



सीएसआईआर - राष्ट्रीय धातुकर्म प्रयोगशाला  
CSIR - NATIONAL METALLURGICAL LABORATORY  
(Council of Scientific & Industrial Research)



Burmamines, Jamshedpur - 831 007  
Tel: 0657 2345 129/132/128/126, Fax: 0657 2345131  
Email: spo@nmlindia.org Website: www.nmlindia.org

## CORRIGENDUM

**Tender Reference No. :- NML/PUR-10-OTE(832)/24-25**  
**Tender ID :- 2024\_CSIR\_211833\_1**  
**Item Name :- Supply, Installation & Commissioning of**  
**Inductively Coupled Plasma Optical Emission Spectroscopy**  
**(ICP-OES).**

**NOTE: The Bids must be submitted in the Central Public Procurement Portal (URL:<https://etenders.gov.in/eprocure/app>) only. Manual/Offline bids shall not be accepted under any circumstances. Bidders should quote in INR only.**

Consequent to the Pre-Bid Meeting held on 28/10/2024, the revised technical specifications are as follows:-

<b>Components</b>	<b>Technical Description</b>
<b>1. Spectrophotometer</b>	Fully PC-controlled ICP-OES, compact bench top model to determine major, minor/trace, and rare earth elements (REEs) elements simultaneously in a single run. The materials to be analyzed are water, soil, dust, rock, solid waste, coal, fly ash, and biomass samples. Performance reports/ application notes with detection limits are to be submitted to support the capability of the system to, analyze major (Si, Al, Ca, Mg, Na, K, Fe, P, S, Ti), trace/minor (Co, Cr, Cu, Mn, Mo, Ni, V, Zn, Pb) and rare earth elements (REEs).



सीएसआईआर - राष्ट्रीय धातुकर्म प्रयोगशाला  
**CSIR - NATIONAL METALLURGICAL LABORATORY**  
 (Council of Scientific & Industrial Research)



Burmamines, Jamshedpur - 831 007  
 Tel: 0657 2345 129/132/128/126, Fax: 0657 2345131  
 Email: spo@nmlindia.org Website: www.nmlindia.org

