Government eProcurement System

Government eProcurement System

Published Corrigendum Details

Date : 24-Dec-2019 12:46 PM

Print

Organisation Chain :	Council of Scientific and Industrial Research||CCMB-Hyderabad - CSIR||Purchase-CCMB - CSIR
Tender ID :	2019_CSIR_37440_1
Tender Ref No :	2986/181019/1653/EQPT
Tender Title :	Supply of 200kV Cryo Transmission Electron Microscope with Direct Detection Camera
Corrigendum Type :	Technical Bid

Corrigendum Document Details

Corr.No.	Corrigendum Title	Corrigendum Description	Published Date	Document Name	Doc Size (in KB)
1	Corrigendum on Amendment to Technical Specifications and Requirements	200kV Cryo Transmission Electron Microscope with Direct Detection Camera Corrigendum on Amendment to Technical Specifications and requirements of Chapter 4 of Original tender document on the subject after PBC held on 20.12.19	24-Dec-2019 12:46 PM	2986AmendmetOfSpecificationsOfCRYOafterPBCon20.12.19.pdf	264.32

FAX: 040-27160996, 27160311 **EPABX**: 040-27160**222** – **241,** S&P Div..- 2719 2681, 2719 2682
website: http://www.ccmb.res.in

सीएसआईआर-कोशिकीय एवं आणविक जीवविज्ञान केन्द्र
CSIR-CENTRE FOR CELLULAR & MOLECULAR BIOLOGY
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद्)
(COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH)
उप्पल रोड, हैदराबाद/Uppal Road, Hyderabad – 500 007
(**तेलंगाना**/TELANGANA) **भारत**/India

Tender ID No. 2019_CSIR_37440_1
CCMB Ref. No. 2986/181019/1653/EQPT **Date: 24.12.2019**

Sub.- Amendment to original Tendered Technical Specifications for procurement of "200kV Cryo Transmission Electron Microscope with Direct Detection Camera" – reg.

With reference to **Pre-Bid Conference (PBC)** held on **20.12.2019** to finalise the tendered specifications, all bidders are requested to take a **NOTE** of the **CHANGES** in the tendered specifications at **REVISED CHAPTER-4** placed below. **Accordingly , tendered specifications of "200kV Cryo Transmission Electron Microscope with Direct Detection Camera" mentioned under CHAPTER- 4 in the original Tender Document gets completely substituted by REVISED CHAPTER- 4** placed below **(Page 2-7)** and bidders in their own interest are advised to carefully go through changes before submitting their ***e-bid.***

There is no change in **other Terms and Conditions** of the original **Tender Document**.

Bidders are advised to submit their **e-bids** as per **original schedule** given in the **Tender Document** on the subject which is also **reproduced** below for information-

BID submission Start Date & Time	**24.12.2019 (17.00 Hrs onward)**
BID submission End Date & Time	**09.01.2020 (upto 14.00 Hrs)**
Date & Time for opening of Bids	**10.01.2020 (upto 14.30 Hrs)**

Note: Prescribed BID SECURITY /EMD in **original** giving CCMB Tender Reference and CPPP Tender ID Reference must reach this office **on or before** BID Submission End Date & Time i.e. **09.01.2020 (upto 14.00 Hrs)** at the address given in Tendered Document, as also reproduced below: –

"Stores & Purchase Officer, CCMB, Habsiguda, Uppal Road, Hyderabad-500007,INDIA".

Sd/-
(Dharmendra Kumar)
Stores & Purchase Officer

Specifications for 200kV Cryo Transmission Electron Microscope with Direct Detection Camera After PBC Held on 20.12.2019:

Cryo Transmission Electron Microscope facility with the following components

A. 200kV Cryo Transmission electron Microscope with autoloader capability

- **1.1 200kV electron microscope ***
- **1.2 Cryo rapid freezer/Vitrification System***
- **1.3 Glow discharge***
- **1.4 High Vacuum Carbon and Sputter coater***
- **1.5 Screening Microscope***
- **1.6 Liquid Nitrogen Dewars***
- **1.7 UPS***

