Expression of Interest (EOI)

For

Supply, Installation and Maintenance of Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)

CSIR – CFTRI

Disclaimer

All information contained in this document, subsequently provided/clarified are in good interest and faith. This is not an agreement and is not an offer or invitation to enter into an agreement of any kind with any party. Director, CSIR-CFTRI reserves the right to cancel this document without liability or any obligation for such document, and without assigning any reason, thereof, CSIR –CFTRI reserves the right to take final decision regarding award of contract.

Submission of proposal/response to this Expression of Interest doesn't guarantee evaluation or allocation of work. Under no circumstances will the CSIR –CFTRI be held responsible or liable in any way for any claims, damages, losses, expenses, costs or liabilities whatsoever (including, without limitation, any direct or indirect damages for loss of profits, business interruption or loss of information) resulting or arising directly or indirectly by application or non-application to this EoI.

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CSIR

Invitation for Expression of Interest for Supply, Installation, Commissioning and Operation of Inductively Coupled Plasma Mass Spectrometry at CSIR CFTRI

CSIR-CFTRI, a constituent laboratory under the Council of Scientific and Industrial Research (CSIR), is planning to establish a line of **Inductively Coupled Plasma Mass Spectrometry (ICP-MS)**

In this context, CSIR-CFTRI is inviting **Expression of Interest (EoI)** in the form of a technical proposal **(EoI technical response sheet format attached as Format - 9)** from Manufactures/Suppliers/solution providers for supply, installation, commissioning and demonstration of the of items.

CRITICAL DATE SHEET

Sl. No.	Stage	Date & Time (tentative)
1.	Release of Expression of Interest (EoI)	09-09-2022@5.00pm
2.	Last Date for submission of written queries by Bidders	13-09-2022@ 5.00pm
3.	Response to the Queries	16-09-2022@5.30pm
4.	Last date for Submission of EoI	29-09-2022@2.00pm
5.	Opening of EoI	30-09-2022@2.30pm
6.	Date of Presentation	Will be intimated later

3. Introduction

CSIR-CFTRI, MYSURU, India, is one of the premier laboratories under Council of Scientific and Industrial Research, an autonomous body under Department of Scientific and Industrial Research (Government of India), New Delhi. CSIR-CFTRI is a Science and Knowledge based Research and Development Organization.

1.1 Bidding Data Sheet

SL.No	Particulars	Details
1.	Document ID	CFTRI/52334/2022
2.	Release Date	09-09-2022
3.	Name of the Inviting Authority	Director, CSIR-CFTRI, Mysuru
4.	EoI issued by	Controller of Stores & Purchase CSIR-CFTRI, Mysuru
5.	Availability of EoI	EoI can be Downloaded from: 1. CSIR-CFTRI website www.cftri.res.in 2. Central Public Procurement Portal (CPPP) www.etenders.gov.in
6.	Last date of Submission of EoI	29-09-2022 @ 2.00pm

4. Evaluation of EoI

a. General Instruction

1. The EOI shall be submitted within the stipulated date and time on CPP Portal www.etender.gov.in
2. EoI proposal shall consist of supporting proofs and documents as defined in Section-6, Pre-Qualification Criteria.
3. Bidder shall submit all the required documents as mentioned in Section 12 of this document.
4. The EoI proposal submitted by Bidder should be complete document. The document should be page numbered, must contain the list of contents with page numbers and shall be digitally signed by the Authorized Representative of the Bidder.
5. EoI document submitted by the Bidder should be concise and only relevant information as required shall be furnished.
6. The entire proposal shall be strictly as per the format specified in this Invitation for Expression of Interest and any deviation may result in the rejection of the EoI proposal.
7. Any proposal received by CSIR-CFTRI after the submission deadline shall not be considered. No further correspondence on the subject will be entertained.

b. Evaluation Process

1. CSIR-CFTRI shall evaluate the response to the EoI and all supporting documents/Documentary evidences. Non-submission of requisite supporting documents/documentary evidence, may lead to rejection of the EoI Proposal.
2. CSIR-CFTRI may seek additional documents or clarifications as and when required from the Bidders.
3. All bidders may be required to give their presentation on the date and time fixed by the CSIR-CFTRI either in person or virtually (online)

5. Brief Objective and Scope of Work

The broad specifications of platform are as follows:

The proposed solution should be well engineered and should satisfy the following minimum criteria:

