Ref: Open Tender for the supply of Inductively Coupled Plasma Mass Spectrometer Analysis Suite (ICP-MS and OES System) (e-tender No.2025_CSIR_241378_1; TENDER No: 4/5(55)25-Pur July 15, 2025).

Minutes of the Pre-bid Meeting conducted on 23/07/2025 at 11.30 AM.

In the pre-bid meeting, two firms participated: M/s Thermo Fisher Scientific India Pvt. Ltd. (online mode) and M/s Agilent Technologies India Pvt Ltd. (in person).

The meeting was convened by the Dr. Amit Chawla (Indentor) and organized by the three TSC members (Dr. Ram Kumar Sharma, Chairman, Dr. Upendra Sharma, and Mr. Bijan Bihari Garnayak, Members).

The meeting started by first inviting Mr. Vinay Tiwari, from M/s Thermo Fisher Scientific India Pvt. Ltd. who joined in an online mode through MS-Teams link. Some points were discussed where Mr. Tiwari raised his concerns, which included some general specifications of the ICP-OES. As these specifications were already generalized and applicable to Thermo and other vendor's models, and no written communication was received, no amendments in the Tender Specifications were undertaken.

The second party invited was M/s Agilent Technologies India Pvt Ltd., represented by Mr. Chandra Rajwar, and Mr. Himanshu Kasturia. The following points were raised: -

Tender Specs Points	**Amendment Requested**	**Action Taken**	**Remarks**
Point No. 11 The Detector should be of 11 order or more magnitude of linear dynamic range.	Detector should have 11 order or more linear dynamic range @ 0.1cps to 10^{10}cps	No changes required	This specification is as per requirements and has been generalized so as to be applicable for all leading manufacturers
Point No.11 Sensitivity : S32 (as SO or suitable mode) : <100 ppt	Sensitivity : S32 (as SO or suitable mode) < 200ppt	No changes required	The specifications as per Agilent model, and as per requirement
Point 11 Sensitivity : Si32 (as SO or suitable mode) : <50 ppt	Sensitivity : Si32 (as SO or suitable mode) : <200 ppt	No changes required	The specifications as per Agilent model, and as per requirement
Point 17 "With Polychromator /Dual Monochromator"	Polychromator	Amended as "A benchtop computer controlled ICP-Optical Emission Spectrometer	All the top models of available OES of leading manufacturers have Polychromator

		(OES) (with factory supplied PC with preloaded software) should be supplied **with polychromator -based** optical system with..."	setup. Further, Polychromator is the latest and more advanced system, offering faster, simultaneous multi-element analysis with higher sensitivity. Hence, specification is amended.
Point 22 Vessel volume 50 ml PTFE-TFM Teflon Vessel. Built in touch screen 7" or more size	Vessel volume 80ml or more PTFE-TFM /Teflon Vessel, **Rotor and springs** Built in touch screen 4" or suitable size as per system operation requirement.	Amended as "A high quality Microwave Digestion System (MDS) with 1900 W or better output, vessel able to handle working pressure 45 bar or more, maximum pressure capacity of rotor of 150 bar or more for utmost safety, working temperature 250 °C or more, 15 or more vessel capacity, vessel volume 80 ml or more for each vessel (PTFE-TFM- Teflon vessel,), rotor and springs; vessel capable of handling sample weights from min 1.5g & upto 3g; built-in touch screen with 4" or more size for operation."	Amended as per suggestion for applicability of various models of leading manufacturers of MDS and taking into consideration of the availability of such modes in various Microwave Digestion System (MDS) models