	<p>The system must have a higher linear dynamic range (<math>10^6</math>) of detection and be capable of multi-element analysis without the need for sample dilution. (Elemental detection chart to be provided). The required detection limits are given below. Evidence related to it should also be provided by OEM and should be demonstrated before placement of order.</p>																																																
	<table border="1"> <thead> <tr> <th>Element</th> <th>Method Detection Limit (<math>\mu\text{g/L}</math>) in Solution</th> <th>Element</th> <th>Method Detection Limit (<math>\mu\text{g/L}</math>) in Solution</th> </tr> </thead> <tbody> <tr> <td>Ag</td> <td>2 or better</td> <td>Fe</td> <td>5 or better</td> </tr> <tr> <td>Al</td> <td>25 or better</td> <td>K</td> <td>60 or better</td> </tr> <tr> <td>Ba</td> <td>2 or better</td> <td>Mg</td> <td>5 or better</td> </tr> <tr> <td>Ca</td> <td>20 or better</td> <td>Mn</td> <td>1 or better</td> </tr> <tr> <td>Cd</td> <td>0.25 or better</td> <td>Na</td> <td>25 or better</td> </tr> <tr> <td>Co</td> <td>1 or better</td> <td>Ni</td> <td>1 or better</td> </tr> <tr> <td>Cr</td> <td>1 or better</td> <td>Pb</td> <td>4 or better</td> </tr> <tr> <td>Cu</td> <td>2 or better</td> <td>Zn</td> <td>1 or better</td> </tr> <tr> <td>As*</td> <td>0.1 or better</td> <td>Sn*</td> <td>0.1 or better</td> </tr> <tr> <td>Se*</td> <td>0.1 or better</td> <td>Sb*</td> <td>0.1 or better</td> </tr> <tr> <td>Te*</td> <td>0.1 or better</td> <td></td> <td></td> </tr> </tbody> </table> <p>*Analysis of As, Se, Sn, Sb, Te using Hydride/vapour generation system.</p>	Element	Method Detection Limit ( $\mu\text{g/L}$ ) in Solution	Element	Method Detection Limit ( $\mu\text{g/L}$ ) in Solution	Ag	2 or better	Fe	5 or better	Al	25 or better	K	60 or better	Ba	2 or better	Mg	5 or better	Ca	20 or better	Mn	1 or better	Cd	0.25 or better	Na	25 or better	Co	1 or better	Ni	1 or better	Cr	1 or better	Pb	4 or better	Cu	2 or better	Zn	1 or better	As*	0.1 or better	Sn*	0.1 or better	Se*	0.1 or better	Sb*	0.1 or better	Te*	0.1 or better		
Element	Method Detection Limit ( $\mu\text{g/L}$ ) in Solution	Element	Method Detection Limit ( $\mu\text{g/L}$ ) in Solution																																														
Ag	2 or better	Fe	5 or better																																														
Al	25 or better	K	60 or better																																														
Ba	2 or better	Mg	5 or better																																														
Ca	20 or better	Mn	1 or better																																														
Cd	0.25 or better	Na	25 or better																																														
Co	1 or better	Ni	1 or better																																														
Cr	1 or better	Pb	4 or better																																														
Cu	2 or better	Zn	1 or better																																														
As*	0.1 or better	Sn*	0.1 or better																																														
Se*	0.1 or better	Sb*	0.1 or better																																														
Te*	0.1 or better																																																
	<p>The system should have a dual view (radial and axial) or multi view configuration with software control.</p>																																																
<p><b>2. Polychromator</b></p>	<p>The instrument must be equipped with Polychromator with a spectral range of between 170 to 770 nm or better, with a resolution <math>\leq 9</math> Pico meter at 200 nm (OEM certificate/ catalogue to be provided).</p>																																																
<p><b>3. Detector</b></p>	<p>The instrument must be equipped with a detector based on a Charge Injection detector (CID), or Charge Coupled Device (CCD)/Segmented array Charge Coupled device (SCD) detector or Complementary Metal Oxide Semiconductor (CMOS).</p>																																																
<p><b>4. RF Generator</b></p>	<p>Free running solid state RF generator (adjustable) must run at a frequency of 27/ 27.2 or 40 MHz with maximum power</p>																																																



सीएसआईआर - राष्ट्रीय धातुकर्म प्रयोगशाला  
CSIR - NATIONAL METALLURGICAL LABORATORY  
(Council of Scientific & Industrial Research)



Burmamines, Jamshedpur - 831 007  
Tel: 0657 2345 129/132/128/126, Fax: 0657 2345131  
Email: spo@nmlindia.org Website: www.nmlindia.org

	wattage of 1500 watts or more.
<b>5. Gas Control</b>	Plasma, Auxiliary, Nebulizer, and makeup gas flows must not be fixed and the precise control of the variable gas flow rates. There must be a minimum of three separate Mass or Volume Flow Controllers for controlling the above gases.
	The system should have provision to remove the tail plume of plasma. If it is a consumable cone/nozzle then an additional two spare cone/nozzle should be provided.
<b>6. Sample Introduction system</b>	Three or more channel peristaltic pump.
	The system should be supplied with a Standard spray chamber including a standard nebulizer, standard Torch, inner tubes, O-rings & injector as well as other required accessories. Standard Peristaltic Pump Tubing set for sample intake and rinse /drainage etc.
	High TDS kit: 01No full dedicated set including tubes, nebulizer and spray chamber and a separate torch compatible with the equipment (TDS Level: >15%)
	HF/Inert kit: 01No full dedicated inert spray chamber including inert nebulizer, inert torch, and connecting tubes from sample to torch and drain.
	The system should be offered with one separate dedicated Hydride/vapour generation system with 3 sets of necessary tubing for analysis of As, Se, Sn, Sb, Te, etc. elements. A simple T/Y tube with a cyclonic spray chamber design will not be accepted. Automated software controlled continuous flow hydride generation system should be provided.
<b>7. Software</b>	Suitable software for method development, data, analytical reports, and other records (such as daily performance checks), associated with the operation of analytical instruments. Licensed software backup or downloadable software should be provided.
	Software should visualize the equipment readiness/ failure/ malfunction. The system must be able to read and apply both manual and automatic spectral interference corrections in