1	Approximate requirement in terms of size and capacity (The actual requirement will be decided at the RFQ stage)	Requirement of Inductively Coupled Plasma Mass Spectrometry containing following equipments (Sample Introduction System, Plasma, Ion Extraction Interface, Ion Focusing System Ion Detector Assembly, Vacuum System, Performance Specifications, Water Chiller, Auto Sampler / Diluter, System Controller and Operating System, Speciation Studies & Methyl Mercury Unit (HPLC Pump Module or Ion Chromatography unit), Multi vessel Microwave digestion system, Milli Q water unit, Exhaust unit, Power Supply and other accessories as mentioned in the Machine specification record respectively.
2	Scope of the engagement	The bidder is expected to provide the following scope • Supply line of modified of Inductively Coupled Plasma Mass Spectrometry • Installation • commissioning • Demonstration • Maintenance

6. Bidder eligibility for participating in EoI

a. Bidder (OEM/SI) should have carried out at least 3 installations (in last five years) for similar kind of equipment/Machinery.

b. Bidder should submit supply order and installation report as proof.

7. Nature and Requirements for Services

- **Inductively Coupled Plasma Mass Spectrometry** need to be supplied, installed commissioned, demonstrated and has to be interlinked as per the operation requirement.

8. Local Content & associated Guidelines

a. The OEM of each major component should mention the local content in their solutions. (With reference to Make in India Order No. P-45021/2/2017-PP dated 16th September 2020 of Ministry of Commerce and Industry, Government of India and any amendments thereon)

b. The vendor also should comply to Order No. P-45021/112/2022-PP(BE-II)(E-43780) dated 24-08-2022 of Ministry of Commerce and Industry, Department for Promotion of Industry and Internal Trade and any amendments thereon.

Important Note:

- Complying to the above guidelines is not essential for participating in the EoI. However, the bidder should provide correct information, so that CSIR- CFTRI takes an informative decision for the RFQ stage.

- All claims regarding the local content should be supported by detailed breakup, valid justifications and OEM certificates.

9. Shortlisting bidders for the for the RFQ stage (next level)

a. It is desirable for a bidder to participate in EoI to be eligible for the RFQ stage.

b. However, CSIR-CFTRI reserves the right to shortlist (considering both technical merit including capability to run the benchmark applications as well as procedural/financial compliance) a sub-set of the participating bidders for the RFQ stage.

   Also, CSIR-CFTRI reserves the right to go for a global/open tender if felt appropriate/necessary as an outcome of the EoI process.

10. EoI-RFQ restrictions

a. The OEM can participate through only one System Integrator and vice-versa.

b. The OEM-SI pair participated in EoI should be same at the RFQ stage as well.

The proposed solution/system in the EoI should be the same or next generation while participating in the RFQ. The bidder cannot quote a completely different solution than the one proposed in the EoI.

11. Terms and conditions

a. **EOI are invited from Manufacturers or their authorized dealers**.

Preference may be given to local suppliers as per Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry Order No. P45021/2/2017-PP (BE-II) dated 04-06-2020 as amended from time to time.

Class – I Local supplier	Whose goods/service offered for procurement has local content equal to or more than 50% as defined below:
Class – II Local supplier	Whose goods/service offered for procurement has local content more than 20% but less than 50% as defined below
Non-Local Supplier	Whose goods/service offered for procurement has local content less than 20% as defined below

Local content: Means the amount of value added in India, which shall, unless otherwise prescribed by Nodal Ministry, be the total value of item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all custom duties) as a proportion of the total value, in percent.

The above bidders/Firms are required to indicate percentage of local content and provide self-certification the items offered meet the local content requirement for Class – I Local Supplier/Class – II Local Supplier as the case may be. Further the bidder shall also give details of the location(s) at which the local value additions is made.

False declaration will be in breach of the Code of Integrity under Rule 175(1)(i) (h) of the General Financial Rules 2017 for which a bidder or its successors can be debarred for up to two years as per Rule 151(iii) of the General Financial Rules along with such other actions as may be permissible under law.

