



# सी एस आई आर -राष्ट्रीय पर्यावरण अभियांत्रिकी अनुसंधान संस्थान

CSIR- National Environmental Engineering Research Institute

नेहरु मार्ग, नागपुर ४४००२०, भारत

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**शीर्षक :** Supply, Installation and Commissioning of (1) Triple Quadrupole Gas Chromatography Mass Spectrometry with Thermal Desorber and (2) Triple Quadrupole Gas Chromatography Mass Spectrometry with Electron Impact and Chemical Ionization के लिए ईओआई एवं मांगपत्र पूर्व सम्मेलन.

**TITLE:** Expression of Interest and pre-indent conference for Supply, Installation and Commissioning of (1) Triple Quadrupole Gas Chromatography Mass Spectrometry with Thermal Desorber and (2) Triple Quadrupole Gas Chromatography Mass Spectrometry with Electron Impact and Chemical Ionization

Supply, Installation and Commissioning of (1) Triple Quadrupole Gas Chromatography Mass Spectrometry with Thermal Desorber and (2) Triple Quadrupole Gas Chromatography Mass Spectrometry with Electron Impact and Chemical Ionization उपकरण आपूर्ति के लिए, यह संस्थान एक्सप्रेसन ऑफ इंटरेस्ट आमंत्रित करता है।

This Institute invites Expression of Interest (EOI) for Supply, Installation and Commissioning of (1) Triple Quadrupole Gas Chromatography Mass Spectrometry with Thermal Desorber and (2) Triple Quadrupole Gas Chromatography Mass Spectrometry with Electron Impact and Chemical Ionization.

एक्सप्रेसन ऑफ इंटरेस्ट दिनांक \_\_\_\_\_ तक इस संस्थान में पहुँच जाना चाहिए। राष्ट्रीय पर्यावरण अभियांत्रिकी अनुसंधान संस्थान, नेहरुमार्ग, नागपुर-440020 के समिति कक्ष में दिनांक \_\_\_\_\_ सुबह \_\_\_\_\_ बजे माँग पूर्व संमेलन आयोजित किया गया है। The EOI must reach this Institute latest by date **27.01.2025**. A Pre-indent Conference has been scheduled to be held at **11.00 am on 30.01.2025** in the **Committee Room of National Environmental Engineering Research Institute, Nehru Marg, Nagpur-440 020. INDIA**

ईच्छुक पार्टियां अपने उत्पाद / मॉडल के तकनीकी प्रस्तुतीकरण तथा उसकी उपयोगिता, प्रौद्योगिकी, सुविधा, साहित्य, डिज़ाइन, तकनीकी पैरामीटर, ग्राहकी तथा अन्य संबंधित मुद्दों पर तकनीकी समिति से चर्चा करने के लिए तकनीकी रूप से सक्षम प्रतिनिधि नियुक्त कर सकते हैं। तकनीकी समिति मांग पूर्व संमेलन में भाग लेने वाले कंपनी / विक्रेताओं के क्रेडेंशियल्स / तकनीकी क्षमताओं / वित्तीय स्थिति का मूल्यांकन करेगी।

Interested parties may depute their competent technical representatives to make presentation of their product/ model(s) and discuss with the Technical Committee on the aspects of utility, technology, feature, literature, design, technical parameters, clientele and other related issues of the equipment. The Technical Committee shall also evaluate the credentials/ technical capabilities/ financial standings with track record of the companies/ vendors attending PIC.

## **Process of EOI and PIC :**

**Last date of submission of EOI : 27.01.2025 .**

**PIC : on 30.01.2025 , Time 11.00 AM**

- 1) OEM/Suppliers/ Agent must :
  - a) Send Expression of Interest to participate in pre-indent Conference latest by date **27.01.2025** through e-mail.
    - i) Send Printed technical Literature duly indicating point to point NEERI requirement and offered point to point technical compliance, as per Annexure-III.
  - 2) Attend Pre-Indent Conference by fully Technical Competent personnel on : **30.01.2025** to present before CSIR-NEERI Technical Committee:
    - i) Specific Model and make : meeting CSIR-NEERI technical specifications.
    - ii) One printed copy of Supporting Technical Literature.
- 3) Tentative Technical Specification are as per **Annexure – I**
- 4) Qualification requirement are as per **Annexure-II**

