

**TENDER (E - PROCUREMENT MODE)**

**FOR**

**SUPPLY & INSTALLATION OF E-SPIN (ELECTRO SPIN FIBERS)/3D WEB  
DEVELOPER SYSTEM IN SCHOOL OF COMPUTING & ELECTRICAL  
ENGINEERING AT IIT MANDI**



**Tender No.: IITMANDI/S&P/PUR-87/2016-17/5800-01**

**Tender date: 17<sup>th</sup> September, 2016**

**Last Date of submission: 14<sup>th</sup> October, 2016**

Indian Institute of Technology Mandi

IIT Mandi, Administrative Block at Bamboo Hut, Near Director Office,

Kamand - 175005

Ph. No.: 01905-267134 email: [arsp@iitmandi.ac.in](mailto:arsp@iitmandi.ac.in) & [satinder@iitmandi.ac.in](mailto:satinder@iitmandi.ac.in)

Indian Institute of Technology Mandi, Kamand invites online Bids for supply, erection, installation, commissioning, testing, demonstration and training of **E-SPIN (Electro Spin Fibers)/3D Web Developer System**, as per specifications given in the Annexure attached to the Tender form. All offers should be made in English and should be written in both figures and words. Tender forms can be downloaded from the CPP Portal (<http://eprocure.gov.in/eprocure/app>)

& Institute website <http://iitmandi.ac.in/administration/tenderseoi.php>.

The bidders are requested to read the tender document carefully and ensure compliance with all specifications/instructions herein. Non-compliance with specifications/instructions in this document may disqualify the bidders from the tender exercise. The Director, IIT Mandi, Kamand reserves the right to select the item (in single or multiple units) or to reject any quotation wholly or partly without assigning any reason. Incomplete tenders, amendments and additions to tender after opening or late tenders are liable to be ignored and rejected.

#### **Preparation and submission of bids:**

1. There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, organization name, location, date, value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as organization name, form of contract, location, date, other keywords etc. to search for a tender publishing on the CPP Portal.
2. Bidder should take into account any corrigendum published on the tender document before submitting their bids.
3. Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents – including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.
4. The tenders will be received online through portal <http://eprocure.gov.in/eprocure/app>. In the Technical Bids, the bidders are required to upload all the documents in .pdf format. All quotation **(both Technical and Financial should be submitted in the E-procurement portal)**.
5. Possession of a Valid Class II/III Digital Signature Certificate (DSC) in the form of smart card/e-token in the company's name is a prerequisite for registration and participating in the bid submission activities through <http://eprocure.gov.in/eprocure/app>. Digital Signature Certificates can be obtained from the authorized certifying agencies, details of which are available in the web site <https://eprocure.gov.in/eprocure/app> under the link “Information about DSC”.
6. Technical & Financial Bids should be submitted in PDF format.

7. **In case of Financial bids**, a standard BOQ format has been provided in PDF format. Bidders are required to download the BoQ PDF file and fill their financial offer on the same BOQ format. After filling the same, submit it online in PDF format, without changing the financial template format. If the BoQ format file is found to be modified by the bidder, the bid will be rejected.
8. Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF formats. Bid documents may be scanned with 100 dpi with black and white option.
9. The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.
10. The uploaded tender documents become readable only after the tender opening by the authorized bid openers.
11. **Kindly add scanned PDF of all relevant documents in a single PDF file like, compliance sheet, OEM/Principle Certificate etc.**
12. Bidder should log into the site well in advance for bid submission so that he/she upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.
13. Upon the successful and timely submission of bids, the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.
14. The Vendors who have earlier supplied the equipment to any of the IITs, IISc, IISERs and other Scientific Institute of National Repute may only tender. The details of such institutions and the cost with name of equipment may also be supplied with the bids.
15. The technical and financial bids should be submitted online through portal <http://eprocure.gov.in/eprocure/app> in original. The financial bid should include the cost of main equipment/item and its accessories. If there is any separate cost for installation etc. that should be quoted separately.
16. Each bidder should be marked with the following reference on the top bids submitted online: **“IITMANDI/S&P/PUR-87/2016-17/5800-01/Item Name. dated 17<sup>th</sup> September, 2016”**.
17. The printed literature and catalogue/brochure giving full technical details should be included with the technical bid to verify the specifications quoted in the tender. The bidders should submit copies of suitable documents in support of their reputation, credentials and past performance in .pdf format.
18. The rates should be quoted in figures (typed or printed) and cutting should be avoided. The final amount should be in figures as well as in words. If there are cuttings, they should be duly initialed, failing which the bids are liable to be rejected.
19. **Assistant To Bidders:** Any queries relating to the tender document and the terms & conditions contained therein should be addressed to tender Inviting Authority for a tender or relevant contact person indicated in the tender.

