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Trombay, Mumbai-400 085

Government of India
BHABHA ATOMIC RESEARCH CENTRE
Glass and Advanced Materials Division

Jyoti Prakash
Scientific Officer F

Ref: GAMD/JP-6/2022/P-31356

Date: 23/02/2022

Sub: Fabrication, supply, installation, testing and commissioning of carbon nano fiber double electro spinning & yarning system as per Annexure 1.
Due date: 7th March 2022

Dear Sir,

For & On behalf of the President of India, quotations are invited by the undersigned for following service work.

Description of work
Fabrication, supply, installation, testing and commissioning of carbon nano fiber double electro spinning & yarning system as per Annexure 1.

The quotation should be sent in a sealed envelope. The envelope shall *clearly be superscribed* with the reference no., due date and with the words "**Quotation: not to be opened**". It should be addressed to following person and should reach him/her on or before the date mentioned.

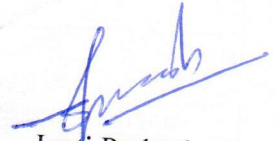
Kind Attention to Dr. Jyoti Prakash Scientific Officer (F) ACMS, G&AMD, Materials Group, 3-358-S, D-Block, Mod Lab BARC, Mumbai-400085.	On or before 07-03-2022
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Instructions to the tenderer :

1. The quotations are to be in printed letter head/ quotation format which should consist of GST Registration Number, PAN number of the firm. Quotations

received without signature, over-writing, summation errors etc. will be construed as invalid and thus rejected.

2. The tenderer should write in words as well as figures, the rate(s) quoted by him. All corrections must be attested by the dated initials of the tenderer.
3. Pre-dispatch inspection will be carried out and supplier has to demonstrate full functioning of the system at their place.
4. Income-Tax and surcharge on income-tax as applicable shall be deducted from the bill. The payment for the work done shall be paid by our Accounts Division only on satisfactory completion of the work within one month.
5. The time allowed for completion of job is **180 working days**. The same shall be reckoned from the date of issue of the work order.
6. The acceptance of the tender rests upon the undersigned with a right to reject the tender without assigning any reason.
7. Party should inform about completion of job and arrange inspection of items before delivery.
8. Guarantee certificate for a period of five years for material quality and workmanship from the date of delivery of the fabricated items.



Jyoti Prakash
SO/F, GAMD

वैज्ञानिक अधिकारी / Scientific Officer (F)
कांच एवं प्रगत पदार्थ प्रभाग
Glass and Advanced Materials Division
भारत सरकार / Government of India
भाभा परमाणु अनुसंधान केंद्र
Bhabha Atomic Research Centre
त्रोम्बे, मुंबई / Trombay, Mumbai - 400 085.

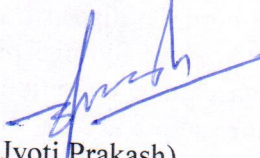
Annexure 1

Fabrication, supply, installation, testing and commissioning of carbon nano fiber double electro spinning & yarning system: One Job

	Item description	Quantity
1	<p>The carbon nano fiber double electro spinning & yarning system should comprise of a bipolar high voltage supply and a set of collectors for CNT based fiber growth. The fabricated system should equipped with a rotary collector through which spinning of the fiber into threads and collected in spools. In order to make fiber into yarn, two syringe pumps, one with positively charged spinneret and the other with negatively charged spinneret, targeted funnel shaped collector and roller should be attached. The fabrication of following individual components and assembly into a fume hood (<i>Stainless Steel, Aluminium & Glass ~1700mm x 800mm x 1950 mm Standalone unit with in-built power supply and wiring for the heater (ambient to 40 degC), lighting and exhaust on top of hood; Transparent glass windows</i>) should be carried out:</p> <p>High voltage power supply (-15kV to +15kV) output voltage range with maximum current capacity of 0.5mA. Output voltage and current should be set using front panel knobs and read out from the digital panel meters.</p> <p>Independently Controlled Dual Channel Syringe Pump: two dual channel syringe pumps with PC controlled movement to and fro in X axis (max. movement 200 mm; To dispense from standard disposable or glass syringes from 5 to 20ml; Syringe holder made of insulating material to work under high voltage conditions; Motor control through microcontroller to control and indicate flow rate; Four syringe dispensing system).</p> <p>Metal funnel shaped rotating mandrel where fiber yarns are formed and rolled into spool (Rotating speed : 300 to 4000 rpm; Material : Aluminium; Diameter : 100mm)</p> <p>Yarn Spool with motorized positioner for rolling the nano fiber yarn into spool (Material : Acetal resin; Rotating speed : 1 to 100 rpm; Linear reciprocating movement : 50 mm).</p> <p>Rotating mandrels (Stainless steel drums of 4/12/25/50/75/100 mm diameter and 200 mm length) as a target to get an aligned continuous mesh of nanofiber (Rotational Speed : 300 - 4000 rpm; Grounding facility should available; actuator should be Microprocessor controlled; Speed stability : +/- 1% and PC based control with documentation of speed and duration).</p> <p>Stainless steel Y Plate Collector (250 x 175 x 3mm; Grounding Facility : Available; Programmable Y motion profile to control the nano fiber deposition characteristics PC based motion control with documentation of parameters like speed, traverse, motion profile and duration).</p> <p>Spinner coater with the angular speed of the substrate, acceleration/deceleration (60-999rpm; speed, duration, acceleration profile, 1RPM resolution), and UV (365 nm) curing duration under</p>	1 sets

<p>vacuum; sample chuck size (25mm, 32mm & 45mm; Sample Holder: PTFE disk with silicon rubber O ring); oil free vacuum Pump attachment for Max flow rate: 45 lpm; Max vacuum: 27 inches Hg). UV Ozone cleaner; stainless steel make; having UV lamp: 4000 V, 30 mA; for substrate size 150mm*150mm for 1-99 minutes.</p> <p>The Flat tipped metal needles for the easy flow of nano fibers; glass syringes; needles; teflon tubings connection.</p> <p>10W 254nm UV light should be added on top of the rotating collector drum. UV LED curing system should be integrated in such a way that it can be used whenever there is a need for curing and drying of fibers.</p> <p>The fabricated system in fume hood should be controlled by a software compatible with Windows OS. The parameters like solution flow rate, rotating speed of the funnel or mandrel collector, duration of electrospinning, horizontal and vertical speeds of the spool etc can be controlled using this software.</p>	
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(Note: The supplier must understand the fabrication work accurately before submitting quotation. The supplier with prior experience in electro spinning unit are encouraged for submitting quotation. The suppliers should submit their prior completed work certificate having similar job)


(Jyoti Prakash)