A supplier who has been debarred by any procuring entity for violation of above cited order shall not be eligible for preference under above order for procurement by any other procuring entity for the duration of the debarment.

b. Requirement of Registration (Order No. F.No.6/18/2019-PPD dated 23-07-2020 of Department of Expenditure, Ministry of Finance, Government of India refers)

i. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority i.e., Registration Committee as constituted by Department of Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, Government of India

ii. "Bidder" (including the term 'tenderer', 'consultant' or 'service provider' in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial judicial person not falling in any of the descriptions of bidder stated hereinbefore, including any agency branch or Officer controlled by such person, participating in a procurement process.

iii. "Bidder from a country which shares a land border with India" for the purpose of this order means:

i)	An entity incorporated, established or registered in such a country; or
ii)	A subsidiary of an entity incorporated, established or registered in such a country; or
iii)	An entity substantially controlled through entities incorporated, established or registered in such a country; or
iv)	An entity whose beneficial owner is situated in such a country; or
v)	An Indian (or other) agent of such an entity; or
vi)	A natural person who is a citizen of such a country; or
vii)	A consortium or joint venture where any member of the consortium or joint venture fails under any of the above

c. <u>The beneficial owner for the purpose of above will be as under</u>

i. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more judicial person, has a controlling owner ship interest or who exercise control through other means.

Explanation –

a)	"Controlling ownership interest" means ownership of a or entitlement to more than twenty-five percent of shares or capital or profits of the company;
b)	"Control" shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements.

ii. In case of a partnership firm, the beneficial owner is the natural persons(s) who, whether acting alone or together, or through one or more judicial person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;

iii. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more judicial person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;
iv. Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;
v. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

vi. An agent is a person employed to do any act for another, or to represent another in dealings with third person.

Further the following certificate has to be submitted by the bidder/Firms

"I have read the clauses regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority. I hereby certify that this bidder fulfills all requirements in this regard and is eligible to be considered.

(Name & Signature of bidder)

Date :

(Where applicable, evidence of valid registrations by the competent Authority shall be attached)

Further bidders must comply with order No._____ dated _____ from PPD division, Department of expenditure, Ministry of Finance

d. If any information furnished by the applicant is found incorrect at a later stage, it shall be liable to be debarred from tendering/taking up of work in CSIR. CSIR-CFTRI reserves the right to reject any prospective application without assigning any reason.

12. SUBMISSION REQUIRMENTS

The interested parties are requested to submit their EoI bids on-line through NIC eProcurment System/Portal on before the due date of submission along with the following forms:

SL.NO.	FORM	FORMAT
1.	Applicant's Consent Form	1
2.	Firm Contact Details	2
3.	Experience in related fields	3
4.	Additional Information	5
5.	Declaration	6
6.	Local Content & Associated Forms	8
7	EoI Technical Response Sheet	9

FORMAT – 1

Applicant's consent Form

To,

The Director
CSIR - CFTRI
MYSURU

Subject : Submission of Expression of Interest for Supply, Installation, Commissioning and Operation of **Inductively Coupled Plasma Mass Spectrometry.**

Dear Sir,

In response to the Invitation for Expression of Interest (EOI) published on _____ for Supply, Installation, Commissioning and Operation of Inductively Coupled Plasma Mass Spectrometry, as instructed, we attach following documents:

a. Firm Contact Details (Format – 2)
b. Experience in related fields (Format -3)
c. Additional Information (Format – 5)
d. Declaration (Format – 6)
e. Local Content & Associated Forms (Format – 8)
f. EoI Technical Response Sheet (Format-9)

Signature of the Applicant

Stamp & Date

Note : This is to be furnished on the letter head of the organization

FORMAT - 2

FIRM CONTACT DETAILS		
1	Name of the Organization: Website	
2	Name of the Contact Person: a) Name: b) Address c) Telephone: d) Fax: e) E-Mail:	
3	Year of Incorporation	
4	Type of Organization a) Public Sector/ Limited/Private Limited/ Partnership/ Proprietary/ Society/ Any other b) Whether 'Foreign Equity Participation (Please give name of foreign equity participant and percentage thereof) c) Names of Directors of the Board/ Proprietors d) Name and address of NRI(s), if any	
5	Category of the firm: Large/Medium/Small scale unit	
6	Address of the Registered Office:	
7	Number of Offices with addresses (Excluding Registered Office): a) India b) Abroad	
8	Certificate of registration as a manufacturing unit	
9	Permanent Account Number	
10	GST Number	
11	Status of ISO Certification	
12	List of products/technologies worked with as regular activity in last three years. Give the list of products/technologies with general specifications and the customers.	
13	Whether the Organization has been blacklisted by any Central /State Government Department Organization	Yes/No