20. Any bids received after **1:00 P.M. on 14<sup>th</sup> October, 2016** shall not be considered
21. The Technical Bids will be opened on **14<sup>th</sup> October, 2016 at 03:45 P.M.** The date & time for opening of Financial Bids will be informed later on to the technically qualified bidders.
22. While sending rates, the firm shall give an undertaking to the effect that ***“the terms/conditions mentioned in the enquiry letter/Tender Notice against which the rates are being given are acceptable to the firm.”*** in .pdf format. In case the firms do not give this undertaking, their rates will not be considered.
23. If the supplier/firm is original equipment manufacturer (OEM)/authorized dealer/sole distributor of any item, the certificate to this effect should submit in .pdf format.
24. The quantity shown against the item is approximate and may vary as per demand of the Institute at the time of placing order.
25. The tenders will be received online through portal <http://eprocure.gov.in/eprocure/app>.
26. For any correspondence regarding tenders is on below address:
- “Assistant Registrar, Stores and Purchase”  
Indian Institute of Technology Mandi (IIT Mandi),  
Near Director Office, Kamand Distt. Mandi – 175005 (H.P), India”**
27. In the event of any dispute or difference(s) between the vendee Institute (IIT Mandi) and the vendor(s) arising out of non-supply of material or supplies not found according to specifications or any other cause whatsoever relating to the supply or purchase order before or after the supply has been executed, shall be referred to “The Director, IIT Mandi”, Kamand who may decide the matter himself or may appoint arbitrator(s) under the arbitration and conciliation Act, 1996. The decision of the arbitrator shall be final and binding on both the parties.
28. The place of arbitration and the language to be used in arbitral proceedings shall be decided by the arbitrator.
29. All disputes shall be subject to Mandi Jurisdiction only.
30. All tenders in which any of the prescribed conditions is not fulfilled or any condition is put forth by the tenderer shall be summarily rejected.
31. All items listed below may not be necessarily ordered and the quantities mentioned in the tender document are also approximate. Items and their numbers to be ordered will be decided by the committee later at the time of ordering. Hence, **the vendor should quote for unit item /smallest pack available for all items”**

32. The bidders or their authorized representatives may also be present during the opening of the Technical Bid, if they desire so, at their own expenses.

**Note:** Price bids of only those bidders will be opened whose technical bids are found suitable by the committee appointed for the purpose. Date and time of opening of price bids will be decided after technical bids have been evaluated by the committee. Information in this regard will be intimated only to the technically qualified bidders. In exceptional situation, an authorized committee may negotiate price with the qualified bidder quoting the lowest price before awarding the contract.

**33. Clarifications:**

In case the bidders requires any clarification regarding the tender documents, they are requested to contact our office (e-mail: [satinder@iitmandi.ac.in](mailto:satinder@iitmandi.ac.in) & [arsp@iitmandi.ac.in](mailto:arsp@iitmandi.ac.in) on or **before 03/10/2016**.

**34. Tender Cost:**

The bidder should submit a demand draft of **Rs. 1,000/- (Rupees One Thousand only)** towards non-refundable **tender fee, drawn in favour of “The Registrar, IIT Mandi”** payable at Mandi in a sealed envelope super-scribed as **“Tender fee & NIT No. IITMANDI/S&P/PUR-87/2016-17/5800-01/Item Name. dated 17<sup>th</sup> September, 2016”** on or before last date & time of submission of bids. In the absence of tender cost, the tender will not be accepted.