Point 24 Fume hood	Complete Material of construction of fume hood SS 316L	Amended as "A high-quality mineral acid fumehood (with sash material 1/4" thick or more, high quality polycarbonate vertical-rising sash with cable and pulley; also suitable for HF or better, with cabinets) of size 8ft, Type 1 unplasticized PVC liner with integral work surface, drainage, wash down system, internal piping and spray nozzles, LED lighting, PVC blower, wash rings, 316 stainless steel work."	The specs for fumehood amended for better clarity
Point 25 Water Purification System (WPS)	Please incorporate certification standards norms. Instrument must be listed with under writer's laboratories for testing of breakdown components, dielectric voltage, **Temperature & clearance/creepage (both UL 508 & UL 840) and** appropriate certification from regulating agency indicating compliance with **EU EC directive (documents must be enclosed)**	Amended as "A microprocessor-controlled ultra-pure water purification system, should be a compact dual stage system, capable of producing Ultrapure Endotoxin and bacteria free water (ASTM Type 1 and Type 2 modules with prefiltration RO setup & UV in the unit, system must be two	The suggested amendment incorporated for availability of 'elemental grade' highly pure water obtained from certified models of WPS

		stage) from potable feed water, (water-resistivity≥18.2 M ohms-cm; TOC ≤4ppb; bacteria<0.1 CFL/ml) & with high quality 60L HDPE reservoir tank; with UV lamps, CO2 Trap and level sensor; with certification (both UL508 & UL840)".	
Point 27 21 CFR compliance & NABL accreditation	21 CFR **or GLP or suitable compliance ,which are applicable for NABL accreditation**	Amended as 21 CFR part 11 compliance software and compliance of all other requirements for NABL accreditation	

In the general discussion, it was also suggested by both the vendors to include factory supplied data acquisition system with pre-loaded licenced software for both TQ-ICP-MS & ICP OES, which has been included in the revised tender specifications. Further, it was also suggested that IQ/OQ of whole system to be carried out every year during the warranty period, should be incorporated in the tender specifications.

Indentor 29/07/2025

Member 29/07/25

Member 29/07/2025

Chairman 29/7/2025

Inductively Coupled Plasma Mass Spectrometer Analysis Suite (ICP-MS and OES) with the following specification;

S.N.	Specifications
1.	A computer controlled Inductively Coupled Plasma Mass Spectrometer (ICPMS) with high sensitivity Triple Quadrupole, with factory supplied data acquisition system with preloaded licenced software.
2.	Quadrupoles Resolution ≤0.4 to 1.0 amu in entire mass range.
3.	Quadrupoles scan speed should be ≥3700 amu/sec or more from Li to U with 40 interval masses.
4.	Quadrupole mass range should be from 5-240amu or wide range.
5.	The integrated sample introduction unit should include a Peltier-cooled spray chamber with temperature range of -5 to 20°c, & a PFA/Glass/Quartz Nebulizer, Ni Sample & Skimmer cones.
6.	A dedicated HF kit along with PFA nebulizer inert spray chamber, inert torch (ceramic based), tubing set and Platinum cone.
7.	Ion Source and RF Plasma should be computer-controlled 27/34 MHz RF generator along with hot/normal plasma conditions & cool plasma, flexible alignment plasma torch, and including compatible re-circulating chiller.
8.	ICP MS unit should have cell offering operation: Standard Mode, Collision Cell (He) Mode with KED, and Reaction mode for interference removal.
9.	The Collision Cell reaction should have three or more independent gas channels along with four mass flow controllers for collision and reaction gas utilization for pure premix or form i.e. He, H_2, NH_3, O_2 etc. with fully automatic changeover required for contamination free ultra-trace analysis.
10.	The system should have dedicated gas channel with MFC/EFC devices to control plasma, auxiliary, nebulizer, reaction gas (03 Nos) and collision gas.
11.	The Detector should be of 11 order or more magnitude of linear dynamic range.
12.	Turbo pump should be of differential/suitable pumping.
13.	The system should have sensitivity (Mcps/ppm) parameters, including (i) Li/Be: ≥ 65; In/Y: ≥ 280; U/Tl/Bi: ≥ 300
14.	The system should have Detection limits (ppt), including Li/ Be: < 0.50; In/ Y: < 0.25; U/ Bi/Tl: < 0.25 ; 32S (as SO+ or with suitable mode) : < 100 ; 31P (as PO+ or with suitable mode) : < 50; 28Si (as SiO+ or with suitable mode) : < 50; Oxide ratio (%) CeO/Ce <2.5; Ba++ or Ce++/ Ba or Ce <4; Background mass 4.5/9/220: No gas <1 cps; Short term stability (% RSD) <3 or better; Long term stability (% RSD) <3 or better; Isotope ratio precision (% RSD): Ag107/Ag109≤ 0.3
15.	An auto-sampler should have plate/micro-plate kit with at least 200 well with cover and duct for removing toxic fumes.
16.	LC/IC should be of same make as ICPMS & have suitable pump (with 0.1-5ml flow rate or wider with 5000psi or more pressure range) and auto-sampler (with atleast 100 Vial capacity), with flow rate precession/accuracy to be +/- 0.5% or better and with integrated single platform software
17.	A benchtop computer controlled ICP-Optical Emission Spectrometer (OES) (with factory supplied data acquisition system with preloaded licenced software) should be supplied with polychromator -based optical system with wavelength range of 167.021 - 780 nm or a wider wavelength range to cover all elements and with resolution less than or equal to 0.009 nm at around 200/202nm.
18.	OES should have dual view (axial & radial, the radial height adjustment must be upto 18 mm or more) & should be based on simultaneous technology with CCD/CID/SCD detector with minimum detector integration/readout time equal or less than 1s. Power output should be software controlled & variable in range of 750-1500W or wider range, with suitable increment step.
19.	All gas requirements of ICP-OES for plasma gas, nebulizer gas, auxiliary gas, purge gas, & sheer gas must be mentioned. All applicable mass flow/gas controllers (plasma, axillary, nebulizer and makeup gas) must be variable & software controlled with less than equal to 1L/min flow settings.

