD (in favour of Registrar, University of Rajasthan, Jaipur) **and a DD of Rs. 200/- only** (if the form is down loaded from University Web Site) and **is accompanied with undertaking for providing Performance Bank Guarantee (PBG) @ 5% of the CIF value.**

9. University of Rajasthan, Jaipur, reserves the right to choose/ reject any/ none models/ modes or companies without assigning any reason.

10. If any dispute arises out of contract with regards to interpretation, meaning and breach of terms of contract, the matter shall be referred to the Vice Chancellor, University of Rajasthan, and his decision shall be final.

Required specifications for HIGH TEMPERATURE SINTERING FURNACE (HTSF)

SCOPE OF WORK

Design, Engineering, Fabrication, Supply, Installation, Testing, Commissioning, and Demonstration of High Temperature Sintering Furnace (HTSF), as per the Technical Specifications, Terms and Conditions given below.

INTENDED USES OF HTSF

The specified HTSF is intended to be used for the following applications:

1. **Sintering of P/M components made out of Non-ferrous/Ferrous alloys (Cu, Ni, Ag, Mo, W, Fe etc) and ceramics ($MoSi_2$, SiC, Al_2O_3 etc).**
2. **Heat treatment of components made out of magnetic/super alloys (Fe, Ni and Co base), MA-ODS alloys, refractory alloys, stainless steels, copper alloys etc. with slow, fast and variable heating & cooling rates under Hydrogen, vacuum & inert atmosphere.**

1.0 MAJOR SPECIFICATIONS AT A GLANCE

1.1 Configuration : Front Loading, preferably Cylindrical, Horizontally Mounted furnace.

1.2 Usable Work Zone : 300mm (W)x 300 mm(H) x 600 mm(L). (Suppliers can quote for the nearest available higher size. However, 300mm (W)x 300 mm(H) x 600 mm(L) is the minimum size requirement)

1.3	**Load weight maximum :**	**45 kg of Tungsten**
1.4	**Ultimate Vacuum level :**	**better than $1x10^{-5}$ mbar within 45 minutes for clean, cold and empty chamber.**

Operating Vacuum Level (range) : 1 x 10-2 mbar to 1 x 10-5 mbar

1.5 Heating element : Lanthanum doped Molybdenum wire mesh

1.6 Temperature, atmosphere & Holding time :

Maximum operating temperature : 1700°C

Normal operating temperature range : 400 °C -1600°C

Working atmosphere : Vacuum, Argon & Hydrogen.

Holding time at maximum operating temperature : 4 hrs.

1.7 Process Gases used : Hydrogen & Argon

DETAILED TECHNICAL SPECIFICATIONS

2.0 CHAMBER ASSEMBLY

2.1 Furnace chamber should be designed to operate in a Process Gas environment at normal working internal pressures of 2 to 10 PSIG. or in vacuum of $1x10^{-6}$ mbar. The adopted design code reference for fabrication of chamber & door along with all relevant details shall be indicated in the offer. Furnace outer shell & door temperature should not exceed 45°C during maximum operating temperature. The design of water cooling jacket shall assume that there is no hot spot above 45 ^{o}C on the vessel.

2.2 Chamber & door should be double-walled baffled, water-cooled with 304L grade stainless steel construction with electro polished finish for good vacuum pumping characteristics and aesthetic appearance. The chamber shall be supported and mounted horizontally on an enclosed structural support frame assembly for ease of loading and unloading of products by the operator. Front door shall be secured with suitable clamps or/and air-operated pneumatic wrench. This safety feature shall prevent accidental opening the door when in a hydrogen atmosphere.

2.3 The chamber should be constructed with a front door which allow easy access(180º swing) to the hot zone allowing the operator to reach the hot zone entirely during the loading of work piece.

2.4 Viewing sight glass on the front door shall be provided(optional). This viewpoint can also be used in conjunction with an optical pyrometer. Preferably a movable sight glass shield shall also be provided to prevent vapor deposition on sight glass.

2.5 Suitable ports should be provided for Control, over-temperature and survey thermocouples. Preferably extra blind port flange with six T/C connectors also should be provided for extra Thermocouples for monitoring the job.

2.6 All elastomer o-ring seals exposed to high vacuum / temperature should be Viton of single piece. They should be free from wrinkle or projection.

2.7 Chamber and pipelines shall be painted with good finish.

3.0 HOT ZONE

3.1 Usable Work Zone: 300mm (W) x 300 mm(H) x 600 mm(L). (Suppliers can quote for the nearest available higher

size. However, 300mm (W)x 300 mm(H) x 600 mm(L) is the minimum size requirement)

3.2 Temperature uniformity on entire hot zone: ± 5^0C

3.3 Heating element, Temperature, atmosphere & Holding time :

Heating element : Lanthanum doped Molybdenum wire mesh

Maximum operating temperature : 1700°C

Normal operating temperature range : 400 ° C - 1600°C

(controlled and programmable)

Working atmosphere : vacuum, argon & Hydrogen.

Holding time at maximum operating temperature : 4 hrs.

Financial bid must give prices separately for the main system and for different accessories.

The Tenderer is required to sign and put a stamp on every page of this document.
This document must be placed in a sealed envelope and marked **"Technical Bid for HIGH TEMPERATURE SINTERING FURNACE (HTSF)"** addressed to Registrar, University of Rajasthan, Jaipur. This envelope, together with the **sealed envelope** containing the "Commercial Bid" must be placed in a larger envelope marked **"Technical and Commercial Bids for HIGH TEMPERATURE SINTERING FURNACE (HTSF)"** and addressed to Registrar, University of Rajasthan, Jaipur, should reach latest by 2.00 PM on 10.3.2015. **Incomplete Tender Form or**
Form where the quoted system does not meet the laid down requirements will be summarily rejected and their commercial bid will not be opened.

Certified that the quoted system meets all the requirements specified in the document

Date: Signature with seal of the authorized person of the Firm

TENDER FORM PART II FOR HIGH TEMPERATURE SINTERING FURNACE (HTSF)"

COMMERCIAL BID FOR SUPPLY OF HIGH TEMPERATURE SINTERING FURNACE

Name of the Company/Firm :

Address
:
Phone/Fax Numbers/E-mail ID:

Name of Indian representative:

Address :

Phone/Fax Numbers/E-mail ID:

Price of the system conforming to required specifications:

(prices of the main system and of different accessories must be quoted separately; insurance and air-freight charges upto Delhi should be mentioned, warranty period should be mentioned)

Note:

1. Tender complete in all respects should reach Registrar, University of Rajasthan, Jaipur by 2.00 PM on 10.3.2015.

2. Only manufacturers or authorized Indian representatives should apply. (Authorized representatives should enclose an authorization certificate from the Principals). Tenders will be opened at 10.3.2015 at 3.00 PM in VC Secretariat in front of the Tendering parties.

3. **Commercial bid of only those Firms will be opened (i) which qualify technically and (ii) whose Technical bid gives detailed list of Users, is accompanied with required earnest money in the form of DD (**in favour of Registrar, University of Rajasthan, Jaipur) **and a DD of Rs. 200/- only** (if the form is down loaded from University Web Site) and **is accompanied with undertaking for providing Performance Bank Guarantee (PBG) @ 5% of the CIF value.**

4. University of Rajasthan, Jaipur, reserves the right to choose/ reject any/ none models/ modes or companies without assigning any reason.

5. If any dispute arises out of contract with regards to interpretation, meaning and breach of terms of contract, the matter shall be referred to the Vice Chancellor, University of Rajasthan, and his decision shall be final.

Date: Signature with seal of the authorized person of the Firm

Tender Form No. .....

Tender No. 4

Name of the representative Firm and

Principal: Receipt No. and

date……

UNIVERSITY OF RAJASTHAN, JAIPUR

CENTRE FOR EXCELLENCE IN NANOTECHNOLOGY PROGRAMME
CENTRE FOR CONVERGING TECHNOLOGIES

TENDER FORM FOR ELECTRODEPOSITION WORKSTATION

Cost of Tender Form: Rs.200/- Form Number: Nanotech/

If this form is down loaded from University Web Site then a DD of Rs. 200/- only, in favour of Registrar, University of Rajasthan, Jaipur, should be enclosed with the completed form.

This Tender form has two parts. Part I is for the technical bid and Part II is for the commercial bid.

TENDER FORM PART I ELECTRODEPOSITION WORKSTATION

TECHNICAL BID FOR SUPPLY OF ELECTRODEPOSITION WORKSTATION

Name of the manufacturer :

Address :

Phone/Fax Numbers/e-mail ID:

Name of Indian representative:

Address:

Phone/Fax Numbers/E-mail ID:
:
Tender Form Fee deposited by D.D./cash receipt number …….. Dated ……

Demand draft (of nationalized bank) No. ……..and Date (for the earnest money) :……

1. Tender complete in all respects should reach Registrar, University of Rajasthan, Jaipur by 2.00 PM on 10.3.2015.

2. Only manufacturers or authorized Indian distributor or dealer should apply. (Authorized distributor/dealer should enclose an authorization certificate from the Principals). Tenders will be opened on 10.3.2015 at 3.00 PM in VC Secretariat in the presence of any intending Tenderer or their authorized representative. All the enclosed documents, annexure, certificates etc should be self attested by the Tenderer with official seal. No documents without self attestation shall be considered.

3. List of User University Departments and Scientific laboratories in India and abroad of Electrodeposition workstation (particularly of the models quoted) alongwith details of (i) Model number, (ii) time of installation of the Instrument and (iii) contact addresses and e-mail IDs of the user(s) should be provided.

4. Technical bids should be accompanied by earnest money of 2% of CIF value in the form of Demand Draft of a scheduled commercial/nationalized Bank and in favour of Registrar, University of Rajasthan, Jaipur, payable at Jaipur. If the Technical bid is not accompanied by DD of the requisite amount, the Tenders will not be considered.

5. Tenderers should undertake to give a Performance Bank Guarantee (PBG) @ 5% of the CIF value if purchase order is placed with them.

6. Tender should be valid for at least a period of six months from the last date of submission of Tenders. It should clearly mention (i) warranty period not less than one year along with the details and (ii) delivery period not exceeding five months.

7. (A) The time specified for delivery in the Tender Form shall be deemed to be the essence of the contract and the successful Tenderer shall arrange supplies within the period on opening of the Letter of credit.

(B) Liquidity damages: In case of extension in the delivery period with liquidated damages, the recovery shall be made on the basis of the following percentages of the CIF value which the Tenderer has failed to supply:

(a) Delay upto one fourth period of the prescribed delivery period: 2.5%
(b) Delay exceeding one fourth but not exceeding half of the prescribed period: 5%
(c) Delay exceeding half but not exceeding three fourth of the prescribed period :7.5%
(d) Delay exceeding three foruth of the period: 10%

Fraction of a day in reckoning period of delay in supplies shall be eliminated if it is less than half a day.

Maximum amount of liquidity damages will be 10%.