**35. Earnest Money Deposit (EMD):**

Bidder should furnish an EMD of a refundable amount of **Rs. 40,000/-** in the shape of DD from a scheduled bank in India drawn in favour of **“The Registrar, IIT Mandi” payable at Mandi**. This EMD should be submitted in sealed envelop super-scribed as EMD & NIT No. **“IITMANDI/S&P/PUR-87/2016-17/5800-01/Item Name. dated 17<sup>th</sup> September, 2016”**. The bidders should enclose a pre-receipted bill for the EMD to enable us to return the EMD of unsuccessful bidders. **Failure to deposit Earnest Money will lead to rejection of tender.** In the event of the awardee bidder backing out, EMD of that bidder will be forfeited.

➤ **Note: Both (tender fee & EMD) envelops should be placed in another sealed envelope and address to:**

**“Assistant Registrar, Stores and Purchase”  
Indian Institute of Technology Mandi (IIT Mandi),  
Near Director Office, Kamand Distt. Mandil – 175005 (H.P), India”**

**This envelop having tender fee & EMD should reach on or before last date & time of submission of bid.**

**36. EMD Exemption:**

The Institute may accept bids without EMD from those bidders who are registered with the Central Purchase Organization, National Small Industries

Corporation (NSIC) or the concern Ministry or Department **as Manufacturer**. To claim the exemption, the bidder must be offering goods manufactured by themselves. Exemption will not be granted in case the bidder is acting as an agent for some other vendor.

### 37. Pre – Qualification Criteria:

- Bidders should be the manufacturer / authorized dealer. Letter of Authorization from original equipment manufacturer (OEM) on the same and specific to the tender should be enclosed.
- The Vendors who have earlier supplied the equipment to any of the IITs, IISc, IISERs and other Scientific Institute of National Repute may only tender. The details of such institutions and the cost with name of equipment may also be supplied with the bids.
- An undertaking from the OEM is required stating that they would facilitate the bidder on a regular basis with technology/product updates and extend support for the warranty as well.
- OEM should be internationally reputed Branded Company.
- Non-compliance of tender terms, non-submission of required documents, lack of clarity of the specifications, contradiction between bidder specification and supporting documents etc. may lead to rejection of the bid.
- **Furnishing of wrong/ambiguous information in the compliance statement may lead to rejection of bid and further black listing of the bidder, if prima-facie it appears that the information in the compliance statement was given with a malafide/fraudulent intent.**

### 38. Prices:

- The Prices quoted should be inclusive of all taxes or duties, packing, forwarding, freight, insurance, delivery and commissioning etc. at destination site (IIT Mandi, Mandi/Kamand). IIT Mandi is registered with DSIR, Govt. of India and is exempted from Custom / Excise Duty. Exemption Certificate to this effect will be issued by IIT Mandi. **Hence, Customs/Excise Duty exempted price should be quoted.** The rates shall be firm and final. Nothing extra shall be paid on any account.
- **In case of imports/foreign supplier, the price should be quoted on ex-work price/FOB/FCA basis only. Under special circumstance (e.g. perishable chemicals), when the item is imported on CIP/CIF, please indicate CIF/CIP charges separately upto Delhi indicating the mode of shipment. IIT Mandi will make necessary arrangements for the clearance of imported goods at the Airport/Seaport.**
- In case of imported equipment(s)/item(s), the agency commission, if any, payable in Indian rupees should be mentioned separately. **IAC shall be paid after satisfactory installation & commissioning of the goods at the destination.** For imported equipment, the Letter of Credit will be opened for the amount excluding agency commission in Indian Rupees. The firm should clearly mention the address of foreign bank in the financial bid.

- **In case of indigenous item, the vendor should clearly mention the final FOR IIT Mandi, Kamand Campus Price, as applicable in their bid.**

**39. Validity:**

The bid should be valid for acceptance up to a period of 180 Days. The Bidders should be ready to extend the validity, if required without any additional financial implications.