मांग पूर्व संमेलन में भाग लेने के लिए तकनीकी रूप से सक्षम प्रतिनिधि को अधिकृत किया जाना चाहिए जो जगह पर निर्णय ले सकें तथा समिति द्वारा उठाए गए बिन्दुओं की पुष्टि कर सकें। तकनीकी प्रतिनिधि नीरी तकनीकी समिति द्वारा अंतिम रूप दिये गए तकनीकी विनिर्देशों पर हस्ताक्षर करने के लिए सक्षम होना चाहिए। Technically competent representative should be authorized for attending Pre-Indent Conference who can take on the spot decision and confirm on the points raised by Technical Committee. Technical representative should be able to sign the final technical specifications finalized by the NEERI Technical Committee.

Kindly note that post EOI & PIC, OTE/GTE shall be floated under two bid system and participation in the same shall not be restricted to participated bidders of EOI.

Interested parties may submit EOI regarding **Supply, Installation and Commissioning of (1) Triple Quadrupole Gas Chromatography Mass Spectrometry with Thermal Desorber and (2) Triple Quadrupole Gas Chromatography Mass Spectrometry with Electron Impact and Chemical Ionization**, addressed to the Director, CSIR-NEERI, Nehru Marg, Nagpur- 440 020 by email on [st\\_pur@neeri.res.in](mailto:st_pur@neeri.res.in), [spo@neeri.res.in](mailto:spo@neeri.res.in), [gs\\_kanade@neeri.res.in](mailto:gs_kanade@neeri.res.in) .

**भंडार एवं क्रय अधिकारी /Stores & Purchase Officer**  
**CSIR-NEERI, Nagpur**

## Tentative Specifications / requirement (Annexure- I)

### Supply, Installation and Commissioning of (1) Triple Quadrupole Gas Chromatography Mass Spectrometry with Thermal Desorber and (2) Triple Quadrupole Gas Chromatography Mass Spectrometry with Electron Impact and Chemical Ionization

#### Tentative Technical Specifications for Gas Chromatograph-Mass Spectrometer

**System 1: Gas Chromatograph Triple Quadrupole Mass Spectrometer with Electron Ionization with Thermal Desorber.**

Sl. No	Requirement	Description
<b>Gas Chromatography: GC with automated flow &amp; Pressure Electronic /Pneumatic controlled for injector and detector ports and able to support 2 inlets, 2 detectors. GC Graphical User Interface (GUI)</b>		
1	Column Oven	<ul style="list-style-type: none"> <li>• Accommodate two capillary columns</li> <li>• Temp. Range: Ambient +4 to 450°C</li> <li>• Ramp rate: maximum 120°C/min or more</li> <li>• Cooling rate: 450°C to 50°C in less than 4 min</li> <li>• Typical Retention Time Repeatability: &lt;0.008 min or better</li> <li>• Number of Ramps/Plateaus: 20/21 or more</li> </ul>
2	Injector port – 1 No.	<p>Split/split less capillary injector should be able to operate with capillary, wide bore column.</p> <ul style="list-style-type: none"> <li>• Maximum temperature: 400 °C</li> <li>• Split ratio 7500:1 or more</li> <li>• Purge flow from 0 to 50 mL/min</li> </ul>
3	Auto Sampler	<ul style="list-style-type: none"> <li>• Automated liquid sampler with 100 Vials capacity</li> <li>• Syringes               <ul style="list-style-type: none"> <li>▪ Size : 5 µL, 10 µL</li> <li>▪ Compatible with standard, gas-tight and plunger in-needle syringes</li> </ul> </li> </ul>
4	Thermal Desorber	<ul style="list-style-type: none"> <li>• A thermal desorption assembly from a reputed OEM to be quoted and hyphenated with the quoted GC-Triple Quadrupole system for environmental applications.</li> <li>• It should be fully automated thermal desorption system for the rapid and unattended processing of up to 100 sample sorbent tubes in a single sequence.</li> <li>• Trap heating rates up to 100°C/s</li> <li>• Primary tube desorption oven temperature range should be in the range 35°C to 425°C with settable in 1°C increments and user settable within the stated range.</li> <li>• Trap low temperature in the range: –30°C to 50°C, settable in 1°C increments.</li> <li>• Trap desorption - 100°C/s, also programmable rates from 1°C/s to 40°C/s to be available.</li> <li>• 100 Qty. of tubes for environmental applications to be included.</li> <li>• Auto-low flow TD sampling pump to be quoted.</li> <li>• Tube conditioner for TD tube conditioning should also be included</li> <li>• Tube Desorption Flow Rate- Settings: 20 mL/min to 200 mL/min (1 mL/min increments; Accuracy ±2 mL/min)</li> <li>• Transfer Line Temperature Settings: 0 °C to 350 °C (1 °C increments)</li> </ul>
<b>Triple Quadrupole Mass Spectrometer with Electron Ionization Source</b>		
5	Electron Impact Ionization	<ul style="list-style-type: none"> <li>• Ion Source temperature: up to 350°C</li> <li>• Electron energy range up to 150 eV or better</li> <li>• Ionization modes: EI &amp; System should have dual filament with automatic filament switching.</li> <li>• EI Scan sensitivity: 2000:1 for 1pg of OFN for the mass m/z 272 using 30 m column</li> </ul>
6	Triple Quadrupole Analyzer	<ul style="list-style-type: none"> <li>• Mass Range: 10 to 1000 amu or better.</li> <li>• The collision energy must be adjustable in the range of 1 – 60 eV in user-programmable increments of 1 eV.</li> </ul>