Signature with Name & Seal:

Place:
Date:

FORMAT - 3

Experience in Related Fields

Overview of the past experience of the Firm

Sl.No	Item	Particulars
1.	Experience & Details of work done with any Govt/Public Sector Undertaking (Publically funded)/Autonomous/Universities /R & D Organization	
2.	Experience & Details of manufacture/supply/work done with other than Sl.No.1	
3.	Experience & Details of Work done in India	

Signature of the applicant _____

Full Name of the applicant _____

Stamp & Date _____

FORMAT - 5

Additional Information

g. List of attachments related to the previous sections

Sl.No	Item	Particulars
1.		

Additional information to support the eligibility (Not more than 2 pages)

Signature of the applicant _____

Full Name of the applicant _____

Stamp & Date _____

FORMAT – 6

Declaration
We hereby confirm that we are interested to participate with CSIR-CFTRI in Supply, Installation, Commissioning and Maintenance of ICP-MS and all the information provided herewith is genuine and accurate to the best of our knowledge. We also confirm that our firm has not been blacklisted or has any litigation or any conflict of interest that may impact on the delivery of services. Authorized Person's Signature : Name and Designation : Date of Signature : Note : This declaration is to be furnished on the letter head of the organization.

Format – 8

Format – 8-A

Format for declaration by the Bidder on Non-applicability of Exclusion from Restrictions under Rule 144 (xi) of the Genera Financial Rules (GFRs), 2017 (on Letter Head of the bidder)

(Ref: - Govt. of India, Ministry of Finance, Dept. of Expenditure Order No. F.No.6/18/2019-PPD dated 23.07.2020 {Public Procurement No.1} and subsequent orders on the subject)

Ref. No: _____ Date _____

To,

The Director,

CSIR-CFTRI,

Cheluvamba Mansion

Opp. Railway Museum, KRS Road,

Mysuru-570020

Sir/Madam

With reference to your Tender No._____ dated _____ I/We hereby undertake that "I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I hereby certify that this bidder is not from such country or, if from such a country, has been registered with the Competent Authority. I hereby certify that this bidder fulfills all requirements in this regard and is eligible to be considered.

Thanking you,

Yours sincerely,

Signature (Name of the Authorized Signatory)

Company Seal

"[Where applicable, evidence of valid registration by the Competent Authority shall be attached]"

Format – 8-B

Self-Certification Form for Minimum 50% or for Minimum 20% Local Content (on Letter Head)

1. Ref: DPIIT Order No.P-45021/2/2017-PP (BE-II) pref. to Make in India dt. 28th May, 2018 as amended vide OM dated 16th Sept 2020 or by the competent Ministries/Departments in pursuance of this order.
2. Ref: Rule 153 (iii) of General Financial Rule - GFR (GoI)

This is to certify that percentage of local content against CSIR-CFTRI EOI no……. ……. dt……..and our Ref. No…….…… dt. ……..is ……..Percent(In Words……) class ……./local supplier.

Local content value added- (PERCENTAGE)	
State:	
District:	
Place:	

Thanking you,
Yours sincerely,

Signature (Name of the Authorized Signatory)
Company Seal

Format - 9

Supply, Installation, Commissioning and Maintenance of Inductively Coupled Plasma Mass Spectrometry at CSIR-CENTRAL FOOD TECHNOLOGICAL RESEARCH INSTITUTE

EoI Technical Response Sheet

The bidder is requested to fill this response sheet in the 3rd column and may provide relevant references and remarks in the 4th column. No field in the 3rd column should be left blank. Please write "Not Applicable", if any information is not relevant to the proposed solution.