सीएसआईआर - राष्ट्रीय धातुकर्म प्रयोगशाला  
CSIR - NATIONAL METALLURGICAL LABORATORY  
(Council of Scientific & Industrial Research)



Burmamines, Jamshedpur - 831 007  
Tel: 0657 2345 129/132/128/126, Fax: 0657 2345131  
Email: spo@nmlindia.org Website: www.nmlindia.org

	<p>addition to background correction. Software should have the provision for processing data during the analysis (online) and offline.</p> <p>Software should be user-friendly and have the data export option to excel/pdf sheet and print report templates creation and modification.</p> <p>Hard and soft copies of the operation and service manual of the instrument need to be provided.</p>
<b>8. Gas distribution and supply to equipment from cylinder &amp; related accessories</b>	<p>The gas supply system should have a facility for the simultaneous connection of two sets of argon, nitrogen, and oxygen gas cylinders through a change-over valve so that the gas source could be changed automatically without switching off the plasma.</p> <ul style="list-style-type: none"><li>• Gas manifold system suitable for Argon, Nitrogen, and Oxygen: 05Nos.</li><li>• Double stage Stainless Steel gas regulator (suitable for cylinder inlet pressure 230 kg/cm<sup>2</sup>): 05Nos.</li><li>• Moisture trap: 05Nos.</li><li>• Gas piping &amp; Ferules, etc. as per required should be included within the offer along with 100 meters of Stainless Steel tube (1/4" O.D).</li></ul> <p>A system with purification panels for argon and nitrogen should be included. The vendor should take care of the installation of gas pipes from the gas cylinder bank to the instrument.</p>
<b>9. Accessories</b>	<p>All necessary and essential accessories for installation and running of the system are to be provided. The name of major accessories are mentioned as followed:</p> <ol style="list-style-type: none"><li>1. A suitable Chiller (OEM / OEM certified), along with One spare set of chiller tubing and Algal resistance solution (3 bottles, 500mL each) should be provided. Quantity of coolant shall be 10 Ltrs. if coolant is necessary.</li><li>2. Air Compressor (if required) of appropriate capacity along with one spare set of filters and 2 bottles pump oil (OEM</li></ol>



सीएसआईआर - राष्ट्रीय धातुकर्म प्रयोगशाला  
CSIR - NATIONAL METALLURGICAL LABORATORY  
(Council of Scientific & Industrial Research)



Burmamines, Jamshedpur - 831 007  
Tel: 0657 2345 129/132/128/126, Fax: 0657 2345131  
Email: spo@nmlindia.org Website: www.nmlindia.org

	certified).
	3. Supply and installation of suitable stainless steel fume exhaust of the required length.
	4. Electrical connectivity requirements as per Indian Standard should be provided.
	5. Tool kit for routine maintenance.
	6. All required solutions for tuning/wavelength calibration solutions for instrument profiling in a minimum of 500 mL bottle(s).
	7. All necessary accessories required for the smooth installation/operation of equipment should be quoted.
<b>10. Consumables</b>	1. All necessary consumables including gases (Argon: 04Nos cylinders, Oxygen: 01No. cylinder, Nitrogen: 01No. cylinder having inlet pressure 230 kg/cm <sup>2</sup> for Argon, Nitrogen, Oxygen cylinders) required for installation and demonstration should be supplied by the vendor.
	2. Traceable multi-element aqueous ICP standards of 1000 ppm containing a minimum of 20 elements (100 mL, Qty: 01No.).
	3. Single element aqueous ICP standards of 1000 ppm: Zr, Nb, B, Be, Cd, Co, Cr, Cu, Mn, Mo, Na, K, V, Zn, Pb, Sn, Pd, Pt, Ag, Au (100 mL each).
	4. Mixed REE standard 100 ppm (100 mL, Qty: 01No.).
	5. Internal standard: Yttrium 1000 ppm (100 mL, Qty: 01No.).
	6. Single element standard 1000 ppm: Si, Al, Ca, Mg, Ni, Mn, Fe, P, S, Ti (100 mL each).
	7. Additional standard Torch (05Nos), inner tubes (03Nos), O-rings & injector as well as other required accessories (05Sets). Additional Standard Peristaltic Pump Tubing set for sample intake and rinse /drainage (10Nos).
	8. Additional HF/Inert kit: 01No full dedicated inert spray chamber including inert nebulizer, inert torch, and