(C)If the Supplier requires an extension of time in completion of the contractual

supply on account of occurrence of any hindrance, he shall apply in writing to the Authority, which has placed the Supply Order, for the same immediately on occurrence of the hindrance but not after the stipulated date of completion of supply.

Delivery period may be extended with or without liquidity damages if the delay in supply of the goods is on account of hindrances beyond the control of the Tenderer. Technical Bid envelope should include: Technical details, catalogues, list of Users with details, Tender Form duly signed in all respects, and Earnest money and Form fee (if downloaded from website) in the form of DD.

8. **Commercial bid of only those Firms will be opened (i) which qualify technically and (ii) whose Technical bid gives detailed list of Users, is accompanied with required earnest money in the form of DD (**in favour of Registrar, University of Rajasthan, Jaipur) **and a DD of Rs. 200/- only** (if the form is down loaded from University Web Site) and **is accompanied with undertaking for providing Performance Bank Guarantee (PBG) @ 5% of the CIF value.**

9. University of Rajasthan, Jaipur, reserves the right to choose/ reject any/ none models/ modes or companies without assigning any reason.

10. If any dispute arises out of contract with regards to interpretation, meaning and breach of terms of contract, the matter shall be referred to the Vice Chancellor, University of Rajasthan, and his decision shall be final.

Required specifications for ELECTRODEPOSITION WORKSTATION

Compliance Voltage: ± 10 V
Applied Voltage: ± 10 V
Max. Current Range: ± 5A
Min. Current range: ± 1pA
Applied potential: ± 10V, with 0.33 mV resolution
Measured Current Resolution: minimum 0.15 fA.
Measured Voltage Resolution: minimum 40 nano Volts.
Electrometer Bandwidth: >16MHz.
Input Impedance: 10^{12}Ohm.
Galvanostat Potential ranges**:** ± 0.4mV, ± 4mV, ± 40 mV, ± 0.4V, ± 10 V
Frequency range**:** 10 micro Hz to 8 Mega Hz
AC Amplitude: 15micro volt to 1 V.
ADC: Dual 16 bit ADC.
CV scan rate: maximum 10kV/sec.
Electrochemical Noise: FFT and MEM analysis and able to record Traces up to 10^9 points

Peripheral connections: 8 Analog in, and 2 analog out with 0 to +4 V, 16 bits resolution,
2 Digital inputs, and 3 Digital outputs
I-out, and E-out analog monitor for cell current and potential
AC-out ±0.5 V sine wave 10 μH- 8 MHz with variable attenuation
Including Full facilitated software, Noise Analysis, Experiments sequencing/ Automation, Programmable light source, Solar simulator, Solar cell testing and modelling functionality.

Financial bid must give prices separately for the main system and for different accessories.

The Tenderer is required to sign and put a stamp on every page of this document.
This document must be placed in a sealed envelope and marked **"Technical Bid for ELECTRODEPOSITION WORKSTATION"** addressed to Registrar, University of Rajasthan, Jaipur. This envelope, together with the **sealed envelope** containing the "Commercial Bid" must be placed in a larger envelope marked **"Technical and Commercial Bids for ELECTRODEPOSITION WORKSTATION"** and addressed to Registrar, University of Rajasthan, Jaipur, should reach latest by 2.00 PM on 10.3.2015. **Incomplete Tender Form or Form where the quoted system does not meet the laid down requirements will be summarily rejected and their commercial bid will not be opened.**

Certified that the quoted system meets all the requirements specified in the document

Date: Signature with seal of the authorized person of the Firm

TENDER FORM PART II FOR ELECTRODEPOSITION WORKSTATION

COMMERCIAL BID FOR SUPPLY OF ELECTRODEPOSITION WORKSTATION

Name of the Company/Firm :

Address
:
Phone/Fax Numbers/E-mail ID:

Name of Indian representative:

Address :

Phone/Fax Numbers/E-mail ID:

Price of the system conforming to required specifications:

(prices of the main system and of different accessories must be quoted separately; insurance and air-freight charges upto Delhi should be mentioned, warranty period should be mentioned)

Note:

1. Tender complete in all respects should reach Registrar, University of Rajasthan, Jaipur by 2.00 PM on 10.3.2015.

2. Only manufacturers or authorized Indian representatives should apply. (Authorized representatives should enclose an authorization certificate from the Principals). Tenders will be opened at 10.3.2015 at 3.00 PM in VC Secretariat in front of the Tendering parties.

3. **Commercial bid of only those Firms will be opened (i) which qualify technically and (ii) whose Technical bid gives detailed list of Users, is accompanied with required earnest money in the form of DD (**in favour of Registrar, University of Rajasthan, Jaipur) **and a DD of Rs. 200/- only** (if the form is down loaded from University Web Site) and **is accompanied with undertaking for providing Performance Bank Guarantee (PBG) @ 5% of the CIF value.**

4. University of Rajasthan, Jaipur, reserves the right to choose/ reject any/ none models/ modes or companies without assigning any reason.

5. If any dispute arises out of contract with regards to interpretation, meaning and breach of terms of contract, the matter shall be referred to the Vice Chancellor, University of Rajasthan, and his decision shall be final.

Date: Signature with seal of the authorized person of the Firm

Tender Form No. .....

Tender No. 5

Name of the representative Firm and

Principal: Receipt No. and

date……

UNIVERSITY OF RAJASTHAN, JAIPUR

CENTRE FOR EXCELLENCE IN NANOTECHNOLOGY PROGRAMME
CENTRE FOR CONVERGING TECHNOLOGIES

TENDER FORM FOR Diffential Thermogravimetry

Cost of Tender Form: Rs.200/- Form Number: Nanotech/

If this form is down loaded from University Web Site then a DD of Rs. 200/- only, in favour of Registrar, University of Rajasthan, Jaipur, should be enclosed with the completed form.

This Tender form has two parts. Part I is for the technical bid and Part II is for the commercial bid.

TENDER FORM PART I FOR Diffential Thermogravimetry

TECHNICAL BID FOR SUPPLY OF Diffential Thermogravimetry

Name of the manufacturer :

Address :

Phone/Fax Numbers/e-mail ID:

Name of Indian representative:

Address:

Phone/Fax Numbers/E-mail ID:
:
Tender Form Fee deposited by D.D./cash receipt number …….. Dated ……

Demand draft (of nationalized bank) No. …….and Date (for the earnest money):
Note:…….

1. Tender complete in all respects should reach Registrar, University of Rajasthan, Jaipur by 2.00 PM on 10.3.2015.

2. Only manufacturers or authorized Indian distributor or dealer should apply. (Authorized distributor/dealer should enclose an authorization certificate from the Principals). Tenders will be opened on 10.3.2015 at 3.00 PM in VC Secretariat in the presence of any intending Tenderer or their authorized representative. All the enclosed documents, annexure, certificates etc should be self attested by the Tenderer with official seal. No documents without self attestation shall be considered.

3. List of User University Departments and Scientific laboratories in India and abroad of Differential Thermogravimetry (particularly of the models quoted) along with details of (i) Model number, (ii) time of installation of the Instrument and (iii) contact addresses and e-mail IDs of the user(s) should be provided.

4. Technical bids should be accompanied by earnest money of of 2% of CIF value in the form of Demand Draft of a scheduled commercial/nationalized Bank and in favour of Registrar, University of Rajasthan, Jaipur, payable at Jaipur. If the Technical bid is not accompanied by DD of the requisite amount, the Tenders will not be considered.

5. Tenderers should undertake to give a Performance Bank Guarantee (PBG) @ 5% of the CIF value if purchase order is placed with them.

6. Tender should be valid for at least a period of six months from the last date of submission of Tenders. It should clearly mention (i) warranty period not less than one year along with the details and (ii) delivery period not exceeding five months.

7. (A) The time specified for delivery in the Tender Form shall be deemed to be the essence of the contract and the successful Tenderer shall arrange supplies within the period on opening of the Letter of credit.

(B) Liquidity damages: In case of extension in the delivery period with liquidated damages, the recovery shall be made on the basis of the following percentages of the CIF value which the Tenderer has failed to supply:

(a) Delay upto one fourth period of the prescribed delivery period: 2.5%
(b) Delay exceeding one fourth but not exceeding half of the prescribed period: 5%
(c) Delay exceeding half but not exceeding three fourth of the prescribed period :7.5%
(d) Delay exceeding three foruth of the period: 10%

Fraction of a day in reckoning period of delay in supplies shall be eliminated if it is less than half a day.

Maximum amount of liquidity damages will be 10%.

(C)If the Supplier requires an extension of time in completion of the contractual supply on account of occurrence of any hindrance, he shall apply in writing to the Authority, which has placed the Supply Order, for the same immediately on occurrence of the hindrance but not after the stipulated date of completion of supply.

Delivery period may be extended with or without liquidity damages if the delay in supply of the goods is on account of hindrances beyond the control of the Tenderer. Technical Bid envelope should include: Technical details, catalogues, list of Users with details, Tender Form duly signed in all respects, and Earnest money and Form fee (if downloaded from website) in the form of DD.

8. **Commercial bid of only those Firms will be opened (i) which qualify technically and (ii) whose Technical bid gives detailed list of Users, is accompanied with required earnest money in the form of DD (**in favour of Registrar, University of Rajasthan, Jaipur) **and a DD of Rs. 200/- only** (if the form is down loaded from University Web Site) and **is accompanied with undertaking for providing Performance Bank Guarantee (PBG) @ 5% of the CIF value.**

9. University of Rajasthan, Jaipur, reserves the right to choose/ reject any/ none models/ modes or companies without assigning any reason.

10. If any dispute arises out of contract with regards to interpretation, meaning and breach of terms of contract, the matter shall be referred to the Vice Chancellor, University of Rajasthan, and his decision shall be final.

Required specifications:

Instrument: Simultaneous TGA and DSC.

2. Temperature Range: Room temperature to 1550^0 C or above will be advantageous. In addition, low temperature option down to -50^{0}C with cryostat will be preferred.

3. Instrument should have facility to determine the heat capacity (Cp) of materials upto 1200^{0}C or more

4. Instrument should have capability to calculate derivative of TG (DTG)

5. Easily interchangeable to only TG or TG-DTA system is desirable option.

6. Top loading system

7. Heating/Cooling rate: 0.01 to 50^0/min

8. Balance should have resolution of at least 1 microgram. Balance with higher capacity (few grams) is desirable.

9. Vendor should provide pan/crucible made of Pt, ceramic or other metals for at least five years of operation.

10. Instrument should have facility for vacuum analysis (0.01 mbar or less).

11. Facility to conduct experiments under different gaseous atmosphere with appropriate safety seals and mass flow controllers. (Oxygen, Air, Nitrogen, Carbon di-oxide, Carbon monoxide etc.). Mass flow controller should be calibrated to handle all of these gases.
12. Gas flow rate facility should be 1 ml/min to 200 ml/min.
13. Should have appropriate calibration kit.
14. Instrument should be upgradabale to attach a Evolve Gas Analyzer (MS/FTIR based analyser)
15. Computer and printer: Desktop computer with minimum Pentium Dual Core 2 or
higher processor, DVD-RW drive facility, >500GB HDD, >8GB DDR RAM, 19"
LCD Monitor, Minimum 4 USB ports, Windows 7 operating system. The computer
should be IBM compatible. The software and hardware should be such that any IBM
compatible computer can be used as a replacement if required in future. A color deskjet printer should be provided. If any other hardware is required for connecting the computer to the instrument, the same should also be provided.
16. It should have appropriate measurement and analysis software for automatic sample mass detection, detection of peak temperature, peak areas etc, correct for buoyancy, enthalpy values for weight changes during the sample run. Appropriate calibration routines, baseline correction, subtraction etc. should be part of the supplied software.

