

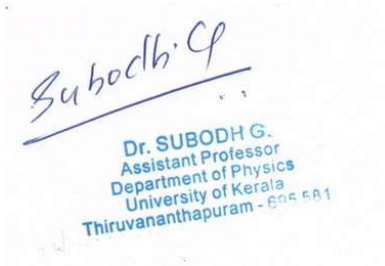
**TENDER**

**Containing General Conditions and Schedule for the  
upgradation of existing 3D printer**

Name of Tenderer: Dr. Subodh G

Address: Assistant Professor  
Department of Physics  
University of Kerala,  
Kariavattom Campus

Signature of Tenderer:



*Subodh G*

Dr. SUBODH G.  
Assistant Professor  
Department of Physics  
University of Kerala  
Thiruvananthapuram - 695 581

**FORM OF TENDER**

From

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.....  
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To

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.....  
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Sir,

I/We hereby tender to supply, under the annexed general conditions of contract, the whole of the articles referred to and described in the attached specification and schedule, or any portion thereof, as may be decided by the University of Kerala, Thiruvananthapuram at the rates quoted against each item. The articles will be delivered within the time and at the places specified in the schedule.

\*I/We am/are remitting/have separately remitted the required amount of Rs..... as earnest money.

Yours faithfully (Signature)

.....

(Address) .....

Date: .....

\* To be scored in cases where no earnest money deposit is furnished.

Important: This tender form may be printed on A4 size paper. Editing of the pre- printed text in the tender form in any way other than as indicated (like ticking, filling in with ink/typing, scoring off inapplicable material etc.) will render the tender form invalid and liable for rejection.

**GENERAL**  
**CONDITIONS**

Sealed tenders are invited for the supply of the materials as specified in schedule attached below.

1. The tenders should be addressed to the Dr. Subodh G, Assistant Professor, Department of Physics, University of Kerala, Kariavattom campus, Thiruvananthapuram in a sealed cover with the tender number and name – “**Tender for the upgradation of existing 3D printer**” duly superscribed on the cover on or before **19/01/2024, 3.00 PM**
2. Tenders which are not in the prescribed form are liable to be rejected and the cost of tenderforms once paid will not be refunded.
3. Intending tenderers should send their tenders so as to reach the officer mentioned in the tender notification, on or before the due date and time noted therein. No tender received after the specified date and time will be accepted on any account. The rates will be considered firm for acceptance till the date mentioned therein. Tenders not stipulating period of firmness and tenders with price variation clause and/or ‘subject to prior sale’ condition are liable to be rejected.
4. a. Every tenderer who has not registered his name with the State Government (Stores Purchase Department), should send along with his tender, an earnest money of Rs. 2500/. The amount may be paid in the form of Demand Draft drawn in favour of the Finance Officer, University of Kerala, Thiruvananthapuram. **Cheques will not be accepted.** The earnest money of unsuccessful tenderers will be returned as soon as possible after the tenders are settled.  
b. Tenderers whose names are registered with Government (Stores Purchase Department) are generally exempted from furnishing earnest money for such articles for which they have registered their names. If they tender for stores other than those for which they have registered their names, they will have to furnish earnest money as in the case of unregistered firms. Registered firms will have to quote invariably in every tender they submit, the registration number assigned to them by the Stores Purchase Department. Attested copy of registration certificate may be enclosed with the tender for reference.  
c. Small Scale Industries and Cottage Industries within the Kerala state, which are certified as such by the Director of Industries and Commerce or by the Regional Joint Director of Industries and Commerce will be exempted from furnishing earned money against tenders for supply of stores manufactured by them.
5. If any tenderer withdraws from his tender before the expiry of the period fixed for keeping the rates firm for acceptance, the earnest money, if any deposited by him will be forfeited to University of Kerala or such action taken against him as the University

think fit.

6. The final acceptance of the tender rests entirely with the University who do not bind themselves to accept the lowest or any tender. But the tenderers on their part should be prepared to carry out such portion of the supplies included in their tender as may be allotted to them.

