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From: Director, CSIR-NPL
No. 14-VII/SS(3063-OTE)25PB/T-42

Dated: 23.09.2026

CORRIGENDUM

With reference to NPL's Open Tender ID: **2026_CSIR_290281_1** for "**UHV Deposition Chamber**". All the prospective bidders are hereby informed that some changes have been made in the technical specification of captioned tender. Revised specifications are as follows:

Original Specifications	Final Specifications
As tendered	Attached as Annexure A

Revised Technical specifications (Annexure-A) is also ATTACHED with this Corrigendum. Accordingly, all the interested bidders may submit their Offer as per revised technical specification.

Please also note that bids submitted without taking these changes into consideration will be rejected summarily.

All other terms will remain the same. The same is also available on CSIR-NPL official website <http://www.nplindia.org> under Tender link.



Sr. Controller of Stores and Purchase

FORM TO BE FILLED BY IO WHILE CONVENING PRE-BID MEETING OF TSC.**File No.- 14-VII/SS(3063-OTE)25PB****Date: 22-09-2026****Pre-bid Meeting (To be typed clearly by the I/O)**

Name of Indentor _____ Dr. Sangeeta Sahoo _____

Indent No. _____ 890 & 09/02/2026 _____

Item Description _____ UHV Deposition Chamber _____

No. of Budgetary Quotes _____ 01 _____

(1) A pre-bid meeting of TSC was held on _____ **15-09-2026** _____

Following bidders (**total numbers: 03**) participated in the Pre-bid Meeting: **(i)** NB Instrument Pvt. Ltd. B2A, B-3, Rakesh Deep Building, 11, Gulmohar Commercial Complex, Yusuf Sarai, New Delhi-110049 (India) **(ii)** Excel Innovators and Integrators, Gala No 9 & 10, Bldg no 2, Dias Industrial Estate, Sativali Naka, Vasai (E), Palghar - 401208, Maharashtra, **(iii)** Scientifix & Analytical Instruments, T-24, Ground Floor, Okhla Industrial Area, Phase-II New Delhi-110020

Name of the Firm	Queries Raised	Remarks , if any
NB Instrument Pvt. Ltd. B2A, B3, Rakesh Deep Building, 11, Gulmohar Commercial Complex, Yusuf Sarai, New Delhi-110049 (India)	Review Technical Specification Point 1.1.3 and 2.1.2a In view of the technical discussion, the committee is requested to consider revising Point 1.1.3(b) and Point 2.1.2a(b) from “1000°C without rotation” to a suitable “temperature within the practical sputtering operating range, such as 800–850°C”.	Email copy attached
Excel Innovators and Integrators, Gala No 9 & 10, Bldg no 2, Dias Industrial Estate, Sativali Naka, Vasai (E), Palghar - 401208, Maharashtra	They raised a concern regarding the material for the substrate holder. For silicon substrate, one has to be careful not to heat it beyond 600°C in vacuum and heat it only after sputtering pressures are achieved. Si has a tendency to alloy at higher temperatures. In this regard, literature review may be considered for finalizing the specifications The Firm indicated that they usually use Molybdenum as a sample holder at higher temperatures, up to 1000°C.	Email copy attached
Scientifix & Analytical Instruments, T-24, Ground Floor, Okhla Industrial Area, Phase-II, New Delhi-110020	They raised concerns on (i) Substrate heating temperature range – with rotation and without rotation.	Email copy attached

	They asked for the confirmation on whether the tendered temperature limits (800 °C with rotation and 1000 °C without rotation) are the required substrate-surface temperatures, and whether both values (800 °C with rotation and 1000 °C without rotation) stand as the final requirement. Also they requested to confirm whether Molybdenum Heater is mandatory or they can use suitable Heating Material to achieve desired Temperature. (ii) Substrate sample materials — to decide the substrate heater material They further asked for the confirmation on the substrate sample materials that will be heated on this system (for example silicon, SiO₂/Si, sapphire, quartz, glass, oxide single crystals, metal foils, ceramics, or any other). This information is required so that they may select the correct substrate heater material and construction for vacuum compatibility, maximum temperature and chemical compatibility with NPL's samples.	
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Indentor's recommendation

The comments, as received from bidders during PBC, and our response is as follows:

Tender Specification and its number	Comment of bidder	Response of Indentor (Accepted/ Not accepted)	Revised specification (If any)	Justification for non-acceptance
specs 1.1.3 and 2.1.2a	NB Instrument Pvt. Ltd. Request revision of Point 1.1.3(b) and Point 2.1.2a(b) from "1000°C without rotation" to a suitable "temperature within the practical sputtering operating range, such as 800–850°C".	Accepted	specs 1.1.3 (b) and 2.1.2a (b) are modified in the revised specifications (Annexure A)	
	M/S Excel Innovators and Integrators Pvt. Ltd. Concern for the selection of the substrate materials in order to avoid their alloying with the substrate holder material at high temperature.	Accepted	In the revised specifications (Annexure A), we have mentioned the probable substrate materials that are planned to be used so that a suitable substrate	

			holder can be provided by the Firm.	
	SCIENTIFIC & ANALYTICAL INSTRUMENTS Pvt. Ltd. Comments on specs 1.1.3 and 2.1.2a related to the substrate heating temperature range – with rotation & without rotation and Substrate sample materials — to decide the substrate heater material	Accepted	In the revised specifications (Annexure A), clarifications related to the temperature range, temperature limit values and the substrate sample materials properly addressed as desired by the Firm.	

Final recommended specifications are as attached at Annexure A and signed by I/O:

Corrigendum to Tender may be issued.

Recommended Revised Date of Tender submission (if any) is 14.10.2026 up to 3.00 PM.
The specifications are generic and broad based.

Submitted to TSC for necessary approvals.

FORM TO BE USED BY TSC FOR FINALISING PRE-BID MINUTES

File No.14-VII/SS(3063-OTE)25PB

Date: 22-09-2026

TSC Minutes (To be typed clearly by the I/O)

Based on the Pre-bid meeting and recommendation of I/O, following changes have been made in the specifications:

Original Specification	Final specification
1.1.3 Substrate holder : Diameter: 2 inches; heating Molybdenum heater capable of heating substrate (a) from room temperature (RT) to 800°C during rotation and (b) from room temperature to 850°C without rotation. Rotation: Substrate holder can rotate continuously, driven by a stepper motor. Variable speed from 0 to 10 RPM Movement: Up / down vertical movement of total 25mm to adjust substrate position during deposition.	1.1.3 Substrate holder : Diameter: 2 inches; heating Molybdenum heater or any other suitable heater capable of heating substrate (a) from room temperature (RT) to 800°C during rotation and (b) from room temperature to 850°C without rotation. Here, the temperature limits (800 °C with rotation and 850 °C without rotation) are the required substrate-surface temperatures. Sapphire, MgO, SiO₂/Si, Si₃N₄/Si (intrinsic and doped Si), 4H-SiC, quartz are the substrate sample materials that will be heated on this system at different range of temperatures. Rotation: Substrate holder can rotate continuously, driven by a stepper motor. Variable speed from 0 to 10 RPM Movement: Up / down vertical movement of total 25mm to adjust substrate position during deposition.
2.1.2.Substrate holder: 2.1.2a. Diameter: 2inches; heating : Molybdenum heater capable of heating substrate (a) from room temperature (RT) to 800°C during rotation and (b) from room temperature (RT) to 1000°C without rotation	2.1.2.Substrate holder: 2.1.2a. Diameter: 2inches; heating : Molybdenum heater or any other suitable heater capable of heating substrate (a) from room temperature (RT) to 800°C during rotation and (b) from room temperature (RT) to 850°C without rotation Here, the temperature limits (800 °C with rotation and 850 °C without rotation) are the required substrate-surface temperatures. Sapphire, MgO, SiO₂/Si, Si₃N₄/Si (intrinsic and doped Si), 4H-SiC, quartz are the substrate sample materials that will be heated on this system at different range of temperatures.

The file is forwarded to Purchase Section for uploading the final specifications and TSC minutes on the website and CPPP Portal.

Declaration: We hereby declare that we have no conflict of interest with any of the bidder in this tender.

Technical details for UHV Deposition Chamber

UHV Chamber Specification (vacuum better than 2×10^{-9} mbar UHV)