B. Direct detection camera with high DQE*

*** Detailed specifications as per given below**

A. 200 kV Cryo Transmission electron Microscope with autoloader capability

S.No	Specification	Requirement
1.1.1	Applications	Automatic SPA with dose minimization, Micro Electron Diffraction and Tomography
1.1.2	Resolution	Cryo EM Biological Sample Structural resolution 3 Å or Higher
	(a) Point Image	0.34 nm or better
	(b) Lattice Image	0.23 nm or better
1.1.3	Accelerating voltage	
	(a) Steps	80 to 200 kV
	(b) Factory Alignment	80 kV, 100 kV, 120 kV, 160 kV, 200 kV
1.1.4	Magnification	
	(a) Low Mag mode	≤ X 100 to ≥ X 6000
	(b) Selected Area Mag	≤ X 1000 to ≥ X 3,00,000
	(c) High Mag	≤ X 1,50,000 to ≥ X 8,00,000
	(d) Mag reproducibility	±1.5% and Rotation free
1.1.5	Diffraction mode	Selected area diffraction
	(a) Magnification range	≤ X5000 to ≥ X 600000
	(b) Camera length	200 to 2500 mm or more
1.1.6	Vacuum system	
	(a) Evacuation	Differential Pumping system
	(b) Control	Fully automatic sequence control
	(c) Vacuum Pumps	Sufficient number of different kind of pumps to maintain vacuum levels at different chamber of microscope. Ultimate vacuum (gun area less than 10^{-7} pa and column area 10^{-6} pa) should reach within 60 minutes

1.1.7	Electron gun	
	(a) Filament	Field Emission Gun
	(b) Automatic gun lift	Required
	(c) Energy resolution	≤ 1.5 eV
	(d) General	Should be capable of delivering excellent brightness, high coherence illumination with low emission current and rotation free imaging. Intensity of beam should not decrease in time and should be constant at least for 2 days usually need to collect SPA data sheet
1.1.8	Apertures	
	(a) Condenser Aperture	Two condenser aperture holders (C1 and C2) each with at least four apertures
	(b) Objective aperture	Objective aperture holder with at least four apertures appropriate for different imaging condition
	(c) SAD	Aperture holder with at least four apertures
	(d) General	All aperture holders should be motorized to maximize the degree of automation
1.1.9	Objective lens system	Constant power objective lens with low hysteresis design and minimum cross talk between optical components and fast switching between differential operational modes
1.1.10	Specimen Stage	Should be appropriate for multi user requirement, suitable for cryogenic temperature use with eucentric tilt.
	(a) Control	Computer controlled of X, Y, Z axis movements in mm
	(b) Stage Reproducibility	≤ 0.5 μm
	(c) Sample stage minimum movement	≤ 0.5 μm in X-Y direction
	(d) Specimen tilt angle range	±70 degree
	(e) Minimum tilt	0.5 degree
	(f) Sample drift	i) 0.01nm/sec after completing equilibration ii) 0.25 nm/sec at 30 minutes iii) 0.035 nm/sec at 60 minutes
	(g) Specimen Protections	Through Auto loader capability
	(h) Stage temperature	≤93K to 105K
	(i) Stage coolant filling	LN2 Auto refill, Life time of frozen hydrated specimen at least 2 days in to the microscope column without detectable deterioration
1.1.11	Specimen loading system	Automised, multiple grids up to 8 or more grids simultaneously into the microscope at and examined successively without breaking the vacuum, the grid exchange mechanism is expected to be highly automatic and reliable, suitable for high throughput and free of ice contamination.
1.1.12	Tomography	Capable of specimen tilt along a single axis over a large angular range (typically ±70°) with small angular tilt increments (typically 1°), and an image is recorded at every tilt angle.
	(a) Softwares	Data acquisition, reconstruction of acquired data and 3D visualisation of reconstructed data