1st	2nd	3rd	4th
Sl. No.	Information Sought by CSIR-CFTRI	proposed by the Vendor	Remarks/Reference
1	Name & Nature of the bidder Submitting the quotation		Indicate the status of bidder (OEM/SI)
2	Sample Introduction System		
	Nebulizer: Concentric Micro mist Nebulizer with low sample flow rate		
	Spray Chamber: Peltier cooled spray chamber		
	Peristaltic pump: Low pulsation high precision peristaltic pump with minimum of three separate channels which can be controlled through the software.		
3	Plasma		
	RF Power range: 500W to 1600 W Radio Frequency Generator (Solid State): 27 or 40 MHz Impedance Matching: Auto-tuning to get maximum coupling efficiency.		
	Torch: Easy mountable single piece quartz torch with shield torch Torch movement should allow for complete computer-control and auto tunable in x-y-z directions with independent movements in the three directions. Provision for Auto-alignment of the torch after routine maintenance with a reproducibility better than 0.1 mm in x-y-z directions		
	Plasma Gas Control: Should have at least 3 Mass Flow Controllers (AMFC) or equivalent PC Controller for control plasma, auxiliary makeup, carrier gases. Gases used should be controlled with mass flow controller and fully computer controlled. Argon gas dilutor or equivalent technology must be quoted along with the main instrument.		

4	Ion Extraction Interface		
	The system should have, Standard sample and skimmer cones with suitable orifice diameters to suit all application and to prevent clogging and minimize signal drift. It should be easily mountable and dismountable. Scope of supply of standard (Nickel) and optional (Platinum) cones should be clearly specified. (for any alternate material, bidder would need to prove sensitivity) Lens/ extraction cones or equivalent should be easy to maintain.		
5	Ion Focusing System		
	Ion focusing system with efficient mechanism for removing all neutrals and photons from the Ion path.		
	Cell offering three modes of operation: Standard Mode, Collision Cell Mode and Reaction Cell		
	Switching of reaction and collision gases will be through software and automated. Unit will have the flexibility of applying both (collision, and reaction) gases using single method for removal of interferences. Mass Cut off facility or equivalent technology should be there to remove unwanted polyatomic interferences formed due to free atoms.		
	The unit should have two separate gas channels one for Collision mode and one for Reaction mode.		
	A reaction cell should be provided for poly atomic interference removal with Helium mode and Hydrogen mode. Separate AMFCs for Reaction cell gases.		
	Vendor should attach application notes for Arsenic analysis as per FSSR where O2 or any other suitable gas is used to remove interference for ArCl which demonstrates mass shift mode.		
	Reaction cell assembly and octopole/ hexapole assembly (if requires cleaning any time in lifetime) should be quoted.		
6	Quadrupole Assembly		
	Quadrupole Mass Analyzer: A quadrupole mass analyzer to provide effective ion transmission, superior resolution and abundance sensitivity.		
	Mass range: 3-290 amu or above		

	RF Frequency : Fully Digital RF generator with frequency 2-3 MHz		
	Abundance sensitivity:Low Mass Side: ≤ 5 x 10^{-7} High Mass side: ≤ 1 x 10^{-7}		
	Scan Speed: Greater than 3000 amu/s Mass stability: < ± 0.05 amu over 8 hours of continuous operation.		
	Resolution: Variable from 0.5 u to 1.0 u or better, user definable		
7	**Ion Detector Assembly**		
	Solid State dual stage dynode discrete over 9 orders of 10 orders or more magnitude of linear dynamic range.		
	Should be unique log amplifier circuit, features a high speed analog mode for transient signals and a true nine orders dynamic range.		
	Minimum dwell time / integration time of 100 µs (in both pulse count and analog modes.		
	Dual-stage detector assembly should come as a standard with the system.		
8	**Vacuum System**		
	Efficient Vacuum system with turbo molecular pump and single external rotary pump for fast pump down and simple maintenance.		
	In the event of vacuum failure, the entire vacuum system is to be automatically back-filled by inert gas to preserve the cleanliness of the system or an alternate system.		
9	**Performance Specifications**		
	Guaranteed sensitivity specifications will be considered (To be demonstrated during Demo): Typical sensitivity values will not be considered		
	Should be able to analyze Sn, Ni, Cu, Zn, Ba, Sb, Ni, B, Ag, Mg, Ca, Na, As, Cd, Cr, Hg, Pb, Se, Fe (but not limited to these elements) at a concentration of 0.05 ppb with RSD of <5% at standard conditions.		
	Oxide ratio (%) CeO/Ce < 2 %		
	Double charged ratio < 3 %		
	Isotope-ratio Precision: 1%RSD		