The Tenderer is required to sign and put a stamp on every page of this document.
This document must be placed in a sealed envelope and marked **"Technical Bid for Diffential Thermogravimetry "** addressed to Registrar, University of Rajasthan, Jaipur. This envelope, together with the **sealed envelope** containing the "Commercial Bid" must be placed in a larger envelope marked **"Technical and Commercial Bids for Diffential Thermogravimetry"** and addressed to Registrar, University of Rajasthan, Jaipur, should reach latest by 2.00 PM on 10.3.2015. **Incomplete Tender Form or Form where the quoted system does not meet the laid down requirements will be summarily rejected and their commercial bid will not be opened.**

Certified that the quoted system meets all the requirements specified in the document

Date: Signature with seal of the authorized person of the Firm

TENDER FORM PART II FOR DIFFERENTIAL THERMOGRAVIMETRY

COMMERCIAL BID FOR SUPPLY OF DIFFERENTIAL THERMOGRAVIMETRY

Name of the Company/Firm :

Address
:
Phone/Fax Numbers/E-mail ID:

Name of Indian representative:

Address :

Phone/Fax Numbers/E-mail ID:

Price of the system conforming to required specifications:

(prices of the main system and of different accessories must be quoted separately; insurance and air-freight charges upto Delhi should be mentioned, warranty period should be mentioned)

Note:

6. Tender complete in all respects should reach Registrar, University of Rajasthan, Jaipur by 2.00 PM on 10.3.2015.

7. Only manufacturers or authorized Indian representatives should apply. (Authorized representatives should enclose an authorization certificate from the Principals). Tenders will be opened at 10.3.2015 at 3.00 PM in VC Secretariat in front of the Tendering parties.

8. **Commercial bid of only those Firms will be opened (i) which qualify technically and (ii) whose Technical bid gives detailed list of Users, is accompanied with required earnest money in the form of DD (**in favour of Registrar, University of Rajasthan, Jaipur) **and a DD of Rs. 200/- only** (if the form is down loaded from University Web Site) and **is accompanied with undertaking for providing Performance Bank Guarantee (PBG) @ 5% of the CIF value.**

9. University of Rajasthan, Jaipur, reserves the right to choose/ reject any/ none models/ modes or companies without assigning any reason.

10. If any dispute arises out of contract with regards to interpretation, meaning and breach of terms of contract, the matter shall be referred to the Vice Chancellor, University of Rajasthan, and his decision shall be final.

Date: Signature with seal of the authorized person of the Firm

Tender Form No. .....

Tender No. 6

Name of the representative Firm and

Principal: Receipt No. and

date……

UNIVERSITY OF RAJASTHAN, JAIPUR

CENTRE FOR EXCELLENCE IN NANOTECHNOLOGY PROGRAMME
CENTRE FOR CONVERGING TECHNOLOGIES

TENDER FORM FOR X-RAY SPECTROFLUOROMETER

Cost of Tender Form: Rs.200/- Form Number: Nanotech/

If this form is down loaded from University Web Site then a DD of Rs. 200/- only, in favour of Registrar, University of Rajasthan, Jaipur, should be enclosed with the completed form.

This Tender form has two parts. Part I is for the technical bid and Part II is for the commercial bid.

TENDER FORM PART I FOR X-RAY SPECTROFLUOROMETER

TECHNICAL BID FOR SUPPLY OF X-RAY SPECTROFLUOROMETER

Name of the manufacturer :

Address :

Phone/Fax Numbers/e-mail ID:

Name of Indian representative:

Address:

Phone/Fax Numbers/E-mail ID:
:
Tender Form Fee deposited by D.D./cash receipt number …….. Dated ……

Demand draft (of nationalized bank) No. ……..and Date (for the earnest money):

Note:…….

1.Tender complete in all respects should reach Registrar, University of Rajasthan, Jaipur by 2.00 PM on 10.3.2015.

2. Only manufacturers or authorized Indian distributor or dealer should apply. (Authorized distributor/dealer should enclose an authorization certificate from the Principals). Tenders will be opened on 10.3.2015 at 3.00 PM in VC Secretariat in the presence of any intending Tenderer or their authorized representative. All the enclosed documents, annexure, certificates etc should be self attested by the Tenderer with official seal. No documents without self attestation shall be considered.

3. List of User University Departments and Scientific laboratories in India and abroad of X-ray Spectrofluorometer (particularly of the models quoted) alongwith details of (i) Model number, (ii) time of installation of the Instrument and (iii) contact addresses and e-mail IDs of the user(s) should be provided.

4. Technical bids should be accompanied by earnest money of 2% of CIF value in the form of Demand Draft of a scheduled commercial/nationalized Bank and in favour of Registrar, University of Rajasthan, Jaipur, payable at Jaipur. If the Technical bid is not accompanied by DD of the requisite amount, the Tenders will not be considered.

5. Tenderers should undertake to give a Performance Bank Guarantee (PBG) @ 5% of the CIF value if purchase order is placed with them.

6. Tender should be valid for at least a period of six months from the last date of submission of Tenders. It should clearly mention (i) warranty period not less than one year along with the details and (ii) delivery period not exceeding five months.

7. (A) The time specified for delivery in the Tender Form shall be deemed to be the essence of the contract and the successful Tenderer shall arrange supplies within the period on opening of the Letter of credit.

(B) Liquidity damages: In case of extension in the delivery period with liquidated damages, the recovery shall be made on the basis of the following percentages of the CIF value which the Tenderer has failed to supply:

(a) Delay upto one fourth period of the prescribed delivery period: 2.5%
(b) Delay exceeding one fourth but not exceeding half of the prescribed period: 5%
(c) Delay exceeding half but not exceeding three fourth of the prescribed period :7.5%
(d) Delay exceeding three foruth of the period: 10%

Fraction of a day in reckoning period of delay in supplies shall be eliminated if it is less than half a day.

Maximum amount of liquidity damages will be 10%.

(C)If the Supplier requires an extension of time in completion of the contractual

supply on account of occurrence of any hindrance, he shall apply in writing to the Authority, which has placed the Supply Order, for the same immediately on occurrence of the hindrance but not after the stipulated date of completion of supply.

Delivery period may be extended with or without liquidity damages if the delay in supply of the goods is on account of hindrances beyond the control of the Tenderer. Technical Bid envelope should include: Technical details, catalogues, list of Users with details, Tender Form duly signed in all respects, and Earnest money and Form fee (if downloaded from website) in the form of DD.

8. **Commercial bid of only those Firms will be opened (i) which qualify technically and (ii) whose Technical bid gives detailed list of Users, is accompanied with required earnest money in the form of DD (**in favour of Registrar, University of Rajasthan, Jaipur) **and a DD of Rs. 200/- only** (if the form is down loaded from University Web Site) and **is accompanied with undertaking for providing Performance Bank Guarantee (PBG) @ 5% of the CIF value.**

9. University of Rajasthan, Jaipur, reserves the right to choose/ reject any/ none models/ modes or companies without assigning any reason.

10. If any dispute arises out of contract with regards to interpretation, meaning and breach of terms of contract, the matter shall be referred to the Vice Chancellor, University of Rajasthan, and his decision shall be final.

Required specifications for X-ray spectrofluorometer

Specification for Time resolved Spectrofluorometer (TCSPC)
1. Fluorescence Lifetime System:
Time correlated single photon counting life time system (TCSPC)
time domain
2. Life Time range: Capable of measuring lifetime less than 100 picoseconds
3. Excitation range: 250 – 700 nm by LED/Laser Diode
4. Description of LED/LD (Central wavelength near about): 280, 340,
405, 450, 515, 660 nm
5. Repetation rate: 0.1 to 3.0 for LED, 10kHz to 100 MHz for Diode
6. Emission monochromator: 200-850 nm
7. Emission Detector range: 200-850 nm
8. Temporal response: 180ps
9. Sample compartment: Large sample compartment Equipped

with thermostable 10 mm, cuvette holder and motorized stirrer, one pair quartz cuvette.
10. Computer: Dedicated computer with Monitor.
11. Software: For spectrometer control, performance monitoring, fluorescence
lifetime data acquisition, Time resolved anisotropy with G-Factor correction,
temperature control and data analysis - exponential decay, non-exponential, micelle
kinetics, life time distribution, LERT/FRET calculator, TRES calculator etc.
Upgradability options:
12. Time resolved Anisotropy Measurements with motorized polarizers/analyzers

Including all accessories such as Solid Sample Holder and Front Face Viewing Mirror (liquid and solid), Cut-On Filter with Filter Holder, Integrating Sphere to measure quantum yield, Sphere must have 6 Inch Dia, Automated Dual Polarization Accessory, Liquid Nitrogen Cryostat for low temperature measurements.

Financial bid must give prices separately for the main system and for different accessories.

The Tenderer is required to sign and put a stamp on every page of this document.
This document must be placed in a sealed envelope and marked **"Technical Bid for X-ray Spectrofluorometer"** addressed to Registrar, University of Rajasthan, Jaipur. This envelope, together with the **sealed envelope** containing the "Commercial Bid" must be placed in a larger envelope marked **"Technical and Commercial Bids for X-ray Spectrofluorometer"** and addressed to Registrar, University of Rajasthan, Jaipur, should reach latest by 2.00 PM on 10.3.2015. **Incomplete Tender Form or**
Form where the quoted system does not meet the laid down requirements will be summarily rejected and their commercial bid will not be opened.

Certified that the quoted system meets all the requirements specified in the document

Date: Signature with seal of the authorized person of the Firm

TENDER FORM PART II FOR X-RAY SPECTROFLUOROMETER

COMMERCIAL BID FOR SUPPLY OF X-RAY SPECTROFLUOROMETER

Name of the Company/Firm :

Address
:
Phone/Fax Numbers/E-mail ID:

Name of Indian representative:

Address :

Phone/Fax Numbers/E-mail ID:

Price of the system conforming to required specifications:

(prices of the main system and of different accessories must be quoted separately; insurance and air-freight charges upto Delhi should be mentioned, warranty period should be mentioned)

Note:

1. Tender complete in all respects should reach Registrar, University of Rajasthan, Jaipur by 2.00 PM on 10.3.2015.

2. Only manufacturers or authorized Indian representatives should apply. (Authorized representatives should enclose an authorization certificate from the Principals). Tenders will be opened at 10.3.2015 at 3.00 PM in VC Secretariat in front of the Tendering parties.

