

**Global Tender notification for the procurement of an “Ultracentrifuge with HEPA filter and necessary rotors”  
at the Molecular Biophysics Unit in Indian Institute of Science, Bangalore.**

Dear Sir/Madam,

29-09-2023

**Subject: Request for quotation for an “ultracentrifuge with HEPA filter and necessary rotors”**

This is a request for quotations for procurement of an “Ultracentrifuge with HEPA filter and necessary rotor” on C.I.P. Bangalore basis. This equipment is number 349 in Annexure A of GTE exempted items for procurement (No.F.4/1/2023-PPD, Govt. of India) valid till 31.03.2024. The requested Biosafety level Floor Model Ultracentrifuge will be used for purification of infectious viruses or virus-like particles and other biological macromolecules. The centrifuge will also be used for samples preparation from infected cells and tissues.

- Quotations should clearly indicate the terms and conditions of the quotation, delivery, delivery schedule, entry tax, payment terms, warranty coverage etc.
- The quotation should be submitted in two parts: Part I (Technical bid) and Part II (Commercial bid) and both should be submitted in a sealed envelope. Technical bid should be exactly same as commercial bid except that prices are not shown in technical bid.
- Technical bid should have item wise compliance report of all specifications.
- The commercial bid should have pricing for each of the items quoted in the technical bid. Prices quoted should be inclusive of all taxes / duties.
- The prices quoted should be inclusive of delivery of the items to the site and installation at site.

The last day for submitting the bid is 20-October, 2023. The offer should be valid for a period of at least 60 days from the last date for submission of quotes.

Technical specifications for ultracentrifuge with HEPA filter and necessary rotors are given below:

1. Ultracentrifuge should have maximum speed in rcf of 800,000xg force or more.
2. Ultracentrifuge should have speed settings from 1000rpm to maximum with 100rpm increment and speed control accuracy of  $\pm 2$  rpm of set speed or better.
3. Ultracentrifuge should have acceleration and deceleration profiles of 10 and 10 or more.
4. Ultracentrifuge should have temperature range of 0 °C to 40 °C with 1 °C increments and temperature control accuracy within  $\pm 0.5$  °C of set temperature.
5. Ultracentrifuge should have ability to set times from 1 min to 999 hours 59 min with 1 minute increments.
6. Ultracentrifuge should have a touchscreen display with provision to have 50 unique user profiles and more than 500 user-defined programs.
7. Ultracentrifuge should have heat output or maximum heat dissipation: 1 KW or below.
8. Ultracentrifuge should have less noise level of 51dB(A) or less.

9. Ultracentrifuge should have Safety and Standards Certification: CE and support 21 CFR part 11 compliance.
10. Ultracentrifuge should have Product Safety: EN61010-1 and EN 61010-2-020 Electromagnetic Compatibility: EN 61326-1.
11. System should have moisture purging and diffusion pump vacuum system. It should also restrict humidity to <80% at <35°C (non-condensing).
12. Ultracentrifuge system should include advanced software features such as: on-board software with inbuilt calculations, simulations, and references; real-time run graphing; speed/temperature vs. time plot; zonal/CF operation screens; online rotor calculator to configure and convert RCF, RPM without manual intervention.
13. Ultracentrifuge system should include HEPA filter of 0.2micron or better for biosafety use.
14. Ultracentrifuge system should have the below safety features:
  - i. option for remote monitoring of system via mobile application
  - ii. automatic rotor detection and tracking of rotor usage and life to endure long-lasting performance.
  - iii. over speed system to ensure that the rotor does not exceed its maximum allowable speed.
  - iv. inbuilt mechanism to calculate rotor inertial energy and stops the system to prevent rotor failures.
  - v. capability to resume an interrupted run from the last recorded parameter once power is restored / normal.
  - vi. door of high-strength structural strength with lock to prevent operator contact with spinning rotor.
  - vii. lock automatically when the door is closed, and a run begins.
  - viii. imbalance detector to monitor the rotor during the run, causing automatic shutdown if rotor loads are out of balance.
15. The quoted ultracentrifuge system should be able to accommodate and be compatible with the existing Beckman SW41-Ti Swinging Bucket Rotor of capacity 6x13mL with RPM: 41,000. The vendor should provide documentation and arrange physical demonstration for rotor compatibility. Otherwise, the vendor needs to provide contacts where cross rotors have been used along with positive user feedback for the same for extended usage.
16. The system should be provided with a fixed angle rotor of below specifications:

6 x 90 - 95mL (Quantity – 01 Number)

  1. Rotor Maximum Capacity: 540-570ml
  2. Rotor Maximum Speed: 45,000 RPM or more
  3. Rotor Maximum Force: 235,000 x g or more
  4. Rotor k-factor: 133 or less
  5. Titanium material
  - 12 numbers of 70.0-72.0mL polycarbonate bottle assembly to be provided along with the rotor with proper adapters. These tubes should be able to run at the same gForce of the rotor of 235,000 x g.
  - 50 numbers of 90.0-95.0mL Clear tubes to be provided along with the rotor with proper adapters. These tubes should be able to run at the same gForce of the rotor of 235,000 x g.