1.1.13	Electron diffraction software	Crystal diffraction data collection with dose optimisation
	(a) image processing software	3D data acquisition and analysis software for micro electron diffraction.
1.1.14	Phase contrast plate	Phase shift between unscattered and scattered parts of the electron wave function to improve in-focus phase contrast in the image plane
	(a) General	Required electronics, software should provide to setup and operate the phase plate under optimal conditions.
1.1.15	View camera	Required for microscope alignments, etc.
1.1.16	Camera	CMOS chip-based camera for imaging and diffraction (Micro ED) with dose minimisation
	(a) Camera mode	search, focus, capture and movie
	(b) Sensor size	4K X 4K or more with Pixel size 5 to 16 µm.
	(c) Mounting position	On axis, bottom mounted and retractable
1.1.17	System control and Application softwares	(i) All essential workstations and support computers with 2 X 4TB storage, 512GB SSD drive for critical OS and critical applications.
		(ii) Online/offline software(s) for smooth operation of Cryo TEM must be included along with the offer.
1.1.18	Image formats	.emi or .dm3, .ser, .mrc, .jpeg and .tiff, should compatible with third party offline softwares for data analysis.
1.1.19	Provision for Energy filters / EELS	System should have provision for fixing Energy filters/ EELS along with suitable detector at later date.
1.1.20	Single particle analysis	Capable of single particle data collection with dose minimisation
	(a) image processing software	single particle data acquisition and analysis software.
1.2.1	Application	To allow rapid freezing of biological samples as thin film suspensions for Cryo-TEM analysis
1.2.2	Blotting Chamber	
	(a) Temperature range	4 degree to 60 degree (ambient temp range 18 to 25 degree)
	(b) Humidity	$\geq$ 98%
	(c) Sample loading	Access for both left and right hands
	(d) Blotting	Adjustable Blotting force, Programmable Blotting time and rotating filter pads.
1.2.3	Coolant container	2 coolant containers with anti-contamination rings and 2 ethane or propane cups
1.2.4	Grid hold tweezers	Quick disconnect tweezer mechanism with minimum 4 tweezers.
1.2.5	Grid box handling tool	Minimum 4 numbers
1.2.6	Instrument Control	software and foot control
1.2.7	Wait time between Blotting and Vitrification	Programmable
1.3.1	Application	To clean the surface of TEM grids (Ex Holey grids) to meet the requirement of successful imaging of variety of macromolecules
	(a) Glow discharge head Polarity	User Selectable Positive or Negative
	(b) Process timer	1-800 seconds or more

	(c) Working Vacuum range	≤ 0.2 to 1 mbar
	(d) Vacuum control	Integrated pirani gauge
	(e) Chamber vent inlets	Filtered air inlets with fast and slow vent option
	(f) Plasma Current	0 to 30 mA or more
	(g) Pre process hold time	0 to 4 hours or more
1.4.1	Applications	Sample preparation for Transmission Electron Microscopy
	(a) Vacuum System	Rotary pump and Turbo molecular pump
	(b) Chamber Size approx.	150 mm diameter chamber
	(c) Evaporation source	Gold (Au), Gold-Palladium (Au/Pd) and Carbon rods
	(d) Evaporation Function	continuous
	(e) Specimen stage	Rotating and tiltable specimen stage
	(f) Film Thickness monitor	Required
	(g) Desirable features	Aperture cleaning
1.5.1	Modes of operations	Bright field, Dark Field, Selected area diffraction, Cryo and Tomography.
1.5.2	Acceleration Voltage	20 kV-120 kV (variable) with auto alignment.
1.5.3	Source	Thermionic gun with LaB6 and Tungsten.
1.5.4	Resolution	0.35 nm or higher and pole piece gap should be compatible for imaging and Tomography.
1.5.6	Vacuum system	Differential Pumping system with fully automatic sequence control and sufficient number of different kind of pumps to maintain vacuum levels at different chamber of microscope. Ultimate vacuum (gun area less than 10^{-6} pa and column area 10^{-5} pa) should reach within 60 minutes
1.5.7	Lens System	Condenser lens, constant power objective lens, projector lens and stigmator coils. Distortion and rotation free imaging
1.5.8	Specimen Stage	Should be appropriate for multi user requirement, suitable for both cryogenic and ambient temperature use with eucentric tilt. Computer controlled X,Y,Z axis movements with specimen tilt angle range ±70°
	(a) Specimen Protections	Anti-contamination device, Biological sample protection, protection against beam damage
1.5.9	Cameras	(i) 4K X 4K or more with Pixel size 5 to 16 µm, on axis, bottom mounted and retractable CMOS based camera for imaging and diffraction with dose minimisation. (ii) View camera for microscope alignments, etc.
1.5.10	Holders	Different multi grid holders for room temperature. Cryo imaging along with necessary accessories and Tomography holder.
1.5.11	Computer	All the computers for TEM must be factory fitted and tested with pre-loaded, licensed software's for smooth operations. Please include Tomography reconstruction licence.
	(a) Image formats	.emi or .dm3, .tiff, jpeg, .ser and .mrc
1.5.12	Essential items	(a) A first-level maintenance kit. (b) System maintenance kit. (c) Calibration standard. (d) Appropriate EMI cancellation unit.