3. **Commercial bid of only those Firms will be opened (i) which qualify technically and (ii) whose Technical bid gives detailed list of Users, is accompanied with required earnest money in the form of DD (**in favour of Registrar, University of Rajasthan, Jaipur) **and a DD of Rs. 200/- only** (if the form is down loaded from University Web Site) and **is accompanied with undertaking for providing Performance Bank Guarantee (PBG) @ 5% of the CIF value.**

4. University of Rajasthan, Jaipur, reserves the right to choose/ reject any/ none models/ modes or companies without assigning any reason.

5. If any dispute arises out of contract with regards to interpretation, meaning and breach of terms of contract, the matter shall be referred to the Vice Chancellor, University of Rajasthan, and his decision shall be final.

Date: Signature with seal of the authorized person of the Firm

Tender Form No. .....

Tender No. 7

Name of the representative Firm and

Principal: Receipt No. and

date……

UNIVERSITY OF RAJASTHAN, JAIPUR

CENTRE FOR EXCELLENCE IN NANOTECHNOLOGY PROGRAMME
CENTRE FOR CONVERGING TECHNOLOGIES

TENDER FORM FOR Plasma Enhanced Chemical Vapour Deposition (PECVD) Cum Plasma Polymerization

Cost of Tender Form: Rs.200/- Form Number: Nanotech/

If this form is down loaded from University Web Site then a DD of Rs. 200/- only, in favour of Registrar, University of Rajasthan, Jaipur, should be enclosed with the completed form.

This Tender form has two parts. Part I is for the technical bid and Part II is for the commercial bid.

TENDER FORM PART I FOR TENDER FORM FOR PLASMA ENHANCED CHEMICAL VAPOUR DEPOSITION (PECVD) CUM PLASMA POLYMERIZATION

TECHNICAL BID FOR SUPPLY OF TENDER FORM FOR PLASMA ENHANCED CHEMICAL VAPOUR DEPOSITION (PECVD) CUM PLASMA POLYMERIZATION

Name of the manufacturer :

Address :

Phone/Fax Numbers/e-mail ID:

Name of Indian representative:

Address:

Phone/Fax Numbers/E-mail ID:
:
Tender Form Fee deposited by D.D./cash receipt number …….. Dated ……

Demand draft (of nationalized bank) No. …….and Date (for the earnest money):

1. Tender complete in all respects should reach Registrar, University of Rajasthan, Jaipur by 2.00 PM on 10.3.2015.

2. Only manufacturers or authorized Indian distributor or dealer should apply. (Authorized distributor/dealer should enclose an authorization certificate from the Principals). Tenders will be opened on 10.3.2015 at 3.00 PM in VC Secretariat in the presence of any intending Tenderer or their authorized representative. All the enclosed documents, annexure, certificates etc should be self attested by the Tenderer with official seal. No documents without self attestation shall be considered.

3. List of User University Departments and Scientific laboratories in India and abroad of PECVD (particularly of the models quoted) alongwith details of (i) Model number, (ii) time of installation of the Instrument and (iii) contact addresses and e-mail IDs of the user(s) should be provided.

4. Technical bids should be accompanied by earnest money of 2% of CIF in the form of Demand Draft of a scheduled commercial/nationalized Bank and in favour of Registrar, University of Rajasthan, Jaipur, payable at Jaipur. If the Technical bid is not accompanied by DD of the requisite amount, the Tenders will not be considered.

5. Tenderers should undertake to give a Performance Bank Guarantee (PBG) @ 5% of the CIF value if purchase order is placed with them.

6. Tender should be valid for at least a period of six months from the last date of submission of Tenders. It should clearly mention (i) warranty period not less than one year along with the details and (ii) delivery period not exceeding five months.

7. (A) The time specified for delivery in the Tender Form shall be deemed to be the essence of the contract and the successful Tenderer shall arrange supplies within the period on opening of the Letter of credit.

(B) Liquidity damages: In case of extension in the delivery period with liquidated damages, the recovery shall be made on the basis of the following percentages of the CIF value which the Tenderer has failed to supply:

(a) Delay upto one fourth period of the prescribed delivery period: 2.5%
(b) Delay exceeding one fourth but not exceeding half of the prescribed period: 5%
(c) Delay exceeding half but not exceeding three fourth of the prescribed period :7.5%
(d) Delay exceeding three foruth of the period: 10%

Fraction of a day in reckoning period of delay in supplies shall be eliminated if it is less than half a day.

Maximum amount of liquidity damages will be 10%.

(C)If the Supplier requires an extension of time in completion of the contractual supply on account of occurrence of any hindrance, he shall apply in writing to the Authority, which has placed the Supply Order, for the same immediately on occurrence of the hindrance but not after the stipulated date of completion of supply.

Delivery period may be extended with or without liquidity damages if the delay in supply of the goods is on account of hindrances beyond the control of the Tenderer. Technical Bid envelope should include: Technical details, catalogues, list of Users with details, Tender Form duly signed in all respects, and Earnest money and Form fee (if downloaded from website) in the form of DD.

8. **Commercial bid of only those Firms will be opened (i) which qualify technically and (ii) whose Technical bid gives detailed list of Users, is accompanied with required earnest money in the form of DD (**in favour of Registrar, University of Rajasthan, Jaipur) **and a DD of Rs. 200/- only** (if the form is down loaded from University Web Site) and **is accompanied with undertaking for providing Performance Bank Guarantee (PBG) @ 5% of the CIF value.**

9. University of Rajasthan, Jaipur, reserves the right to choose/ reject any/ none models/ modes or companies without assigning any reason.

10. If any dispute arises out of contract with regards to interpretation, meaning and breach of terms of contract, the matter shall be referred to the Vice Chancellor, University of Rajasthan, and his decision shall be final.

Required specifications for Plasma Enhanced Chemical Vapour Deposition (PECVD) Cum Plasma Polymerization

1. System Description Supply, installation and performance demonstration of Plasma Enhanced Chemical Vapour Deposition (PECVD) with necessary hardware and software. . The thrust area using this system will be to produce thin and thick films of silicon nitride, silicon carbide, silicon-di-oxide and silicon with or withoutin-situ doping of Phosphorus for MEMS / NEMS applications. The vendor must provide detailedspecifications of the infrastructural requirements for the PECVD system with the bid. Also the tender should provide the clear timeline by which the system will be built, inspected, shipped andinstalled. The system shall consists of following main units

a) Loading Cum Polymerization chamber.
b) Central Load Lock Chamber
c) Four quantities of PECVD chambers
d) Vacuum System
e) RF Electrode and power supply
f) Gas Management System
g) Electrical & Control System

0B2. Loading with Polymerization chamber

The Loading with polymerization chamber should consists of following :

2.1. Circular Chamber of suitable size made of non magnetic Stainless Steel Grade SS-304

2.2. Door for loading/unloading the substrate (Manually)

2.3. Support structure made of tubular mild steel and powder coated to house all the process

chambers, Central load lock chamber and loading/unloading chamber

2.4. Sufficient number of ports with flanges

2.5. Round Substrate holder of approximately 125 mm dia to accommodate substrate of

100mm Diameter

2.6. Transport mechanism to transport the substrate from loading/unloading chamber to central

load lock chamber and vice versa without breaking vacuum

2.7. View port for viewing the plasma

2.8. Rotatable work holder (speed 0 to ≥ 20 RPM)

2.9. The loading with polymerization chamber should able to form plasma

assisted polymers deposition on the 4 inch substrate from the following types of monomers

a. Hydrocarbons

b. Hydrocarbons with polar groups

c. Fluorocarbons

d. Silicon containing monomers

e. Metal containing plasma polymers

1B3. Central Load Lock Chamber

The Central Load Lock Chamber should consists of following

12

3.1. Circular Chamber of suitable size made of non magnetic Stainless Steel Grade SS-304

3.2. Support structure made of tubular mild steel and powder coated to house all the process

chambers, Central load lock chamber and loading/unloading chamber

3.3. Sufficient number of ports with flanges

3.4. Round Substrate holder of approximately 125 mm dia to accommodate substrate of 100mm

diameter

2B4. PECVD chamber- 4 Nos.

Support structure made of tubular mild steel and powder coated to house all the process

chambers, Central load lock chamber and loading/unloading chamber should be provided by the supplier. The system consists of four quantities of PECVD Chamber and each PECVD chambershould consists of following

4.1. Circular Chamber of suitable size made of non magnetic Stainless Steel Grade SS-304.

4.2. Sufficient number of ports with flanges

4.3. Substrate Holder:

4.3.1. Heater assembly for heating the substrate uniformly over the entire area upto 700o

Celsius
4.3.2. Temperature controller with RS 232 port and digital display of the set Temperature and actual temperature. The temperature should be measured on the substratesurface and not inside the heater. Digital PID temperature controller unit should be capable of maintaining the set temperature with an accuracy of ± 10C
4.3.3. Substrate holder should be able to rotate during coating at a speed of 0 to 20 RPM
4.4. Transport mechanism for transferring the substrate from central load lock chamber to PECVD chamber or vice versa without breaking vacuum.
4.5. View port for viewing the plasma
4.6. Suitable ports compatible for future addition of in-situ/online measurement tools such as ellipsometer or interferometer
4.7. The process requirements for the PECVD chambers are as follows
a) One PECVD chamber for Silicon nitride deposition
b) One PECVD chamber for Silicon carbide deposition
c) One PECVD chamber for Silicon-di-oxide deposition
d) One PECVD chamber for Polysilicon deposition with or without phosphorus doping (1020 atoms / cm3)
3B5. Vacuum System
The ultimate vacuum that can be achieved in clean, cold, empty, dry de-gassed chamber is ~5 x10-7 m bar or better.