- 50 numbers of 90.0-95.0mL thin wall polyallomer tubes to be provided along with the rotor with proper adapters. These tubes should be able to run at the same gForce of the rotor of 235,000 x g.
  - 50 numbers of 13ml Thin wall Ultra Clear tubes compatible with the existing swinging bucket rotor to also be included.
17. Vendor should have and provide certified free & sterile ultracentrifuge tubes with no detectable DNA, RNA or any endotoxin which prevents sample degradation for Genomics, Exosomes & Proteomics workflow.
  18. Adapters/kits to adapt small samples in larger rotors without sacrificing the maximum force of the rotor, to shorten separation time up to 50 percent.
  19. System should have provision to print directly from the centrifuge or networked printer.
  20. A pre-sample accessory preparation system for the ultracentrifuge should also be included which is capable of centrifuging samples to speeds equivalent to ~ 29,000 x g or more. Accessory system should further have set speeds preferably from 200 to 18,000 rpm; allow set times from 1 mi. to 9 hours, 59 min or continuous (hold); have temperature range from 0°C to + 40°C or better and ambient temperature range from +2°C to 40°C; capable of adding swing out rotor in future with ref 4,000 x g force or more; total capacity of system should be 4 x 400 mL or equivalent; have brushless induction drive system for clean, quiet operation; have microprocessor control and interactive operation. System should include two fixed angle rotors (6 x 30 mL capacity and 24 x 1.5/2.0 mL capacity) with 29,000xg force or equivalent. Suitable tubes must be provided along with the rotors.
  21. A 10kV or more voltage stabilizer should be provided with the system.
  22. Any other accessories not mentioned above but needed for proper running of equipment should be included.

**Note:**

- i. Ultracentrifuge should come with standard warranty of 10 years for the drive units.
- ii. Availability of spares and service commitment should be provided for the next 10 years from date of installation. Letter to be provided on the manufacturer / OEM letter head.
- iii. Date of manufacturing of the supplied system should be within  $\pm 3$  months from the date of release of purchase order.
- iv. Bidder should provide free service if there is a routine upgradation or software installation is required. It is also preferable if the bidder provides/includes proper servicing of the instrument on a time-to-time basis.
- v. The participating vendors/firms should be able to provide proven record of installation and usage of the same system in Bangalore. Application & service support details in Bangalore must be provided.
- vi. The technical compliance table given below should be duly filled and submitted as an annexure along with the technical bid by participating firms.

The machine along with accessories should be installed and made fully functional by the company or through its authorized agents. The machine acceptance will involve trouble free operation and demonstration of the capability of the system for which necessary consumables to be supplied along with

the system. The participating firms must quote all-inclusive delivery prices and the entire shipment must be insured from the manufacturer's warehouse to the installation site at IISc.

Compliance table for the Ultracentrifuge with filter and rotor:

S.No.	Technical Requirement	Yes/No	Reference or comparable alternates (if applicable)
1.	Maximum rcf of 8,00,000xg force or more		
2.	Speed settings from 1000rpm to maximum speed with increments of 100rpm, $\pm 2$ rpm of set speed accuracy		
3.	Temperature range of 0 °C to 40 °C with 1 °C increments and temperature control accuracy within $\pm 0.5$ °C of set temperature		
4.	Ability to set times from 1 min to 999 hours 59 min with 1minute increments.		
5.	Acceleration and deceleration profiles of 10 and 10 or more		
6.	Touch screen display with $\geq 50$ user profile and user program options		
7.	Moisture purging and diffusion pump vacuum system – humidity restrictions		
8.	Added HEPA filter of 0.2micron		
9.	Advanced software controls – please list ones available		
10.	Safety features as given in above technical specs- list applicable ones		
11.	Ultracentrifuge compatible with Beckman SW41Ti swinging bucket rotor		
12.	Fixed angle rotor (titanium make) of 6x95ml volume or equivalent with maximum 235,000xg force speed		
13.	Set of consumables for rotors with suitable adaptors for smaller volume		
14.	Accessory pre-sample preparation unit as per technical specs		
15.	Meets safety and standards certification (point no.9 in tech specs)		
16.	Meets product safety and electromagnetic compatibility (point no.10 in tech specs)		
17.	Minimum 10 years warranty provided		
18.	Free of cost service in case of routine upgradation or installation of system software		
19.	Availability of spare parts with letter from manufacturer		
20.	List of successful installations in Bangalore with application and service support details		

The documents may be addressed to the Chairman, Molecular Biophysics Unit (Kind attention: Dr. Vidya Mangala Prasad), Indian Institute of Science, Bangalore 560012. Last date for receiving queries is 11 October, 2023. Last date for submission of bids is 20 October, 2023.

Thank You.

Sincerely,

Dr. Vidya Mangala Prasad

Assistant Professor

Molecular Biophysics Unit

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Karnataka, India.

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