29/7/25 29/7/25 29/07/2025 29/7/2025

20.	The OES must include a peristaltic pump of min four channels that allow for the online addition of internal standards & simultaneous hydride element analysis with hydride generator setup with separate spray chamber & tubing set (for As, Hg & Se)
21.	The Autosampler of OES should be of atleast 200 vials capacity (with 1000 vials to be provided).
22.	A high quality Microwave Digestion System (MDS) with 1900 W or better output, vessel able to handle working pressure 45 bar or more, maximum pressure capacity of 150 bar or more for utmost safety, working temperature 250 °C or more, 15 or more vessel capacity, vessel volume 80 ml or more for each vessel (PTFE-TFM- Teflon vessel), rotor and springs, vessel capable of handling sample weights from min 1.5g & upto 3g; built-in touch screen with 4" or more size for operation.
23.	Complete set of accessories along with dedicated HF/hydride generation kit alongwith PFA nebulizer inert spray chamber, inert torch (ceramic based), tubing set (pump tubing aqueous sample (pack/12) (03 Nos.); pump tubing ISTD (pack/12) (03 Nos.); Nebulizer tubing (02 sets); spray chamber drain tubing (02 sets)); and consumables such as Tuning solution 500ml (01 nos.); Extra torch along with centre tube/injector (02 nos.); RF coils (01 Nos.); chemicals to be included for 200 run for each element; chemicals for 100 samples analysis each (Hg, As, Se) and tubing sets reductant and waste (24 each).
24.	A high-quality mineral acid fumehood (with sash material 1/4" thick or more, high quality polycarbonate vertical-rising sash with cable and pulley; also suitable for HF or better, with cabinets) of size 8ft, Type 1 unplasticized PVC liner with integral work surface, drainage, wash down system, internal piping and spray nozzles, LED lighting, PVC blower, wash rings, 316 stainless steel work.
25.	A microprocessor-controlled ultra-pure water purification system, should be a compact dual stage system, capable of producing Ultrapure water (ASTM Type 1 and Type 2 modules with prefiltration RO setup & UV in the unit, system must be two stage) from potable feed water, (water-resistivity≥18.2 M ohms-cm; TOC ≤4ppb; bacteria<0.1 CFL/ml) & with high quality 60L HDPE reservoir tank; with UV lamps, CO_2 Trap and level sensor; with certification (both UL508 & UL840).
26.	All-in-one PC (intel core i7 13th generation or better), 1TB SSD, 16GB DDR4 RAM or better, 32 in display or better, pre-loaded Windows 11 Professional or better (integrated webcam, with OEM warranty) with independent software keys/user access for offline analysis and branded auto-duplex LaserJet color printer.
27.	21 CFR part 11 compliance software and compliance of all other requirements for NABL accreditation. IQ/OQ should be performed every year during warranty period.
28.	Supplied with good quality separate stainless steel Exhaust Hoods with all accessories for ICPMS-OES and MDS .
29.	Gas Purification Panel for separately for both ICPMS and OES (01 each)
30.	Free-standing acid storage cabinets 02 nos or more with vents ducts and chemical storage cabinet made of corrosive resistant material
31.	IGBT based 30 KVA online UPS (Three-phase input and Single-phase output) with isolation transformer with 30 minutes of backup on full load. UPS should be supplied with suitable TPN, DP with the box for i/p and o/p & 80m Cable.
32.	Three 2.0 ton automatic hot and cold ACs with timer circuits and MCBs suitable for controlling room temperature.
33.	Noise less oil free scroll Air Compressor (if required for instrument operation).
34.	All the required accessories and consumables for a minimum of 200 runs for each speciation studies of As, Hg, Cr; with column, and standards for speciation for As, Hg, Cr, Se (complying FSSAI/US FDA/MOEF&CC guidelines).
35.	The vendor should supply requisite number of consumables for ICP-MS: Sample tubes (60 nos.); drain tubes (60 nos.); internal standard tubes (60 nos.); Ni Sample Cones (03 nos.); Ni Skimmer Cone (03 nos.); Pt Sample Cone (01 nos.); Pt Skimmer Cone (01 nos.); Quartz Nebulizer (03 nos.); Spray Chamber (02 nos.); Plasma Torch (05 nos.); Quartz Injector (05 nos.); Autosampler tubes/vessels: 2000 (nos.); Autosampler tubings (02 sets); Autosampler probe (01 set); Graphite gaskit (06 nos.); Torch bonut (02 nos.); Pt Shield (02 nos.); 50 ml centrifuge tube (1000 nos.); PFA sample tubing (5m) (02 sets); RF coil (01 set); Volumetric Flask 25ml, 50ml, 100ml (12 pieces /each); Tuning solution (1L); Cone cleaning solvent (3L); Chiller coolant (20L); Pump Oil (5 sets);