Pumps
5.1. Turbo molecular pump having pumping speed of 400 ltrs/sec or more with controller forCentral load lock chamber
5.2. The pumps shall be air cooled or water cooled
5.3. Oil free dry Scroll Pump of required capacity for backing Turbo pump

4 4 Nos oil free dry Scroll Pump of required capacity for all PECVD process chambers. The pump should be capable of working in environment like Oxygen, Nitrogen, Silane,Phosphine and Methane gases.
5.4. Additional oil free dry Scroll Pump for plasma polymerization chamber
5.5. All the pump should meet international norms for noise and vibration. The noise levelshall be ≤ 60 db for individual pumps.
5.6. Vacuum lines made of stainless steel, fitted with bellow adopter wherever necessary to arrest the vibration. All the vacuum lines fittings are argon arc welded using TIG welding technique and all the pipelines are leak tested using Helium Mass Spectrometer Leak Detector to a leak rate of 1 x 10-9 m.bar lit/sec
Vacuum line accessories
5.7. Motorised Throttle Valve 4 Nos. of suitable size on the roughing line to maintain vacuum level on all PECVD chambers
5.8. Suitable roughing and backing valve for central chamber.
5.9. Solenoid operated vent valve to break the vacuum at the end of the process either byadmitting atmospheric air or by connecting dry nitrogen/argon gas source, one for eachchamber.
5.10. High vacuum valve of suitable size to isolate the chamber from the turbo Molecular pump-for central chamber.
5.11. Gate valve of suitable size between process chambers and Central load lock

chamber
5.12. All valves should conform to the leak rate of 10-9 mbar l/sec. The material used forconstruction of the valve should be of SS 304L or any other equivalent stainless steel with viton seals. In the event of power failure the high vacuum valves should closeautomatically.
4B6. Vacuum Measurement
The system is to have low vacuum gauges and high vacuum gauges and the details are givenbelow. The gauge controllers for the gauges and the gauges should be calibrated against national standards. All the gauges should be interfaced with PC via RS232 or USB or Ethernet orequivalent.
6.1. Capacitance Manometer for vacuum measurement with controller and necessary cables,measuring range 10 to 10-3 mbar for all PECVD chambers
6.2. Pirani Gauge with measuring range upto 10-3 mbar for loading chamber, central load lockchamber and turbo backing.
6.3. Penning Gauge with measuring range 10-2 to 10-9 mbar for measuring turbo high vacuum.
7. RF Electrode and power Supply
7.1. One RF Power Supply, 13.56 MHz frequency, 600 Watts with auto matching network with forward & reflected power monitoring along with the necessary cables for all PECVDchambers and plasma polymerization chamber. Power supply should be of reputed make such as SEREN/AE/HUTTINGER/COMDEL
7.2. Shower type RF Electrode of suitable size mounted from the bottom of the chamber capableof adjustment from 10 to 50mm w.r.t substrate holder

8. Gas Management System
8.1. Mass Flow Controller (MFC) should be calibrated / designed for following gasses
a) Hydrogen (0-200 SCCM) – 4 Nos (all PECVD chambers)
b) Silane (0-50 SCCM) – 4 Nos (all PECVD chambers)
c) Silane / phosphine mixture (0-50 SCCM) – 1 No (Polysilicon chamber)
d) Methane (0-50 SCCM) – 1 No (Silicon carbide chamber)
e) Ammonia (0-100 SCCM) – 1 No (Silicon nitride chamber)
f) Nitrous Oxide N2O (0-50 SCCM) – 1 No (Silicon Di oxide chamber)
g) Argon (0-200 SCCM) - 1 No (Carrier for Plasma Polymerization chamber if monomeris in liquid form)
h) Vinylidene Fluoride (0-200 SCCM) – 1 No (Plasma Polymerization chamber)
i) Organo metal compound (0-200 SCCM) -1 No (Plasma Polymerization chamber)
8.2. Necessary solenoid valves, gas valves, needle valves should be provided. Maximum pipeline length will be 10 to 12 feet for each gas line.
8.3. Tank of suitable capacity to be provided for liquid type monomers
8.4. All the Mass Flow Controllers shall be interfaced to PC via RS232 or equivalent.
9. Instrumentation and Control System
9.1 Major equipment should be controllable through a computer interface.
9.2 Computer control with real time data acquisition. Software to define and save recipes,should be provided by the supplier. Logging of process parameters (temperatures,pressures) during deposition
9.3. All system parameters should be recorded in the computer and ready for

easy retrieval whenneeded
9.4 Control Console is fabricated out of Mild Steel neatly powder coated with panel cooler isplaced by the side of chamber frame structure is provided to house all the Electrical ControlInstrumentation and Control Switches which houses the following:
a) Programmable Logic Controller
b) Substrate heater controller
c) Mass Flow Gas Controllers display
d) Vacuum gauge indicators
e) Pump control unit status
f) Mains Control with RYB Indications and Isolator Switch
g) Turbo Pump Controllers
h) RF Power Supplies
i) Touch screen PC
9.5 All the electrical switchgears like Control Transformer, Contactors, Relays, Fuses, Timersetc are mounted on a plate and fitted vertically for the convenience of maintenance
9.6 The control console is wired to operate on 415 V AC, 50 Hz, 3 Phase Power Supply.
9.7 The PECVD system should consist of a centralized control system interfacing the input power module, utilities, all sub-systems of PECVD, process control module through asuitable PLC system.
9.9 Programmable Logic Controller (PLC) shall be provided in the system for Complete automation of vacuum cycle, deposition cycle and to achieve various interlocks of the system. This PLC will have necessary number of inputs and outputs, communicationinterface module etc.
9.10 The supplier should provide a CD containing the ladder logic or equivalent PLC programme used for the instrumentation of the PECVD system and a CD containing the software forPLC programming.
9.11 Operator Control Station is a PC with Touch screen with Colour Monitor of reputed Make.
9.12 In case of sudden power failures, suitable protective devices should be provided in all electrical / electronic systems to prevent damages to the critical / sensitive systems of thePECVD system.
10. Deliverable Documents, Tool-kits and Spare Parts
10.1 All documentation shall be in English language. In addition to the hard copies, soft copiesof the manuals shall be submitted vide – CD.
a) System Operational Manual in print and CD
b) System Maintenance Manual in print and CD. A discussion of common symptoms of mal function / failure and the remedial measures to be adopted in each case should bediscussed in details in the maintenance manual supplied with the systems.
c) Calibration Procedure Manual in print and CD
d) Complete set of Service Manuals for all OEM products
e) Complete set of Engineering Drawings in print, pdf and original CAD format in CD
f) Detailed circuit schematics and description of all the electrical / electronic circuit system
g) Test Reports

10.2 A set of spare O-rings and other essential spares to be provided.
10.3 A set of fuses and essential spares for turbo and rotary pumps, gauges, RF power supplyand gas handling system to be provided.
10.4 Complete set of tool-kits for maintenance of PECVD system
10.5 Complete set of took-kits for vacuum-pumps and compressors
10.6 Complete sets of spare parts including (if appropriate)
a) Gaskets for every port
b) Turbo pump lubricant
11. Installation and Training
11.1 The complete system along with accessories specified in Part B of this tender document tmust be installed at CCT within 4 months from purchase order.
11.2 The supplier / manufacturer must provide qualified instructor(s) to train CCTresearch staff on the use of Plasma Enhanced Chemical Vapour Deposition (PECVD) CumPlasma Polymerization Unit and its accessories
11.3 The supplier / manufacturer must provide training for the operation, trouble-shooting andmaintenance complete system.
11.4 Vendor should provide pre-shipment inspection training at the manufacture site for oneworking week for two persons. All costs like to & fro travel, boarding and lodging shouldpaid by the vendor
11.5 Warranty: Two year from installation and acceptance and completion
12.1 The supplier shall install and commission all the accessories covered under the Part B of this tender and demonstrate performance and quality parameters of the complete system as per design. CCT Personnel shall witness the performance tests.
12.2 Leak testing of the chamber and its sub-assemblies (if any) to an individual leak rate of1x10-9 mbar ltrs/sec using Helium Mass Spectrometer Leak Detector.
12.3 Testing of ultimate vacuum of 1 x 10-6 m.bar in clean, cold, empty thoroughly degassedcondition in Process Chamber
12.4 Testing of Manual/automatic operation of vacuum system from cold start to vacuum readyindication
12.5 Testing safety interlocks functions
12.6 The supplier shall demonstrate the growth of 2 μ m thick silicon nitride, silicon-di-oxide andSilicon Carbide on the 4 inch substrate
12.7. The supplier shall demonstrate the growth of 2 μ m thick silicon on the 4 inch substratewithout doping and with doping of phosphorus to the level of > 1020 /cm3.
12.8 The supplier shall demonstrate the deposition of 2 μ m thick of PVDF polymer
12.9 The supplier should demonstrate +3% thickness uniformity on a 4 inch substrate, excluding5 mm edges.
13. Optional Accessories / Modules
The following accessories (Residual Gas Analyzer for all process chambers, Exhaust System)should be quoted separately
13.1 Residual Gas Analyzer
13.1.1. Quadruple Mass spectrometer type residual gas analyzer shall be integrated with the PECVD system.

13.1.2. Residual Gas Analyzer should be capable of detecting atomic mass number (amu) from 1to ≥200
13.1.3 C based software for data acquisition as well as online monitoring of residual gas shall beprovided.
13.1.4 Reputed make RGA with in built Turbo based vacuum system to be provided, that will be used sequentially for monitoring residual gases in any or all chambers.
13.2. Chiller
13.2.1 Chiller for chilled water supply for closed loop circulation.
13.2.2. The capacity of chiller should be suitable to the PECVD system
13.3. Air Compressor and Spare Accessories
13.3.1 Air compressor with ≥ 100 litre storage tank and pressure regulator shall be quoted
13.3.2 The noise level of the air compressor should be less than 45 db

13.3.3 Spare (2 Nos) oil free dry Scroll Pump along with gate valve as well as spare (2 Nos) turbomolecular pump with pump controllers and gate valve should be quoted as optional
13.3.4 Spare (2 Nos) Pirani gauge (range upto 10-3mbar) and Spare (2 Nos) Penning Gauge (measuring range 10-2 to 10-9 mbar). Both the gauges should have individual digital display units as well as interfaceable with PC via RS232 or USB or equivalent
13.3.5 One additional RF power source and RF electrode as mentioned in section 7 shall be quoted as optional spare
13.3.6 A spare heater assembly along with temperature controller having RS232 or equivalent interface as specified in section 4.3 needs be quoted as optional spare.
13.3.7 A spare PLC along with PC and touch screen display should be quoted as optional spare.
13.4. Optional MFC's
a) Acetylene (0-200 SCCM) - 1 No (Plasma Polymerization chamber)
b) Acrylonitrile C3H3N (0-200 SCCM) – 1 No (Plasma Polymerization chamber)
c) Hexamethyl disil oxane-HMDSO (0-200 SCCM) – 1 No (Plasma Polymerizationchamber)
d) Carbon-di-oxide (20 sccm) – 1 No
e) All MFC should have interface option with PC via RS232 or equivalent
13.5 Gas Cylinders, regulators, detectors and Scrubber system
The vendor should quote for Gas cylinders, regulators, detectors and scrubber system as specifiedbelow including the installation of the same at CCT, University ofRrajasthan, Jaipur.
13.5.1 Along with the system supplier shall provide electronic grade high purity cylinder foreach gas. Technical Specs for specialty gases along with the type of connectivity and purity levelare given below:
Name of the gas Purity Cylinder connectivity No. of Cylinders
Hydrogen 99.9999 (N6) DISS 724 or equivalentCompatible regulators 1
Silane (SiH4) 99.999 (N5) DISS 632 or equivalentCompatible regulators 1
1% Phosphine (PH3)in Silane (SiH4) 5N5/6N DISS 632 or equivalent Compatible regulators 1
Methane (CH4) 99.999 (N5) CGA 350 or equivalent Compatible regulators 1

Ammonia (NH3) 99.9995 (N5.5) CGA 660/720 or equivalent Compatible regulators 1
Nitrous Oxide (N2O) High Purity Compatible regulators 1
Argon (Ar) 99.999 (N5) CGA 580 or equivalent Compatible regulators 1
Vinylidine Fluoride(VDF) High Purity Compatible regulators 1
Acetylene High Purity Compatible regulators 1