7. In cases where a successful tenderer, after having made partial supplies, fails to fulfil the contracts in full, all or any of the materials not supplied may at the discretion of the Registrar, be purchased by means of another tender/quotation or by negotiation or from the next higher tenderer who had offered to supply already and the loss, if any, caused to the University shall thereby, together with such sums as may be fixed by the University towards damages, be recovered from the defaulting tenderer.

8. Payment will be made only after the supplies are actually verified and taken to stock.

9. The contractor shall not assign or make over the contract or the benefits or burdens thereof to any other person or body corporate. The contractor shall not underlet or sublet to any person or persons or body corporate the execution of the contract or any part thereof without the consent in writing of the Registrar who shall have absolute power to refuse such consent or to rescind such content (if given) at any time if he is not satisfied with the manner in which the contract is being executed and no allowance or compensation shall be made to the contractor or the sub-contractor upon such recession. Provided always that if such consent be given at any time, the contractor shall not be relieved from any obligation, duty or responsibility under this contract.

10. The tenderer shall undertake to supply materials according to the standard sample and/or specifications

11. No representations for enhancement of rates once accepted will be considered.

12. Any attempt on the part of the tenderers or their agents to influence the University in their favour by personal canvassing with the officers concerned will disqualify the tenderers.

13. Samples would be forwarded if called for and unapproved samples got back by the tenderers at their own cost. Samples sent by V.P. Post for 'freight to pay' will not be accepted. The approved samples may or may not be returned at the discretion of the undersigned. Tenderers whose samples are received late will not be considered. Tenders for the supply of materials are liable to be rejected unless samples if called for, of the materials tendered for are forwarded.

## **Requirements**

1. The printer should have two extrusion heads, enabling it to dispense two separate polymer blends simultaneously and at various intervals.
2. The nozzle should be able to extrude polymer blends with particles having size in the 1-5 micrometer range.
3. Proper curing of polymer blends has to be ensured to manufacture integrated structures.
4. The nozzle temperature should be controllable from room temperature to 250°C.
5. The printer should be able to print layered filler reinforced polymer-based structures having minimum layer thickness of 0.1 mm.
6. The printer should have a good precision, which is,  $\geq 0.05$  mm.

**Technical Specifications to meet the requirements**

SI No.	Product	Specifications	
1	Hardware Modification	Gantry System	Steel rails with Sliding Block (Resolution < 0.05 mm in XY and < 0.1mm in Z direction)
		Steppers	Nema 17 with Torque > 10KGCM
		Stepper Driver	TMC 2209 or higher
		Bed Levelling	Automated Piezo Based
		Extrusion System	Dual head paste Extrusion with provision to avoid particle agglomeration
		Display	TFT Information Display
2	Software	Firmware	Dual Extrusion capable firmware
		Interface	Web/Desktop Interface
		Slicer	Capable of slicing Objects with complex pattern and multilaterals
3	Curing Unit	In Built print time Fast Curing Unit for resin and polymer	
Additional Requirements		Minimum 1 year warranty	

**Note:** The existing 3D printer at Department of Physics, University of Kerala is a Core X-Y type printer that utilizes Fused Deposition Modelling (FDM) extrusion technology. It is constructed with aluminium profiles and features POM wheels for smooth movement. The printer is powered by customized Klipper Firmware for efficient and reliable operation. The upgradations should not

compromise the features of the existing printer.

**Rate quoted should be inclusive of all charges such as packing, forwarding, freight, loading/unloading/handling or installation charges and Government duties leviable, if any.**

Whether samples are essential: Yes

Period within which goods should be delivered: As per the Delivery Schedule in the Purchase Order.

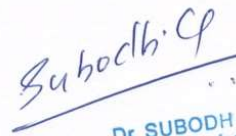
**Other special conditions:** Defective items, if any, supplied should be rectified/replaced to the satisfaction of the University by the suppliers at their own cost.

  
SA

Head  
Department of Physics  
University of Kerala

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Department of Physics  
University of Kerala  
Kariavattom-695 581





Dr. SUBODH G.  
Assistant Professor  
Department of Physics  
University of Kerala  
Thiruvananthapuram - 695 581