**40. Delivery:**

The Equipment should be delivered and installed within the period as specified in the purchase order and be ready for use within 24 weeks of the issue of purchase order unless otherwise prescribed. If the bidder fails to deliver and place any or all the Equipments or perform the service by the specified date, penalty at the rate of 1% per week of the total order value subject to the maximum of 10% of total order value will be deducted.

**41. Installation, Training & Demonstration:**

Bidders need to provide adequate training to the nominated persons of IIT Mandi at their cost. IIT Mandi will not bear any training expenditure. The supplier is required to done the installation and demonstration of the equipment within **one month** of arrival of materials at the IIT Mandi site of installation, otherwise the penalty clause will be the same as per the supply of material.

**42. Warranty Declaration:**

Bidders must give the comprehensive on-site warranty as required from the date of successful installation of Equipment against any manufacturing defects and also give the warranty declaration that *“everything to be supplied by us hereunder shall be free from all defects and faults in material, workmanship and shall be of the highest quality and material of the type ordered, shall be in full conformity with the specification and shall be complete enough to carry out the experiments, as specified in the tender document.*

Any deviation in the material, and the specifications from the accepted terms may liable to be rejected and the bidders need to supply all the goods in the specified form to the satisfaction/specifications specified in the order / contract and demonstrate at their own cost.

- 43. Performance Bank Guarantee:** A performance bank guarantee from a scheduled bank in India for an amount equal to 10% of the price for duration of two months beyond the expiry of warranty period will be taken from the supplier or Indian agent.

- 44. Terms of Payment:** Payment will generally be made only after delivery and satisfactory installation, testing, commissioning etc. **This must be specified in the tender/quotation.**

- In case of imported supplies, payment (excluding Indian agency commission, if any) will be made through irrecoverable Letter of Credit in two installments. 80 %



of the money will be released on submission of shipping of documents. Remaining 20 % will be released after successful installation of the instrument and submission of a performance bank guarantee for 10% of the order value from a nationalized bank, valid for 2 months beyond the expiry of the warranty. All the bank charges within India will be borne by the Institute and outside India will be borne by the Supplier.

- In case of required item quoted in INR, 80% payment will be made through E-payment after receipt of material in good condition and Remaining 20% will be released on successful installation of the instrument and on submission of a performance bank guarantee for 10% of the order value from a nationalized bank, valid for 2 months beyond the expiry of the warranty.
45. **Tender expenses and documents:** All costs incurred by the bidder in the preparation of the tender shall be at the entire expense of the bidder.
46. **Tender Evaluation Criteria:** The technical bids will be opened and evaluated by a duly constituted committee. After evaluation of the technical bid, the financial bid for only those offers which have qualified in the evaluation of technical bid will be opened.
47. **Return of EMD:**
- The earnest money of unsuccessful bidders will be returned to them without any interest within 15 working days after awarding the contract.
  - The earnest money of the successful bidder will be returned to them without any interest within 15 Days after supply of material.
48. **Manual and documentation:** All the manuals necessary for operating and servicing the equipment (including details of electronic circuits) will have to be provided along with the instrument.
49. The IIT Mandi reserves the right to cancel the tender at any stage (point of time) without assigning any reason.
50. Bidders should go through the tender terms, conditions and specifications carefully and fill in the attached compliance statement accurately and unambiguously. They should ensure that all the required documents are furnished along with the bid.

Sd/-  
**Assistant Registrar**  
**Stores & Purchase**



## BID PARTICULARS

1. Name of the Supplier :

2. Address of the Supplier :

3. Availability of demonstration of equipment : Yes / No

4. Tender cost enclosed: : Yes/No if yes

D.D. No. \_\_\_\_\_ Bank \_\_\_\_\_ Amount \_\_\_\_\_

5. EMD enclosed : Yes / No if Yes

D.D. No. \_\_\_\_\_ Bank \_\_\_\_\_

6. Name and address of the Officer/contact person to whom all references shall be made regarding this tender enquiry.

Name :

Address :

Telephone No. :

Fax No. :