	Sensitivity: Li (7) /Be (9): ≥ 6 Mcps/ ppm In (115) /Y (89): ≥ 90 Mcps/ ppm U (238) /Tl (205): ≥ 70 Mcps/ ppm **To be demonstrated at the time of installation.**		
10	**Water Chiller**		
	The system should have a suitable re-circulating chiller changer of internationally reputed company for plasma component cooling.		
11	**Auto Sampler / Diluter**		
	Highly effective auto sampler/ diluter compatible with operation along with ICP- MS without user intervention.		
	Auto sampler with minimum 200 vials holding capacity with 500 nos. of 15 ml capacity tubes (as consumable).		
	Programmable complete with inert PTFE coated probe with PTFE inner tubing.		
	Spare extension tube complete with 20 ml syringe for programmed auto dilution		
	All accessories, racks, bottles, tubing assembly, waste container, dust cover etc.		
12	**System Controller and Operating System**		
	Software control for automatic data acquisition and processing.		
	mass spectrometer tuning and calibration auto and manual		
	Data Validation (IQ/OQ/PQ for Software)		
	Self-diagnostics		
	Multi element analysis capability Isotope ratio and dilution		
	Cool Plasma or other facility to eliminate polyatomic interferences.		
	Remote diagnostics		
	Software should control plasma, MS and other accessories like auto sampler		

	The system software shall support the following calibration curve fit modes for Quantitative analysis: i). Linear least squares. ii). Weighted linear least Squares iii). Linear forced-through-zero least squares. iv). Quantitative analysis including external calibration, additions calibrations, method of standard additions, isotope ratios and isotope dilution's and semi quantitative analysis. v). On-line help with quick steps to reference entire instrument user manual. **Licensed software with life time validity should be provided. As and when, there is a change in software upgradation it has to be done without any additional charges.**		
13	**Speciation Studies &Methyl Mercury Unit**		
	The system /unit model should have the provision to attach IC/ HPLC to perform Speciation studies.		
	The speciation kit should have all necessary accessories to connect IC/HPLC along with the software to operate.		
	A Complete kit to analyze Methyl Mercury should be included.		
	Necessary accessories for the analysis of Methyl Mercury should be included.		
13a	**HPLC Pump Module**		
	Inert HPLC Pump with dual piston binary pump with completely inert and metal-free fluid path for lower detection limits and better accuracy.		
	Must come with post-seal wash to avoid salt build-up behind the pump seal, increasing seal lifetimes and reducing pump maintenance.		
	Pump should have dual-piston action and incorporated pulse dampener to ensures that pulsations are kept to a minimum and that quiet baselines can be achieved. Built-in back-pressure compensation should be there.		

	Flow rate range: 0.001 to 10.0 mL/min or more		
	Pressure Range: 0 to 5,000 psi or better for entire flow rate range		
	Flow precision 0.5% RSD or better		
	Flow accuracy ± 2.0% or better		
	➢ **Auto sampler**		
	Fluid path should be composed of entirely inert and metal-free components. Wetted Materials in Flow Path: PEEK, PTFE, and inert, coated needle.		
	Injection volume pressure limit: Up to 5000 psi (428 bar) or better.		
	Sample Capacity: 1.5-2 mL vials or equivalent.		
	Standard injection volume programmable from 0 ul to 9999 ul or more in 1 ul increment.		
	Syringe size 500ul standard.		
	Valve Switching Time: 60 msec.		
	Loop volume: 2uL to 5mL or more.		
	Injection precision with full loop:<0.5% RSD.		
	Sample carry over with standard wash: ≤0.1 %		
	Safety and EMC Compatibility : CE, CSA (UL), RoHS, ISO 9001		
	Audible Noise Level : <70 dB		
	➢ **Column Oven**		
	Operating temperature range ambient + 10°C to 90°C or better with 1°C increment.		
	Temperature accuracy < 0.1°C		
	Temperature stability < 0.1°C		
	Temperature repeatability < 0.1°C		
	Temperature gradient < 0.2°C		