13.5.2 Proper regulators should be supplied for each gases mentioned above:
13.5.2.1 Regulators should be Single stage
13.5.2.2 Approx. delivery pressure range of 2-100 psig (0.14 – 7 bar)
13.5.2.3 Source Pressure : Vacuum to 3500 psig (241 bar)
13.5.2.4 Inlet/Outlet Connections : ¼ inch face seal
13.5.2.5 Surface Finish : 15 µin – 25 µin Ra
13.5.2.6 Material : SS316L
13.5.2.7 All port (6 port) ¼" male VCR
13.5.2.8 316L SS Diaphragm Valves for outlet & purging with ¼" mail VCR
13.5.3 Suitable Gas detectors should be supplied along with gas cylinders:
13.5.3.1 Gas detectors for all flammable (SiH4, CH4, H2…) and toxic gases (PH3,NH3, N2O….)
13.5.3.2 The detector should be connected to remote gas monitor with alarm facility
13.5.3.3 Monitoring Configuration: Continuous, single point, extractive
13.5.3.4 Detection level in ppm
13.5.3.5 The vendor must provide at least a two-channel sensor unit for detection of each gases. One sensor is to be mounted near the gas cylinder, the second sensor is to be mounted in proximity of the system
13.5.3.6 For flammable gases Sensor details, measuring range, limit of sensor : Range 0 - 100% LEL,Detection level in ppm
13.5.3.7 Type – catalytic, Output - 4 to 20 mA , Input supply - 24 VDC , Sensor body SS-316, Enclosure – Flame proof
13.5.3.8 Display – 10 LED bar graph per channel , Module Card - Microcontroller based, Programming : 4 magic button , Input - 4- 20 mA , Buzzer - 90db+ Power – 220V, 50 Hz, working temp: 15 - 40 degree centigrade . Make: Alfa Level / ABB/ PRISM Etc of good quality.
13.5.4 Scrubber System:
13.5.4.1 Tenderer should provide and install suitable scrubber system for the gases specified in section 8.1
13.5.4.2 The capacity of the scrubber system should be suitable for gases specifiedin section 8.1
13.5.4.3 Dry standalone scrubber should be provided compatible to clean room.
13.6 Vacuum Deposition Systems
Following two independent Vacuum Deposition System shall be quoted as optional items
13.6.1. Bench top sputter system
13.6.1.1.Chamber: The working chamber material should be made up of Borosilicate glass with acrylic implosion guard or better transparent as well as implosion guard. The diameter of the chamber shall be ≥ 150 mm

and height shall be ≥ 110 mm. This bench top sputter system should be used for the sample preparation for Scanning Electron Microscopy (SEM). The sample could be obtained from the system described in section 1. If required, suitable cooling system should be provided by the vendor.

13.6.1.2.Work holder: The work holder should be ≥ 100 mm diameter. Atleast 6 quantities each of SEM Stub holes, 10 mm dia and approx 3 mm dia holes.

13.6.1.3.Vacuum System and Gauges: Rotary and Turbo pump should be quoted along with suitable valves and gauges such as Pirani (range upto 10-3 mbar) and Penning Gauge (measuring range 10-2 to 10-9 mbar). Both the gauges should have individual digital display units as well as interfaceable with PC via RS232 or USB or equivalent. One spare set of Pirani and Penning gauge should be quoted separately.

13.6.1.4.Targets and accessories: Two quantities each of Gold target and Chromium target. Other targets such as platinum, copper and iron shall be quoted as optional accessories. Carbon evaporation accessory for the production of carbon films for Transmission Electron Microscopy (TEM) shall be quoted. Digital Film Thickness Monitor (with RS232 or USB or equivalent interface) along with accessories (oscillator kit & crystal). Necessary power supply unit along with controls and display units needs to be provided.

13.6.2. Multifunctional Vacuum Deposition System

13.6.2.1 Chamber: A multi functional vacuum coating system can be proposed as an optional item. It contains a single stainless steel SS304L chamber having inner side dimension ≥ 500mm (D), ≥ 500mm (D) and ≥ 600mm (H). A hinge supported door for closing (or) opening the chamber with ≥ 2 nos of view ports. The base plate should have minimum of 11 feedthrough ports. Top of the chamber should be provided with ports with flanges required for mounting substrate, rotary work holder support, substrate heater feedthrough, Quartz crystal sensor feedthrough, necessary ports for evacuation, measuring gauge heads. Suitable support structure for the Chamber should be provided by the vendor. Ultimate vacuum of approx 5 x 10-7 mbar should be achieved in clean, cold, empty degassed chamber.

13.6.2.2 Substrate Holder: Rotary substrate holder which can hold the different sized substrates up to 6 inch. The rotation should be controllable between 20 – 60 rpm. Substrate heaters for heating upto 2500C to be provided along with Digital PID Controller (with RS 232 or USB interface) and suitable thermocouple. Electrically operated source shutters shall be provided. Al, Cu and W target material should be provided by the vendor.

13.6.2.3 Chamber Gadgetories: L.T Source & Power supply capable of delivering upto 200 amps at 10 volt. Electron beam gun & power supply capable of delivering upto 3kW – four pocket electron beam source with X-Y sweep coils. H.T electrodes, water feedthrough, detachable type filament assembly along with ≥ 3 kW electron beam tetrode power

supply with X-Y beam scan facility should be provided. Magnetron source (≥ 3 inch) should be RF/DC & pulsed DC compatible. Themagnetron source should be configured for upward sputtering. Ion beam source with power supply, End Hall Permanent magnet Ion sourcepackage with mass flow controller for Ar or Oxygen. Electricallyoperated source shutters for Electron Beam Gn and LT source should beprovided. RF power source (≥ 300 Watt) with auto matching network tobe provided for RF sputtering. A DC power supply capable of deliveringupto 2 kW for DC sputtering. Necessary display units with RS232 interface for all power supply needs to be provided. Digital Film Thickness Monitor (with RS232 or equivalent interface) along withaccessories (oscillator kit & crystal) should be provided for monitoringdeposition rate and thickness. The deposition monitor should beinterfacable with the operation of shutter.
13.6.2.4 Vacuum System and Gauges: Dry pump (≥ 35 m3/hr) and Turbo pump (≥1000 ltrs/sec) should be quoted along with suitable valves and gauges such as Pirani (range upto 10-3mbar) and Penning Gauge (measuring range 10-2 to 10-9 mbar). Both the gauges should have individual digitaldisplay units as well as interfaceable with PC via RS232 or equivalent.
One spare set of Pirani and Penning gauge should be quoted separately.
Electro pneumatically operated isolation valves for both roughing and backing purposes. This valve operation should be interlocked with the high vacuum valve and vent valve. An electro pneumatically operated air admittance valve should be provided to break the vacuum at the end of the cycle to expose the substrate to atmosphere. Mass flow controller (2 to 100 sccm) with filter, valve and an inlet solenoid valve to feed gas into the chamber to carry out sputtering operation using Ar and Oxygen.
13.6.2.5 Control System: PLC / PC based instrumentation system should be provided for controlling the substrate heater, rotary drive, Electron Beam Gun power supply, Magnetron power supply, Ion beam gun power supply, Thyristor controller, System emergency OFF switch and thickness monitor.

Financial bid must give prices separately for the main system and for different accessories.

The Tenderer is required to sign and put a stamp on every page of this document.
This document must be placed in a sealed envelope and marked **"Technical Bid for PECVD"** addressed to Registrar, University of Rajasthan, Jaipur. This envelope, together with the **sealed envelope** containing the "Commercial Bid" must be placed in a larger envelope marked **"Technical and Commercial Bids for PECVD"** and addressed to Registrar, University of Rajasthan, Jaipur, should reach latest by 2.00 PM on 10.3.2015. **Incomplete Tender Form or Form where the quoted system does not meet the laid down requirements will be summarily rejected and their commercial bid will not be opened.**

Certified that the quoted system meets all the requirements specified in the document

Date: Signature with seal of the authorized person of the Firm

TENDER FORM PART II FOR FOR PLASMA ENHANCED CHEMICAL VAPOUR DEPOSITION (PECVD) CUM PLASMA POLYMERIZATION

COMMERCIAL BID FOR SUPPLY OF Plasma Enhanced Chemical Vapour Deposition (PECVD) Cum Plasma Polymerization

Name of the Company/Firm :

Address
:
Phone/Fax Numbers/E-mail ID:

Name of Indian representative:

Address :

Phone/Fax Numbers/E-mail ID:

Price of the system conforming to required specifications:

(prices of the main system and of different accessories must be quoted separately; insurance and air-freight charges upto Delhi should be mentioned, warranty period should be mentioned)

Note:
Tender complete in all respects should reach Registrar, University of Rajasthan, Jaipur by 2.00 PM on 10.3.2015.

1. Only manufacturers or authorized Indian representatives should apply. (Authorized representatives should enclose an authorization certificate from the Principals). Tenders will be opened at 10.3.2015 at 3.00 PM in VC Secretariat in front of the Tendering parties.

2. **Commercial bid of only those Firms will be opened (i) which qualify technically and (ii) whose Technical bid gives detailed list of Users, is accompanied with required earnest money in the form of DD (**in favour of Registrar, University of Rajasthan, Jaipur) **and a DD of Rs. 200/- only** (if the form is down loaded from University Web Site) and **is accompanied with undertaking for providing Performance Bank Guarantee (PBG) @ 5% of the CIF value.**

3. University of Rajasthan, Jaipur, reserves the right to choose/ reject any/ none models/ modes or companies without assigning any reason.

4. If any dispute arises out of contract with regards to interpretation, meaning and breach of terms of contract, the matter shall be referred to the Vice Chancellor, University of Rajasthan, and his decision shall be final.

Date: Signature with seal of the authorized person of the Firm

Tender Form No. .....

Tender No. 8

Name of the representative Firm and Principal:

Receipt No. and date……

UNIVERSITY OF RAJASTHAN, JAIPUR

CENTRE FOR EXCELLENCE IN NANOTECHNOLOGY PROGRAMME
CENTRE FOR CONVERGING TECHNOLOGIES

TENDER FORM FOR UV/VIS/NIR SPECTROPHOTOMETER

Cost of Tender Form: Rs.200/- Form Number: Nanotech/

If this form is down loaded from University Web Site then a DD of Rs. 200/- only, in favour of Registrar, University of Rajasthan, Jaipur, should be enclosed with the completed form.

This Tender form has two parts. Part I is for the technical bid and Part II is for the commercial bid.

TENDER FORM PART I FOR UV/Vis/NIR Spectrophotometer

TECHNICAL BID FOR SUPPLY OF UV/Vis/NIR Spectrophotometer

Name of the manufacturer:

Address :

Phone/Fax Numbers/e-mail ID:

Name of Indian representative:

Address:

Phone/Fax Numbers/E-mail ID:
:
Tender Form Fee deposited by D.D./cash receipt number …….. Dated ……

Demand draft (of nationalized bank) No. ……and Date (for the earnest money):
Note:…….