Mobile No :

e-Mail :

Web :

**Ref:-ENQUIRYNO:-IITMANDI/S&P/PUR-87/2016-17/E-SPIN (Electro Spin Fibers)/3D Web Developer System**

**E-SPIN (Electro Spin Fibers)/3D Web Developer System**

IIT Mandi, VLSI lab requires an 3D web developer system including high Voltage power supply including syringe pump and rotating collector for nano fibers synthesis from electronically conducting polymers, metals, semiconductors, and carbons, polymers, polymer composites, viscoelastic material to the synthesis of single, coaxial nano fibers, nanoporous 3D web for mass production. It should be capable of one-by-one continuous nano-fibers formation from various polymers, composite etc. This system should equipped with advanced features with computer control operations by remote communication for operational safety concern.

**A. High voltage:**

- 1) Input Voltage range : 90-240 VAC +/-
- 2) Output voltage range : 0-50 KV (continuously varying )
- 3) Output currant : 0-1 mA
- 4) Digital: Digital Voltage and current monitoring
- 5) Voltage Regulation: 1/10KV
- 6) Overload trip- unit shut down if current exceeds 20% of the maximum output current

**B. Syringe Pump: 1 (Independent control)**

- 1) Single syringe attachmentwith separate stepper drive unit
- 2) Infusion and withdrawal function optional
- 3) Volume, time and flow control
- 4) Acceptable Sample Syringe : 5  $\mu$ L - 60 mL
- 5) Adjusting Resolution : 0.1  $\mu$ L/min
- 6) Flow rate : 1 nl/min – 3 ml/min

**C. Syringe Pump: 2 (Independent control)**

1. Single syringe attachment with separate stepper drive unit
2. Infusion and withdrawal function optional
3. Volume, time and flow control
4. Acceptable Sample Syringe : 5  $\mu$ L - 60 mL
5. Adjusting Resolution : 0.1  $\mu$ L/min
6. Flow rate : 1 nl/min – 3 ml/min

**D. Syringe Pump: 3 (Independent control)**

1. Single syringe attachment with separate stepper drive unit
  2. Infusion and withdrawal function optional
  3. Volume, time and flow control
  4. Acceptable Sample Syringe : 5  $\mu$ L - 60 mL
  5. Adjusting Resolution : 0.1  $\mu$ L/min
  6. Flow rate : 1 nl/min – 3 ml/min
- Syringe pump system should be complete with suitable pressure regulator and all connectors and tubing

**E. Collector:**

1. Plate : 200 mm X 200 mm
2. Rod : D=100 mm, L=200 mm
3. Drum Collector : a) D=50 mm, L=200 mm  
: b) D=100 mm, L=200 mm
4. Disk :D=100 mm, L=200 mm
5. RPM : 100-6000 continuous variable

**F. Spinneret**

- (i) Co-axial nozzle (Teflon made with changeable needle geometry)
- (ii) Co-axial Nozzle (Stainless steel arrangement with fixed needle geometry)
- (iii) Multi-nozzle ( 4 changeable nozzle geometry)
- (iv) Single Nozzle

**G. Linear stage**

- 51.X- Axis: Distance adjustment manual. Computer controlled preferred
- 52.Y- axis : Programmable transverse motion  
Specification:  
Oscillation speed: 1 mm/sec to 5 mm/sec adjustable  
Stroke distance: 300 mm  
Speed: Three speed adjustable (Slow, Medium and Fast)
- 53.Z- Axis manual control optional

**H. Near field electrospinning spinning arrangement (Optional Item)**

Complete system for near field electrospinning capable of preparing 3D structures using software

- Spinning Nozzle : 1  
Spinning Area : 160\*160\*180mm  
XY axis speed(Max) : 3000mm/min  
Z axis speed(Max) : 200mm/min  
Spinning/oscillation speed : 40-120mm/s  
Hot collector support : Yes  
Spinning collector material : Aluminum  
XY axis positioning accuracy : 0.012mm  
Z axis positioning accuracy : 0.004mm  
Software language : English  
3D design software:  
File format : STL, OBJ, G-Code,etc.