सीएसआईआर - राष्ट्रीय धातुकर्म प्रयोगशाला  
CSIR - NATIONAL METALLURGICAL LABORATORY  
(Council of Scientific & Industrial Research)



Burmamines, Jamshedpur - 831 007  
Tel: 0657 2345 129/132/128/126, Fax: 0657 2345131  
Email: spo@nmlindia.org Website: www.nmlindia.org

	connecting tubes from sample to torch and drain.
<b>11. Warranty</b>	Standard Comprehensive Warranty: One year
<b>12. Computer with Warranty</b>	<b>Computer:</b> Branded Computer compatible with the instrument's software with one year warranty (onsite). Processor: Intel Core i7 or better Licensed MS Office 2016 Professional or higher Licensed Windows 10 or higher RAM: 16 GB RAM or better Storage: 1TB (SSD/HDD) or better Monitor: 23.8" TFT / LED or better Keyboard, Mouse, WiFi card, Ethernet card
<b>13. Printer with Warranty</b>	<b>Printer:</b> Suitable Duplex B/W Laser Printer with one year Warranty. Type: Duplex Laser Printer Output: Black and white Feature: Duplex Print Resolution: 600 x 600 dpi or better Input Sheet Capacity: 250 or more
<b>14. UPS with Warranty</b>	<b>UPS:</b> 10KVA branded UPS with an inbuilt isolation transformer, 30 minutes battery backup, 3 phase input, and single phase output (as needed for the system) with one year Warranty.
<b>15. AMC</b>	<ol style="list-style-type: none"><li>Five years of Non-comprehensive AMC after completion of one year standard warranty period should be quoted separately.</li><li>AMC charges <b>must be quoted year-wise</b> to release the related payment every year after successful servicing and certification by the indenter or user scientist. <b>AMC charges will be frozen and paid accordingly after the successful visit &amp; recommendation of the user.</b></li></ol> <p>During the warranty and AMC period, there should be a <b>minimum of two preventive maintenance visits and one breakdown visit</b> as and when required.</p>



सीएसआईआर - राष्ट्रीय धातुकर्म प्रयोगशाला  
CSIR - NATIONAL METALLURGICAL LABORATORY  
(Council of Scientific & Industrial Research)



Burmamines, Jamshedpur - 831 007  
Tel: 0657 2345 129/132/128/126, Fax: 0657 2345131  
Email: spo@nmlindia.org Website: www.nmlindia.org

<b>16. Installation and Training</b>	<p>The firm should successfully install the full system along with all accessories. The Method of Detection Limit (MDL) in the solution has to be demonstrated onsite.</p> <p>Onsite training for Instrument operation, method development, and sample preparation for 5 days should be provided to CSIR-NML staff (5 employees of CSIR-NML) after successful installation.</p>
<b>17. Evaluation Criteria</b>	<ul style="list-style-type: none"><li>• Basic Instrument cost along with accessories, consumables, and one-year standard warranty.</li><li>• Non-comprehensive AMC charges for five years after the completion of 1 year warranty period.</li><li>• Vendors have to submit at least 2Nos. of the installation and commissioning documents of similar quoted equipment supplied to Govt. sectors and Private sectors which will be considered for selection of technical compliance. Relaxation will be given to MSME/Start-up vendor(s) related experience as per purchase rule.</li><li>• OEM authorization is mandatory.</li></ul>
<b>18. Delivery Schedule</b>	<ul style="list-style-type: none"><li>• Delivery period: 4 months from confirmed LC/PO.</li><li>• Installation and commissioning: Within 4 weeks of delivery.</li><li>• Demo and training: Within 2 weeks of installation.</li></ul>

The bidders are requested to submit their bid based on this revised technical specifications.

All other terms and conditions shall remain same.

Stores & Purchase Officer,  
CSIR-NML, Jamshedpur