S.No.	Description
1.0	UHV Chamber Specification (vacuum better than 2×10^{-9} mbar UHV)
1.1	Chamber Overview 1.1.1 Spherical (diameter $\geq 14''$) or equivalent square shaped UHV chamber with support frame equipped with three (3) X 2-inch magnetron sputtering sources. All CF Flanges and UHV Viewports/SS blanks. 1.1.2. Three (3) X 2-inch magnetron sputtering sources. Each sputtering source has an individual gas inlet line for process gases. All CF Flanges. 1.1.3 Substrate holder : Diameter: 2 inches; heating Molybdenum heater or any other suitable heater capable of heating substrate (a) from room temperature (RT) to 800°C during rotation and (b) from room temperature to 850°C without rotation. Here, the temperature limits (800 °C with rotation and 850 °C without rotation) are the required substrate-surface temperatures. Sapphire, MgO, SiO₂/Si, Si₃N₄/Si (intrinsic and doped Si), 4H-SiC, quartz are the substrate sample materials that will be heated on this system at different range of temperatures. Rotation: Substrate holder can rotate continuously, driven by a stepper motor. Variable speed from 0 to 10 RPM Movement: Up / down vertical movement of total 25mm to adjust substrate position during deposition. 1.1.4. Sputtering geometry: One sputtering source mounted parallel to the substrate surface, tilt adjustable. Two sputtering sources mounted confocally at an angle relative to the substrate. Base pressure: lower than 2×10^{-9} mbar (ultra-high vacuum).
1.2	Vacuum Pumping System
	1.2.1. Turbo Molecular Pump: Pfeiffer HiPace300 / Edwards nEXT 300 / Leybold Turbovac 350i with CF100 flange or equivalent with integrated controller
	1.2.2. Ion Pump with controller: Included to maintain UHV vacuum levels and provide clean pumping.
	1.2.3. Backing Pump: Pfeiffer HiScroll 12 / Edwards nXDS 15i / Leybold scroll VAC 15 plus or equivalent dry scroll pump used to back TMP
	1.2.4. Gate Valves : One CF100 and one CF150 manual Gate valves for isolating the chamber from the pumping systems as well as throttling
1.3	Vacuum Gauges and Measurement

	1.3.1. One Cold cathode gauge with readout capable of measuring vacuum pressures down to 1×10^{-10} mbar for precise UHV monitoring.
	1.3.2. One Capacitance manometer gauge with measurement range from 1×10^{-1} to 1×10^{-3} mbar for accurate pressure reading during deposition phase
1.4	Gas Delivery System
	1.4.1. Two independent Mass Flow Controllers (MFCs): 1.4.1a. One MFC (0-100 sccm) for Argon gas feeding to all three sputtering sources via high vacuum valves. 1.4.1b. One MFC (0-100 sccm) for Nitrogen gas feeding directly into the chamber with its own high vacuum valve. Gas lines for Ar and N₂ are physically separated to avoid cross-contamination.
1.5	Chamber Access and Viewports
	1.5.1. Two view ports installed on the chamber, each equipped with manual shutters.
	1.5.2. Access Ports for gauges, pump, gas inlet and few spares for future upgradation.
1.6	Baking Capability: Entire chamber designed to bake-out at 150°C to reduce contamination and out gassing during operation
1.7	Cooling Capability : Water manifold with flow switch / flow meters

Near UHV Chamber Specification

S.No.	Description
2.0	Near UHV Chamber Specification
2.1	Chamber Overview
	2.1.1. Spherical (diameter $\geq 14''$) or equivalent square shaped UHV Chamber with stand equipped with three (3) 2-inch magnetron sputtering sources, each with individual gas inlet. All CF Flanges and UHV Viewports/SS blanks.
	2.1.2.Substrate holder: 2.1.2a. Diameter: 2inches; heating : Molybdenum heater or any other suitable heater capable of heating substrate (a) from room temperature (RT) to 800°C during rotation and (b) from room temperature (RT) to 850°C without rotation Here, the temperature limits (800 °C with rotation and 850 °C without rotation) are the required substrate-surface temperatures. Sapphire, MgO, SiO₂/Si, Si₃N₄/Si (intrinsic and doped Si), 4H-SiC, quartz are the substrate sample materials that will be heated on this system at different range of temperatures. 2.1.2b. Rotation : Substrate holder driven by stepper motor. Variable speed from 0 to 10 RPM Movement: Up / down vertical movement of total 25mm to adjust substrate position during deposition.