1. Tender complete in all respects should reach Registrar, University of Rajasthan, Jaipur by 2.00 PM on 10.3.2015.

2. Only manufacturers or authorized Indian distributor or dealer should apply. (Authorized distributor/dealer should enclose an authorization certificate from the Principals). Tenders will be opened on 10.3.2015 at 3.00 PM in VC Secretariat in the presence of any intending Tenderer or their authorized representative. All the enclosed documents, annexure, certificates etc should be self attested by the Tenderer with official seal. No documents without self attestation shall be considered.

3. List of User University Departments and Scientific laboratories in India and abroad of UV?Vis/NIR spectrophotometer (particularly of the models quoted) alongwith details of (i) Model number, (ii) time of installation of the Instrument and (iii) contact addresses and e-mail IDs of the user(s) should be provided.

4. Technical bids should be accompanied by earnest money of 2% OF CIF Value in the form of Demand Draft of a scheduled commercial/nationalized Bank and in favour of Registrar, University of Rajasthan, Jaipur, payable at Jaipur. If the Technical bid is not accompanied by DD of the requisite amount, the Tenders will not be considered.

5. Tenderers should undertake to give a Performance Bank Guarantee (PBG) @ 5% of the CIF value if purchase order is placed with them.

6. Tender should be valid for at least a period of six months from the last date of submission of Tenders. It should clearly mention (i) warranty period not less than one year along with the details and (ii) delivery period not exceeding five months.

7. (A) The time specified for delivery in the Tender Form shall be deemed to be the essence of the contract and the successful Tenderer shall arrange supplies within the period on opening of the Letter of credit.

(B) Liquidity damages: In case of extension in the delivery period with liquidated damages, the recovery shall be made on the basis of the following percentages of the CIF value which the Tenderer has failed to supply:

(a) Delay upto one fourth period of the prescribed delivery period: 2.5%
(b) Delay exceeding one fourth but not exceeding half of the prescribed period: 5%
(c) Delay exceeding half but not exceeding three fourth of the prescribed period :7.5%
(d) Delay exceeding three fourth of the period: 10%

Fraction of a day in reckoning period of delay in supplies shall be eliminated if it is less than half a day.

Maximum amount of liquidity damages will be 10%.

(C)If the Supplier requires an extension of time in completion of the contractual supply on account of occurrence of any hindrance, he shall apply in writing to the Authority, which has placed the Supply Order, for the same immediately on occurrence of the hindrance but not after the stipulated date of completion of supply.

Delivery period may be extended with or without liquidity damages if the delay in supply of the goods is on account of hindrances beyond the control of the Tenderer. Technical Bid envelope should include: Technical details, catalogues, list of Users with details, Tender Form duly signed in all respects, and Earnest money and Form fee (if downloaded from website) in the form of DD.

12. **Commercial bid of only those Firms will be opened (i) which qualify technically and (ii) whose Technical bid gives detailed list of Users, is accompanied with required earnest money in the form of DD (**in favour of Registrar, University of Rajasthan, Jaipur) **and a DD of Rs. 200/- only** (if the form is down loaded from University Web Site) and **is accompanied with undertaking for providing Performance Bank Guarantee (PBG) @ 5% of the CIF value.**

13. University of Rajasthan, Jaipur, reserves the right to choose/ reject any/ none models/ modes or companies without assigning any reason.

14. If any dispute arises out of contract with regards to interpretation, meaning and breach of terms of contract, the matter shall be referred to the Vice Chancellor, University of Rajasthan, and his decision shall be final.

Required specifications for UV/Vis/NIRSpectrophotometer

UV/Vis/NIR Spectrophotometer with accessories

Wavelength range:

175 nm – 3000 nm or >3000nm.

Should have facility for N_2 purging.

Optical unit should include Pre-aligned tungsten halogen lamp and deuterium lamp with automatic source change.

All reflecting optical system (SiO_2coatedpreferred) with holographic grating monochromator with 1400 lines/mm.

Photomultiplier detector for high energy in the whole UV/Vis wavelength range and Peltier cooled PbS detector for the NIR wavelength range.

Spectral bandwidth from 0.05 nm – 5 nm UV/Vis,

spectral bandwidth from 0.2 nm – 20 nm NIR.

System should have dual sample compartment.

System should have Programmable attenuators for high absorbance measurements

UV/Vis Resolution:≤ 0.05 nm;

NIR Resolution:≤ 0.20 nm.

Stray Light: ≤0.00009%T at 220 nm.

Wavelength Accuracy:UV/Vis± 0.080 nm // NIR± 0.300 nm.

Wavelength Reproducibility:

UV/Vis (Deuterium lamp lines) ≤ 0.020 nm // NIR (Deuterium lamp lines) ≤ 0.080 nm.
Photometric Accuracy:
Double Aperture Method 1A ± 0.0006 A.
Photometric Linearity: At 1.0 A ± 0.0060 A.
Photometric Reproducibility:≤ 0.00009 A.
Photometric Range:8 A (UV/Vis) and 6 A (NIR).
Baseline Flatness:± 0.0009 A or better.
Photometric Noise RMS:0 A and 500 nm ≤0.00005 A (2 nm slit, 1 second integration time)
10mm path length rectangular Cell Quartz with Stopper, Pk/2, (Vol. 3.5 ml) for UV-VIS and NIR
Integrating Sphere 60 mm Module Should Comprise Integrating sphere contained in a module which simply snaps into the spectrometer and is ready to be used without any adjustment. Features includes: - the sphere is preferably Spectralon Coated - PMT / PbS detector combination.
Powder sample holder.
Instrument should be ready to adopt Cryostat for spectrophotometer.

The Tenderer is required to sign and put a stamp on every page of this document. This document must be placed in a sealed envelope and marked **"Technical Bid for UV/Vis/NIRSpectrophotometer "** addressed to Registrar, University of Rajasthan, Jaipur. This envelope, together with the **sealed envelope** containing the "Commercial Bid" must be placed in a larger envelop e marked **"Technical and Commercial Bids for UV/Vis/NIRSpectrophotometer "** and addressed to Registrar, University of Rajasthan, Jaipur, should reach latest by 2.00 PM on 10.3.2015. **Incomplete Tender Form or Form where the quoted system does not meet the laid down requirements will be summarily rejected and their commercial bid will not be opened.**

Certified that the quoted system meets all the requirements specified in the document

Date: Signature with seal of the authorized person of the Firm

TENDER FORM PART II FOR UV/Vis/NIRSpectrophotometer

COMMERCIAL BID FOR SUPPLY OF UV/Vis/NIRSpectrophotometer

Name of the Company/Firm :

Address
:
Phone/Fax Numbers/E-mail ID:

Name of Indian representative:

Address :

Phone/Fax Numbers/E-mail ID:

Price of the system conforming to required specifications:

(prices of the main system and of different accessories must be quoted separately; insurance and air-freight charges upto Delhi should be mentioned, warranty period should be mentioned)

Note:

1. Tender complete in all respects should reach Registrar, University of Rajasthan, Jaipur by 2.00 PM on 10.3.2015.

2. Only manufacturers or authorized Indian representatives should apply. (Authorized representatives should enclose an authorization certificate from the Principals). Tenders will be opened at 10.3.2015 at 3.00 PM in VC Secretariat in front of the Tendering parties.

3. **Commercial bid of only those Firms will be opened (i) which qualify technically and (ii) whose Technical bid gives detailed list of Users, is accompanied with required earnest money in the form of DD (**in favour of Registrar, University of Rajasthan, Jaipur) **and a DD of Rs. 200/- only** (if the form is down loaded from University Web Site) and **is accompanied with undertaking for providing Performance Bank Guarantee (PBG) @ 5% of the CIF value.**

4. University of Rajasthan, Jaipur, reserves the right to choose/ reject any/ none models/ modes or companies without assigning any reason

5. If any dispute arises out of contract with regards to interpretation, meaning and breach of terms of contract, the matter shall be referred to the Vice Chancellor, University of Rajasthan, and his decision shall be final.

Date: Signature with seal of the authorized person of the Firm

Tender Form No. .....

Tender No. 9

Name of the representative Firm and

Principal: Receipt No. and

date……

UNIVERSITY OF RAJASTHAN, JAIPUR

Department of Physics, University of Rajasthan
(DST-FIST Program)

TENDER FORM FOR FREQUENCY RESONANCE ENERGY TRANSFERSET

Cost of Tender Form: Rs.200/- Form Number: Nanotech/DST-FIST-Physics/

If this form is down loaded from University Web Site then a DD of Rs. 200/- only, in favour of Registrar, University of Rajasthan, Jaipur, should be enclosed with the completed form.

This Tender form has two parts. Part I is for the technical bid and Part II is for the commercial bid.

TENDER FORM PART I FOR FREQUENCY RESONANCE ENERGY TRANSFER SET UP

TECHNICAL BID FOR SUPPLY OF FREQUENCY RESONANCE ENERGY TRANSFER SET UP

Name of the manufacturer :

Address :

Phone/Fax Numbers/e-mail ID:

Name of Indian representative:

Address:

Phone/Fax Numbers/E-mail ID:
:
Tender Form Fee deposited by D.D./cash receipt number …….. Dated ……

Demand draft (of nationalized bank) No. ……..and Date (for the earnest money):
Note:…….

1. Tender complete in all respects should reach Registrar, University of Rajasthan, Jaipur by 2.00 PM on 10.3.2015.

2. Only manufacturers or authorized Indian distributor or dealer should apply. (Authorized distributor/dealer should enclose an authorization certificate from the Principals). Tenders will be opened on 10.3.2015 at 3.00 PM in VC Secretariat in the presence of any intending Tenderer or their authorized representative. All the enclosed documents, annexure, certificates etc should be self attested by the Tenderer with official seal. No documents without self attestation shall be considered.

3. List of User University Departments and Scientific laboratories in India and abroad of FRET (particularly of the models quoted) alongwith details of (i) Model number, (ii) time of installation of the Instrument and (iii) contact addresses and e-mail IDs of the user(s) should be provided.

4. Technical bids should be accompanied by earnest money of Rs. 2% of CIF value in the form of Demand Draft of a scheduled commercial/nationalized Bank and in favour of Registrar, University of Rajasthan, Jaipur, payable at Jaipur. If the Technical bid is not accompanied by DD of the requisite amount, the Tenders will not be considered.

5. Tenderers should undertake to give a Performance Bank Guarantee (PBG) @ 5% of the CIF value if purchase order is placed with them.

6. Tender should be valid for at least a period of six months from the last date of submission of Tenders. It should clearly mention (i) warranty period not less than one year along with the details and (ii) delivery period not exceeding five months.

7. (A) The time specified for delivery in the Tender Form shall be deemed to be the essence of the contract and the successful Tenderer shall arrange supplies within the period on opening of the Letter of credit.