1.6.1	(a) 240 liter LN2 Dewar -2 Nos (b) 110 liter LN2 Dewar -1 No	Should be ideal for conventional straight liquid dispensing, convenient fill/withdrawal valve, vent valve with full tricock to prevent over filling, Pressure gauge and relief devices for safety, self-pressuriser, precise pressure regulator for pressure range of 15 - 25 PSI and casters for easy mobility and for locking.
	(c) 10 liter LN2 Dewar	3 Nos
	(d) 5 liter LN2 Dewar	3 Nos
	(e) 2 liter LN2 Dewar	3 Nos
1.7.1	UPS System	Two 100 KVAs in parallel redundant configuration with 20 minutes SMF battery backup time, PWM IGBT rectifier and inverter, output power factor ≥ 0.9 and Built-in isolation transformer for galvanic isolation of output.

B. Direct detection camera with high DQE

S.No	Specification	Requirement
2.1	Detector Type	Direct Electron Detector
2.2	Operational Voltage	200kV
2.3	Mounting position	On-axis, bottom mount, retractable
2.4	Sensor Size	4K X 4K or more
2.5	Acquisition modes	Integration and Counting
2.6	Acquisition Frame rate	200 fps or more
2.7	Sensor Life time	≥ 1.5 billion electron/ pixel
2.8	Sensor Protection	Required
2.9	DQE	≥0.5 at half Nyquist
2.10	Acquisition software	Software for automatic data collection of single particle analysis and tomography. Image data, metadata acquired should be able to analyze, manipulated and compatibility for third party software packages. Detector software is expected to be fully embedded into TEM's operation system

Additional Important Clauses

S.No	Specification	Requirement
3.1	Mandatory	(a) The 200kV TEM and Direct electron camera must be compatible with each other and should be well integrated. All the necessary optics, tools, hardware and software for successful integration of the system to be included. (b) Demonstrated capability of integrating with the above mentioned similar combination is essential and the number of installations globally and addresses of institutions where such similar integrations are done should be enclosed. In addition, EMDB depositions , number of publications etc., should be submitted for evaluation of the technical bid so as to match state-of-the-art internationally proven cryo TEM facility
3.2	Power	All components including subsystems, accessories and computers should operate on 220 / 230 volts, 50Hz electrical power.
3.3	Warranty	**3 Years** comprehensive **on-site warranty**

3.4	Computers/ work stations	The computers/ work stations and printers offered along with the system should be the latest models compatible with the application software. Required interface cards, cables etc. to be included along with storage devices. The system configuration offered should be specified.
3.5	Software	Software supplied should be the **latest** versions and any **up gradations** in the softwares including third party softwares to be given free of cost.
3.6	Accessories	All standard accessories that would be supplied with the system should be clearly mentioned in the offer. Other required accessories may be offered separately.
3.7	Spares & Consumables	Essential spares and consumables such as sample grids, holders, tweezer etc. required for maintaining the system for two years to be included in the offer. A list of such items should be enclosed.
3.8	Manuals	Detailed **Instructions and service manuals with circuit diagrams** for the entire system and accessories should be supplied. Commitment to this clause to be made by the principals in the offer.
3.9	Literature	Detailed **literatures (all originals)** with technical specifications and features for the main system and all the accessories to be enclosed with the offer.
3.10	Compliant Statement	Please ensure that the specifications mentioned in the offers must cover all the parameters listed in our enquiry. Unspecified parameter will be treated as non-compliant.
3.11	Pre-installation requirement	**Pre-installation and utility requirements** for installation and running the systems should be clearly mentioned.
3.12	Installation & Commission	The principals / local agents are responsible for the installation, testing and commissioning of the main system and accessories which should be carried out immediately after receipt of the system. Integration of the main system with the accessories, checking the specifications to be carried out.
3.13	Application and maintenance Training	**Initial and advance application trainings as well as periodic trainings** on sample preparation, instrument operation, data collection and analysis. Preliminary training for day to day maintenance of instruments for 2 persons to be provided on-site at CCMB for **free of cost.**
3.14	Spares support	Please indicate the **year** in which the **model** was introduced in the market and confirm whether the spares and consumables for the system would be available for a minimum period of **10 years.**
3.15	Service support	Availability of local service support and response time for a service call during and after warranty to be specified.
3.16	Instrument demonstration	Demonstration of identical models as the one(s) offered to be given on request at other customer sites.
3.17	Technical presentation	Technical presentations on the systems offered are to be made on request from CCMB.

NOTE: **Bidders may also note that in case of any discrepancy pertaining to requirement of Training, Warranty and tendered Technical Specifications mentioned in any other part of Tender Document on the subject, requirement on Training, Warranty and Technical Specifications specifically indicated in this REVISED CHAPTER - 4 shall prevail.**