**I. Spinning arrangement:**

- Vertical spinning
- Horizontal spinning

**J. Spinning conditions:**

1. Solvent spinning ( Compatible for water, Acetone, Methanol and other solvents)
2. Under Vacuum spinning (Optional)
3. Inert Gas spinning

**K. Spinning chamber**

- Inert atmosphere control
- Vacuum arrangement (Optional)
- Inlet-outlet gas port
- Temperature control and display
- Humidity display
- Humidity control (Optional)

- Ventilation:
- Illuminating Light:20 Wx2 LED tubes
- UV Light: 50 watts
- Computer control interface

**L.Panel control:**

Emergency Stop

Main stop

UV light operation arrangement

Exhaust Operation

Auto cut high voltage while door is opened.

**M. Accessories**

- Syringes with needles :3ml, 5ml and10 ml one box each
- Foot pad : 1 number
- Insulation pad : 1 number
- Standard spinning samples
- Chemical resistance tubing
- Teflon/PP connectors

**N. Two channels Microfluidic system to test the fabricated electrospun micro-nano filters (Optional Item)**

A complete set up for microfluidic experiments. System should include

1. Microfluidic pressure to generate fast and pulseless fluid movement ( 1bar ), Flow rate control module to control and monitor flow rate upto 16 channels, Flexible fluidic flow rate measuring unit and pressurized reservoirs (2ml & 15 ml) for mixtures and continuous phase with two microfluidic chips for performing experiments

**O.Other Requirement**

- (i) Tool kit containing all the required tools.
- (ii) Hard copies of operational manuals for all the items.
- (iii) The supplier should provide one week training to the students and other users at the time of installation and thereafter and two advance training in next 2 years, as and when required.
- (iv) Provide list of users with their contact details and year of installation
- (v) Warranty- Two years
- (vi) Provide the AMC charges after expiry of two year warranty.
- (vii) A compliance statement in the attached format should be submitted with the offer. Any deviation from the specified specification should be marked clearly in the compliance sheet.

**COMPLIANCE STATEMENT FOR THE TENDER SPECIFICATIONS**

**INDIAN INSTITUTE OF TECHNOLOGY MANDI**

**HIMACHAL PRADESH-175001**

**Ref:-ENQUIRYNO:-IITMANDI/S&P/PUR-87/2016-17/E-SPIN (Electro Spin  
Fibers)/3D Web Developer System**

**Instructions:**

1. You have to fill in all columns and ensure that you furnish all the required information accurately and unambiguously.
2. If our specification contains any values, you have to provide your values against the column in the same unit as we have specified.
3. Deviation in values, materials etc. from our specification may be explained in the remarks column

<b>SNo</b>	<b>Specification</b>	<b>Details</b>	<b>Response (Complied /Not Complied) Kindly provide reference of brochure or website. Also provide hard copy of the reference. Any deviation should be clearly marked.</b>
A	Is Tender fees attached?		
B	Is EMD attached? (if applicable)		
C	Is the bidder original equipment manufacturer (OEM)/authorised dealer?		
D	If authorised dealer, recent dated certificate to this effect from OEM, attached or not?		
E	Undertaking from OEM regarding technical support & extended warranty present		
F	Validity of 180 days or not?		
G	Undertaking from bidder regarding acceptance of tender terms & conditions		
H	Attach user list of quoted model only, with complete contact details.		
I	Whether list of reputed users (along with telephone numbers of contact persons) for the past three years specific to the instrument attached.		
1	<b>High voltage:</b>		