	Oven temperature change: 10 °C/min from 40 to 60 °C or better		
	Time programmable temperature change Maximum of 10 programmable steps		
	Programmable temperature ramp 0.1 to 5°C/min or better		
	Working environment: 5-40 °C; 30-80% relative humidity (non-condensing)		
	Safety: Integrated temperature/vapor alarm		
	➢ **Switching valve**		
	Switching valve with a metal-free and inert fluid path should be there to allows the mobile phase to be diverted away from the ICP-MS, enabling you to tune the mass spectrometer at the same time as equilibrating your column.		
	➢ **Software**		
	Suitable software to control all modules of HPLC		
	Separation columns (4 no's) to be supplied for As, Hg speciation.		
13b	**Ion Chromatography (Metal free system) to hyphenate with ICPMS to do Mercury and Chromium peciation**		
	Suitable Ion Chromatography with following specs must be supplied for speciation studies of Hg & Cr with appropriate PEEK base columns with MicroBead Latex, Bilayer of anion-exchange andcation-exchange latex. Suitable single software that can control both IC & ICP-MS must be supplied.		
	The Ion chromatography system must be of complete metal free i.e should be made up of PEEK base system to avoid metal interference while doing speciation studies. It must have future upgradability of conductivity, Amperometry detector to do Anions, Organic Acids, Cations, Amines analysis in future.		
	The system must be equipped with six port peek base manual injector and viper fittings and below mentioned pump specs.		

	The flow range must be 0.001–10.000 mL/min .		
	Flow Rate Precision &Accuracy :< ± 0.1%		
	Pressure Ripple :< 1% at 1.0 mL/min, typical		
	The pump must have as an option piston seal wash, which can be continuously operated when connected to rinse solution supply.		
	The pressure range must be at least 6000 psi (0-41 MPa).		
14	**Computer**		
	Latest compatible PC with minimum configuration of Intel ® Core ™ i5 – 4570 Quad Core Processor (3.2 GHz),16 GB (2 x 8 GB) 1600MHz DDR3 Non-ECC RAM , 1 TB 3.5 inch Serial ATA (7.200 Rpm) Hard Drive, 16X Half Height DVD ± R/W Drive , Full height 2nd Serial Port card , Display Port to DV Adaptor ,On board 10/100/1000 PCIe network card , Full height additional network card ,USB Optical Mouse, Keyboard : US/European USB Keyboard, Windows 7 professional (64 Bit Windows 8.1 License, Media) English , Windows 8.1 (64 Bit) English Resource DVD,		
	Microsoft Office Home & Business 2013, 23" TFT LCD Monitor. **OR** Better Specifications.		
	Reputed Branded colour Laser jet printer and automatic back to back should be provided.		
15	**Multi vessel Microwave digestion system**		
	Magnetron .Power:- Microwave heating system must have a measured delivered output power of 1800watts with dual magnetron system. There should be provision of protection of magnetron from reflected microwave energy.		
	Control: System must have a built in operating system with touch screen controller fluorescent and facility for connecting external mouse and external alphanumeric keypad for entry of operating parameters and sample Identification. System must operate stand alone and must not require the use of any external computer for operation. System software must automatically adjust the		

	power delivery based upon number of vessels, type of vessels and type of samples in a single touch operation.		
	System must be capable of processing up to 16 vessels simultaneously (500 psi and 110ml volume size).		
	➢ **Vessels:**		
	Microwave digestion vessels must be vent able preferably without any metal discs		
	No of vessels: 16 or more		
	Volume 110 ml		
	Temperature: min 240 deg C or more		
	Pressure: 500 psi or more		
	MOC of vessels: TFM		
	Temp Control: Temperature controlling should be with volume independent flour mounted contact less temperature sensor for temperature monitoring, vessel counting and automatic vessel detection prior to start/calculate heating reactions in precise manner.		
	Cavity : Cavity should be made up of SS with impact resistant polymer shell for durability & should be coated with multilayer Teflon coating cavity size of min 40 liters or above.		
	Door safety: System should have at least 5 safety switches out of which 3 safety interlocks should be for door safety & two thermal switches.		
	System must be able to control temperature in all vessels suitable software should be offered.		
16	**Milli Q water unit (Type – 1 Water Purification System) with 50 L tank capacity.**		
	Ultra Pure (Type I) water: Resistivity…18.2 Mega Ohms.cm @ 25 Degree C. TOC ..... < 5 ppb Bacteria … < 0.01 cfu /ml or better Particulates (.22 micron)… < 1 /ml RNAse.....< 0.003 ng/ml or better DNAse.....< 0.4 pg/ml or better Endotoxin….0.001 EU/ml or better Flow rate.....≥ 1 Ltr/Minute.		
	Ultra Pure (Type II) water: Resistivity… > 1 Mega Ohms.cm @ 25 Degree C. TOC ..... < 30 ppb		