	2.1.3. Sputtering geometry: One sputtering source mounted parallel to substrate surface (tilt able preferred). Two sputtering sources mounted confocally at an angle. Base pressure: lower than 5×10^{-8} mbar (Near UHV).
2.2	Vacuum Pumping System
	2.2.1. Turbo Molecular Pump: Pfeiffer HiPace 700 / Edwards nEXT 730 / Leybold Turbo vac 900 iX or equivalent with DN 160CF flange and integrated controller, suitable for Near UHV vacuum.
	2.2.2. Backing Pump: Pfeiffer Hi Scroll 12/Edwards nXDS15i / Leybold scroll vac 15 plus or equivalent dry scroll pump used to back TMP
	2.2.3. Gate Valves: One CF150 manual gate valve to isolate / throttle chamber from pumping system.
2.3	Vacuum Gauges and Measurement
	2.3.1. Cold cathode readout capable of displaying vacuum pressures down to 1×10^{-8} mbar.
	2.3.2. Capacitance manometer gauge with measurement range from 1×10^{-1} to 1×10^{-3} mbar for accurate pressure reading during deposition phase.
2.4	Gas Delivery System
	2.4.1. Two independent Mass Flow Controllers (MFCs): 2.4.1a. One MFC (0-100sccm) for Argon feeding all three sputtering sources through high vacuum valves. 2.4.1b. One MFC (0-100sccm) for Nitrogen feeding chamber gas inlet through high vacuum valve. Separate gas lines for Ar and N ₂ gases.
2.5	Chamber Access and Viewports
	2.5.1. One CF100 door (with possibility of sample loading and unloading) on chamber with viewport for observation and access.
	2.5.2. Ports for gauges, pump, gas inlet and few spares for future upgradation
2.6	Cooling Capability Water manifold with flow switch / flow meters.

Load Lock Chamber Specification (Base pressure: lower than 1×10^{-6} mbar)

S.No.	Description
3.0	Load Lock Chamber Specification (Base pressure: lower than 1×10^{-6} mbar)
3.1	Chamber Overview

	3.1.1. An appropriate sized spherical or equivalent square shaped Load-lock chamber with stand equipped with one 2-inch magnetron sputtering source mounted at bottom of the chamber with Argon gas inlet.
	3.1.2. Ports for gauges, pump, gas inlet, transfer arm etc. Appropriate view ports and transfer ports (CF 63) to connect to two above chamber, Loading port.
	3.1.3. Substrate holder: Diameter: 2 inches; Room temperature operation; Rotation of substrate holder; Up/down vertical movement of 25mm in-situ
3.2	Vacuum Pumping System
	3.2.1. Turbo Molecular Pump: Pfeiffer HiPace300/ Edwards nEXT 300/ Leybold Turbovac 350i or equivalent with CF100 flange and integrated controller
	3.2.2. Backing Pump: Pfeiffer HiScroll 12/ Edwards nXDS15i / Leybold scroll vac 15 plus or equivalent dry scroll pump used to back TMP.
	3.2.3 Valves: 3.2.3a. One manual CF100 gate valve for TMP isolation. 3.2.3b. Two manual CF100 gate valves for substrate transfer (sized for 2" samples).
3.3	Vacuum Gauges and Measurement
	3.3.1. Cold cathode gauge with readout for vacuum measurement.
	3.3.2. Pirani gauge for rough vacuum measurement.
3.4	Gas Delivery System
	3.4.1. Two independent MFCs (0-100 sccm): 3.4.1a. One for Argon feeding the sputtering source through high vacuum valve. 3.4.1b. One for Oxygen feeding chamber through high vacuum valve. Separate gas lines for Ar and O ₂ .
3.5	Chamber Access and Viewports Appropriate high vacuum compatible view port installed along with Quick access to the chamber through CF150 front door
3.6	Transfer System Two magnetic transfer arms for substrate movement between Load Lock, Near UHV and UHV chambers. And one spare transfer arm.

Common Items

S.No.	Description
4.0	Common Items
4.1	Instrumentation and Electronics
	4.1.1. Instrumentation rack housing all controllers, electronics, and power distribution components.
	4.1.2. An additional sample transfer rod
	4.1.3. UPS (based on the total load)
	4.1.4. Power Supplies: 4.1.4a. One (1) × 600W DC power supplies for sputtering sources. 4.1.4b. One (1) × 300W RF power supply for RF sputtering or substrate biasing. 4.1.4c. Controllers for substrate rotation, heating, and stepper motor control.
	4.1.4d. Integrated water flow sensors with interlock systems to monitor and ensure proper cooling.
4.2	Cooling System
	4.2.1. Each chamber equipped with individual water manifolds. Water manifolds connected to a common chiller system rated for 2kW cooling capacity. 4.2.2. Cooling system designed to cool: 7 sputtering magnetron sources. 2 substrate heaters (UHV and Near UHV chambers).
5.0	Installation: Accessibility criterion
	5.1. Achieving desirable ultra-high vacuum after complete installation 5.2. Formation of plasma using both DC and RF power source
6.0	Installation by: Manufacturer
7.0	Training: At least three days training
8.0	Warranty: one year standard warranty
9.0	Spare part availability: vendor/supplier may ensure for at least 5 years support towards supply of spare parts