29/7/25 29/07/25 29/07/2025 30/7/2025

	Variable autoclavable micropippetes (pack of 03 with variable volumes) each, along with tips (2000 each); Supra-pure grade acid 10L HNO3, 10L HCl, 10L H2O2 & 2L HF; Waste containers 20L (04 nos.); Argon Gas Cylinder (10 nos.); Manifold double stage cylinder for Argon (04 stage) (02 Nos.); ICPMS Gas Cylinder for He, H2, O2, NH3. (1 Nos. with regulators for each); NIST Certified Multi element (at least 23 elements) aqueous calibration standard (100 ml): 1000 ppm, 100 ppm, 10 ppm (two sets each); Individual standards NIST-Certified 1nos.each-S,P,Hg,As 1000 ppm/100 ppm (200 ml); Internal Standards mixed NIST Certified Aqueous 400 ml each elements; Gold stock solution (400 ml); REE mixed standard (100 ml).
36.	Vendor should supply branded high quality furnitures including required civil work and services (e.g. ducting, partitioning etc.) for installations and making the equipment fully functional.
37.	A five-year warranty on the complete system including local items and one Preventive Maintenance (PM) kit per year including all accessories should be provided. PM kit should be compulsorily changed every year during 05 years of warranty period.
38.	Spare parts availability for 10 years must be provided from the date of installation.
39.	In case of any fault or malfunctioning of the equipment, time required by the company to solve the problem or time of non-working of the equipment due to non-availability of Service/Service Engineer will not be counted in the warranty period.
40.	Apart from above the vendor has to provide 8 days on site application training from factory certified application engineer.
41.	Vendor must give list of minimum 3 references in India where the quoted models (IC/LC-TQICP-MS and ICP-OES) or similar system is working satisfactorily.

29/07/2025 29/07/2025 29/07/2025 29/07/2025