17	**Exhaust unit**		
	Exhaust unit for the ICP-MS has to be supplied along with the System		
18	**Standards with minimum expiry of two years**		
	Specially pure Analytical NIST traceable single element standard solutions(Minimum pack (one each) or 100ml each whichever is lower) for Sn, Ni, Cu, Zn, Ba, Sb, Ni, B, Ag, K, Mg, Ca, Na, As, Cd, Cr, Hg, Pb, Se, Fe, Co, Mo, Al, Ti, V, P, Se, Bi, Sr should be supplied. Multi element Calibration NIST traceable standards for ICP-MS - one set. Suitable mixed internal standards.		
19	**Power Supply**		
	The system should have UPS (minimum 20 KVA) of suitable rating with voltage regulation, spike protection and minimum 60 minutes back up for the supplied equipment		
20	**Accessories**		
	Peristaltic pump tubing-sample intake – 100 No's		
	Peristaltic pump tubing-Drain – 100 No's		
	Tubing – Auto Sampler to Peristaltic Pump – 25 No's		
	Micro mist nebulizer – 5 No's		
	Plasma Torch – 5 No's		
	Ni Sampling Cone – 4 No's		
	Pt Sampling Cone – 2 No's		
	Ni Skimmer Cone – 4 No's		
	Pt Skimmer Cone – 2 No's		
	Hyper skimmer cones/extraction system for HF digested sample		
	A HF resistant kit to handle HF digested samples should be supplied		
	Vacuum Pump oils – 5 litres		
	Argon Gas Cylinders-6 No's		
	Gas cylinder for Collision cell gases – Helium-1		
	Gas cylinder for Reaction cell gases – Oxygen (2 No's), Hydrogen (2 No's) & Ammonia (2 No's) (>99.99 % mixed or pure as per system requirement), whichever is applicable for individual system for elimination of interference species along with 3 stage Gas pressure regulators for each cylinder		
	Gas purification panel for Argon, Oxygen,		

	Helium & Hydrogen with appropriate plumbing.		
	Optional: Any other accessory as felt required for the proper functioning of the equipment.		
21	**Additional items**		
	Consumables for Five years operation of the system for main ICP unit, spare torches, nebulizer, tunings, and moisture trap to be supplied.		
	Bidders should quote a startup package for 100 samples. In addition, the bidders should give a list of recommended consumables along with their source and budgetary prices.		
	Operation kit comprising all required items pump tubings, transfer tubings, work coils etc. for startup/regular operation of instrument.		
	Firm should also quote for all essential pre-installation requirements and utility requirement for ICP-MS.		
	Give the Detection limits (DL) chart for Sn, Ni, Cu, Zn, Ba, Sb, Ni, B, Ag, Mg, Ca, Na, As, Cd, Cr, Hg, Pb, Se, Fe (but not limited to these elements. Provide for as many elements as vendor can) and give the conditions at which the DLs are measured		
	Operation and maintenance manual for each unit in both hard copy and soft copy.		
	Service manual with set of required tools for each system/unit.		
	The system should have Server connectivity and should be capable of 21 CFR Part 11 and food safety compliance. The necessary validations will have to be carried out by the equipment suppliers.		
	Methods library for all food matrixes, related software's and user manuals to be provided		
22	**Operation and maintenance & Training Component**		
	The supplier will have to carry out successful installation at our laboratory premises (where ever the system has to be installed) and to provide on – site comprehensive training two weeks for scientific personnel operating the system or till customer satisfaction.		
23	**IQ/OQ/PQ**		
	IQ/OQ/PQ of the system is required		
24	**Warranty**		
	Standard Warranty of 12 months (for ICPMS, IC/HPLC, Microwave digester, water purification unit, UPS) starting		

	from date of satisfactory and faultless functioning of the equipment for 60 days at the laboratory premises.		
	Annual Maintenance Contract Service for 60 months after expiry of standard Guarantee/Warranty should be quoted separately yearly basis		
	Annual calibration of the equipment shall be a part of the AMC. It shall also be mandatory to perform calibration after every major repair/breakdown		
	The vendor should guarantee the availability of spares for 10 years		
	Current user's / performance list with contact details (Customer name, phone email id etc) and date of installation to be provided (Minimum 3 installations of the model quoted)		
	Number and details of the service engineers has to be provided		
	Onsite technical performance evaluation of the quoted model of the equipment will be carried out for those who qualify in the technical bid		
25	Pre installation requirements		
	List out all pre-installation requirements (which are to be provided by the Lab)		