	Input Voltage	range : 90-240 VAC +/-	
	Output voltage range	:0-50 KV (continuously varying)	
	Output current	0-1 mA	
	Digital:	Digital Voltage and current monitoring	
	Voltage Regulation	1/10KV	
	Overload trip	Unit shut down if current exceeds 20% of the maximum output current	
	<b>Spinning chamber</b>		
	Foot print	Not more than 1x1x2(H) m3	
	Inert atmosphere control	Should have gas purge/flow arrangement	
	Vacuum arrangement (Optional)	Complete with vacuum pump and accessories	
	Inlet-outlet gas port	For two inert gases	
	Temperature control and display	Upto 70 degree C	
	Humidity display		
	Humidity Control (Optional)		
	Ventilation	Inbuilt exhaust fan	
	UV Light	50 Watts	
	Lighting arrangement	20 wattx2 LED lights	
	Computer control interface		
2.	<b>Syringe Pump: 3 Nos (Independent control)</b>	<p>Single syringe attachment with separate stepper drive unit</p> <p>Infusion and withdrawal function optional</p> <p>Volume, time and flow control</p> <p>Acceptable Sample Syringe : 5 µL - 60 mL</p> <p>Adjusting Resolution : 0.1 µL/min</p> <p>Flow rate: 100 nl/min – 3 ml/min but 1nl/min-3ml/min preferred</p>	
3.	<b>Collector:</b>		
	Static collector	200 mm X 200 mm	
	Rod collector	D=100 mm, L=200 mm	
	Drum	D=50 mm, L=200 mm D=100 mm, L=200 mm	
	Disk	D=100 mm, W=10 mm	
	RPM	100-6000 continuous variable	
4	<b>Spinneret</b>		
	Single Nozzle	Variable nozzle size	
	Co-axial nozzle	Teflon made with changeable needle geometry	
	Co-axial Nozzle	Stainless steel arrangement	

		with fixed needle geometry	
	Multi-nozzle	4 Nozzle with variable nozzle size	
	Shell-core nozzle	Variable nozzle size	
<b>Linear Stage</b>			
	X-axis:	Computer control distance adjustment	
	Y- axis:	Programmable transverse motion Specification: Oscillation speed: 1 mm/sec to 5 mm/sec adjustable Stroke distance: 300 mm Speed: Three speed adjustable (Slow, Medium and Fast)	
	Z- Axis	manual control	
5.	<b>Near field electrospinning spinning arrangement (Optional)</b>		
	Complete system for near field electrospinning capable of preparing 3D structures using software.	Spinning Nozzle : 1 Spinning Area : 160*160*180mm XY axis speed(Max) : 3000mm/min Z axis speed(Max) : 200mm/min Spinning/oscillation speed : 40-120mm/s  Hot collector support Spinning collector material: Aluminum  XY axis positioning accuracy: 0.012mm  Z axis positioning accuracy: 0.004mm  3D design software: File format:STL, OBJ, G-Code,etc.	
6.	<b>Spinning arrangement:</b>		
		a. Vertical spinning b. Horizontal spinning	
7.	<b>Spinning conditions:</b>		
	Solvent spinning	Compatible for water, Acetone, Methanol and other solvents	
	Under Vacuum spinning	(Optional) with suitable vacuum pump	
	Inert Gas spinning	With inert gas purging system	
8.	<b>Panel control</b>		



	Emergency Stop		
	Main stop		
	UV light arrangement		
	Exhaust		
	Auto cut high voltage while you open the door		
9.	<b>Accessories</b>		
	Syringes with needles	:3ml, 5ml and10 ml one box each	
	Foot pad	1 number	
	Insulation pad	1 number	
	Standard spinning samples		
	Chemical resistance tubing		
	Teflon connectors		
	Syringes with needles	3ml, 5ml and10 ml one box each	
	Foot pad	1 number	
	Insulation pad	1 number	
	Standard spinning samples		
	<b>2 channel Microfluidic system to test the fabricated electrospun micro-nano filters (Optional)</b>		
	A complete set up for microfluidic experiments. Should include suitable pump for 1bar pressure, flow control, pressure control, all connecting tubes, atleast two microfluidic chips, software and other required accessories to perform experiments.		
10.	<b>Other Requirement</b>		
	Tool kit containing all the required tools.		
	Hard copies of operational manuals for all the items.		
	one week training at the time of installation and thereafter two advance training in next 2 years, as and when required.		
	Provide list of users with their contact details and year of installation		

	<b>Warranty- Two years</b>		
	Provide the AMC charges after expiry of two year warranty.		