(B) Liquidity damages: In case of extension in the delivery period with liquidated damages, the recovery shall be made on the basis of the following percentages of the CIF value which the Tenderer has failed to supply:

(a) Delay upto one fourth period of the prescribed delivery period: 2.5%
(b) Delay exceeding one fourth but not exceeding half of the prescribed period: 5%
(c) Delay exceeding half but not exceeding three fourth of the prescribed period :7.5%
(d) Delay exceeding three foruth of the period: 10%

Fraction of a day in reckoning period of delay in supplies shall be eliminated if it is less than half a day.

Maximum amount of liquidity damages will be 10%.

(C)If the Supplier requires an extension of time in completion of the contractual supply on account of occurrence of any hindrance, he shall apply in writing to the Authority, which has placed the Supply Order, for the same immediately on occurrence of the hindrance but not after the stipulated date of completion of supply.

Delivery period may be extended with or without liquidity damages if the delay in supply of the goods is on account of hindrances beyond the control of the . Tenderer.

8. Technical Bid envelope should include: Technical details, catalogues, list of Users with details, Tender Form duly signed in all respects, and Earnest money and Form fee (if downloaded from website) in the form of DD.

9. **Commercial bid of only those Firms will be opened (i) which qualify technically and (ii) whose Technical bid gives detailed list of Users, is accompanied with required earnest money in the form of DD (**in favour of Registrar, University of Rajasthan, Jaipur) **and a DD of Rs. 200/- only** (if the form is down loaded from University Web Site) and **is accompanied with undertaking for providing Performance Bank Guarantee (PBG) @ 5% of the CIF value.**

10. University of Rajasthan, Jaipur, reserves the right to choose/ reject any/ none models/ modes or companies without assigning any reason.

11. If any dispute arises out of contract with regards to interpretation, meaning and breach of terms of contract, the matter shall be referred to the Vice Chancellor, University of Rajasthan, and his decision shall be final.

Required specifications for Frequency Resonance Energy Transfe set upr System

The system should be of latest state of the art with complete spectral confocal technology for fixed & Live Cell imaging, Fluorescence recovery after photobleaching (FRAP), Fast FRAP, Fluorescence resonance energy transfer (FRET), Photo activation/conversion.

The system should consist of:

Microscope and related accessories:

- Fully Motorized Upright Fluorescence Research Microscope including programmable motorized X-Y scanning stage with motorized 6Xnosepiece and motorized 6X-8X FL filter turret or better.
- Universal sample holders for slides, 35/60 mm Petri dish or similar chamber for multipoint, tile and mosaic imaging.

- 12V 100W halogen illumination for transmitted light, 120W metal halide illumination for Fluorescence.
- High resolution Z-focus drive with step size of 10-20 nm or better, in addition to Z motoritisation of microscope, please also quote Galvo/piezo stage.
- High resolution Plan Apochromat objectives 10x/0.4, 20X/0.7-0.8 , 40x/0.9, 60/63x/1.40oil, & Plan Apo 63x/0.90 or better water dipping objective for live cell imaging and Plan Apo 100X/1.4NA oil immersion lens.
- Automated DIC for all objectives and Fluorescent band pass filters for DAPI, GFP, YFP, RFP, Rhodamine.

Laser scanning and detection unit:

- High sensitive built-in spectral detectors for simultaneous imaging of at least 5 fluorochromes or higher, including high sensitivity GaAsP detectors (minimum 2) having QE 45-50%.
- The scanner unit should be included with sensitivity improving components like spectral recycling/prism/hybrid photon technology with suitable dichroic combinations etc.
- The Scanner should have real multiple ROI scan capability including fast scan for bleaching, normal scan for Imaging.
- **Scanning resolution:** 4 x 1 to 6144 x 6144 pixels, continuously adjustable.
- **Scanning speed:** 15 × 2 speed stages; up to 12.5 frames/sec with 512 × 512 pixels, 5 frames/sec with 512 × 512 pixels (max. 250 frames/sec 512 × 32); up to 4000 lines per second
- **Scanning zoom:** 0.5 x to 40 x, variable in increments of 0.1 or better.
- **Scanning rotation:** Freely rotatable around 360°, variable in increments of 0.1°; free xy offset
- **Scanning field:** Field diagonal of 18-20 mm in the intermediate image plane, homogeneous illumination of image field
- **Pinhole:** Motorized master pinhole, diameter continuously adjustable
- **Data depth:** 8-bit, 12-bit or 16-bit selectable; up to 37 channels simultaneously detectable
- **Detection** One or two confocal channels (reflection/fluorescence), one optional external transmitted-light channel with DIC capability, each with high-sensitivity PMT detector, spectral increment 1 nm
- **Data depth** Should be selectable between 8 bit, 12 bit or 16 bit
- Laser Module with control electronics and acousto-optic tunable filters (AOTF) for all lasers including multiline Ar 458/488/514nm, DPSS 561 nm, HeNe 594, 633 nm and 405 nm.

Control computer:

- High-end PC with ample RAM and hard disk storage capacity; ergonomic high-resolution16:10 LCD-TFT flat-panel display, Dual layer DVD writer, Ethernet, USB 2.0, Window operating system with multi-user capability.

- As per instruments requirement, suitable online UPS with external maintaince free battery for minimum back 60 min should be supplied.

Confocal imaging and control software:

- Software should be capable of controlling all motorized functions of microscope, digital camera, scan head, lasers including AOTF, image acquisition & processing.
- **System self-test** Calibration and testing tool for the automatic verification and optimal adjustment of the system
- Image acquisition for 3D, 4D, Spectral Imaging, Time series etc including capability to separate bleed through in multichannel by spectral fingerprinting technique.
- Additional analysis software module for Advance 3D (including 3D Deconvolution software), Dedicated FRAP, Fast FRAP, FRET, Co-localization with histogram analysis to be offered as standard.
- **Acquisition modes:** Spot, line / spline, frame, z-stack, lambda stack, time series and all combinations (xyz I t); online calculation and display of ratio images; averaging and summation (line / framewise, configurable); step scan (for higher frame rates); smart acquisition setup by selection of dyes
- **Crop function** Convenient and simultaneous selection of scanning areas (zoom, offset, rotation)
- **Multitracking:** Fast change of excitation lines at sequential acquisition of multicolor fl uorescence for reduction of signal crosstalk
- **Lambda scan:** Parallel or sequential acquisition of image stacks with spectral information for each pixel
- **Image analysis and operations:** Colocalization and histogram analysis with individual parameters; profile measurements on any line; measurement of lengths, angles, surfaces, intensities etc; operations: addition, subtraction, multiplication, division, ratio, shift, filtering (low pass, median, high-pass, etc; also customizable)
- **Image archiving, exporting & importing:** Functions for managing of images and respective recording parameters; multi-print function;over 20 file formats (TIF, BMP, JPG, PSD, PCX, GIF, AVI, Quicktime, etc) for export.
- High resolution monochrome cooled CCD camera, 2/3''Chip with 1.4 million net effective pixel resolution controlled by the same confocal software for multichannel, z stack, time series imaging.
- **Real-time electronics** Control of the microscope, the lasers, the scan module and other accessory components; control of the data acquisition and synchronization by real-time electronics; oversampling readout logic for best sensitivity; data communication between real-time electronics and user PC *via* Ethernet interface with the possibility of online data analysis during image acquisition

Service and training:

- A written contract of good after sales service and technical support should be provided.
- AMC as well as CAMC (without consumables like laser, bulbs) for two years to be offered separately on yearly basis.
- Periodic training/demonstration classes at least once in every 6/12 months to new users should be conducted.
- The Vendor should have a good service and application support backup.

Manufacture:

- Country of origin/manufacture product catalogue, specifications and certificates of calibration and inspection should be provided.
- Photocopy/computer print will not be accepted.
- All technical data should be supported with original product data sheet.

Spare-Parts:
Additional key spare parts should be included.

Service and training:

- A written contract of good after sales service and technical support should be provided.
- Periodic training/demonstration classes at least once in every 6/12 months to new users should be conducted.

Warranty:
The entire instrument system and software should be provided with a 5 year comprehensive warranty from the date of completion of satisfactory installation. The warranty should include regular maintenance, parts and labor. The warranty should also include all software upgrades. The maintenance costs for the entire system after warranty period should be stated.

Note:

- Bidder should give compliance statement point wise showing/highlighting items part number/serial number as quoted in their quotation for comprehensive technical comparison.
- Proof of compliance should be mentioned point wise in the catalogue/technical leaflets/literature/product catalogue in manufacturer website.
- Multiple Models with higher specifications should be quoted as separate models in the bids.

Financial bid must give prices separately for the main system and for different accessories.

The Tenderer is required to sign and put a stamp on every page of this document.
This document must be placed in a sealed envelope and marked **"Technical Bid for Frequency Resonance Energy Transfer set up System"** addressed to Registrar, University of Rajasthan, Jaipur. This envelope, together with the **sealed envelope** containing the "Commercial Bid" must be placed in a larger envelop e marked **"Technical and Commercial Bids for Frequency Resonance Energy Transfer set up System"** and addressed to Dy. Registrar (GAD), University of Rajasthan, Jaipur, should reach latest by 2.00 PM on 10.3.2015. **Incomplete Tender Form or Form where the quoted system does not meet the laid down requirements will be summarily rejected and their commercial bid will not be opened.**

Certified that the quoted system meets all the requirements specified in the document

Date: Signature with seal of the authorized person of the Firm

TENDER FORM PART II FOR FREQUENCY RESONANCE ENERGY TRANSFER SET UP SYSTEM

COMMERCIAL BID FOR SUPPLY OF OF FREQUENCY RESONANCE ENERGY TRANSFER SET UP

Name of the Company/Firm :

Address:

Phone/Fax Numbers/E-mail ID:

Name of Indian representative:

Address :

Phone/Fax Numbers/E-mail ID: :

Price of the system conforming to required specifications:

(prices of the main system and of different accessories must be quoted separately; insurance and air-freight charges upto Delhi should be mentioned, warranty period should be mentioned)

Note:

1. Tender complete in all respects should reach Registrar, University of Rajasthan, Jaipur by 2.00 PM on 10.3.2015.

2. Only manufacturers or authorized Indian representatives should apply. (Authorized representatives should enclose an authorization certificate from the Principals). Tenders will be opened at 10.3.2015 at 3.00 PM in VC Secretariat in front of the Tendering parties.

3. **Commercial bid of only those Firms will be opened (i) which qualify technically and (ii) whose Technical bid gives detailed list of Users, is accompanied with required earnest money in the form of DD (**in favour of Registrar, University of Rajasthan, Jaipur) **and a DD of Rs. 200/- only** (if the form is down loaded from University Web Site) and **is accompanied with undertaking for providing**
Performance Bank Guarantee (PBG) @ 5% of the CIF value.

4. University of Rajasthan, Jaipur, reserves the right to choose/ reject any/ none models/ modes or companies without assigning any reason

5. If any dispute arises out of contract with regards to interpretation, meaning and breach of terms of contract, the matter shall be referred to the Vice Chancellor, University of Rajasthan, and his decision shall be final.

Date: Signature with seal of the authorized person of the Firm