Sl. No	Requirement	Description
		<ul style="list-style-type: none"> <li>The collision cell must support minimum SRM dwell time of 500 <math>\mu</math>s.</li> <li>Mass axis stability: <math>\pm 0.1</math> amu over 48 hours</li> <li>Mass resolution: 0.4 to 3.0 amu (FWHM)</li> <li>MRM/SRM speed: 800 transition / second.</li> <li>Dwell time: &lt; 0.5 msec</li> <li>Scan rate: 20000 amu/second (Q3 Scan)</li> <li>The instrument control must have the ability to alternate between Full Scan MS and SRM/SIM target analysis on successive scans. .</li> <li>The instrument control must support the following scan modes:               <ol style="list-style-type: none"> <li>MS Mode: full scan (FS), SIM and FS/SIM simultaneous within a single sample injection,</li> <li>MS/MS Mode: full scan (FS), SRM and FS/SRM simultaneous within a single sample injection</li> </ol> </li> <li>Instrument Detection Limit : IDL <math>\leq 0.3</math> fg OFN</li> </ul>
7	Detector	<ul style="list-style-type: none"> <li>Detector with off-axis, discrete dynode electron multiplier</li> <li>linear range of <math>&gt;10^7</math></li> </ul>
8	Vacuum pump:	<ul style="list-style-type: none"> <li>Dual inlet turbo molecular pump with capacity of 300 L/sec or better.</li> </ul>
9	Database and software	<ul style="list-style-type: none"> <li>NIST 2023 library with license, Library data base in digital storage media</li> <li>Compatible license software for instrument control and data analysis for qualitative &amp; quantitative workflow</li> </ul>
10	Computer & Printer	<ul style="list-style-type: none"> <li>Compatible latest PC with i7 processor or equivalent with 1 TB hard disk and 8 GB RAM and 24' TFT monitor with color printer</li> </ul>
11	Consumables	<ul style="list-style-type: none"> <li>10 <math>\mu</math>l SYR Bevel Tip -10 Nos</li> <li>5 <math>\mu</math>l SYR Bevel Tip -10 Nos</li> <li>Filament for MS - 10 Nos.</li> <li>Liner for Split/Splitless Pk of 5 -5 Nos</li> <li>Column nut, SSL Pk of 10 -10 Nos</li> <li>OIL, vacuum pump, 1 liter -3Nos</li> <li>MS performance spec kit -1 Set</li> <li>Vespel Ferrule capillary nut 0.1-0.25 Pk of 10 -10 Nos each</li> <li>Vespel Ferrule capillary nut 0.32 Pkof 10 -01 Nos</li> <li>Septa BTO PK of 50 – 10 Nos</li> <li>Ion source cleaning compound – 1 pack</li> <li>Cleaning paper – 10 Nos.</li> <li>1000 qty autosampler vials with caps</li> <li>Tool Kit for GC &amp; MS</li> <li>Wall mount Gas purification and control system for gases with gas regulators</li> <li>Column : DB 5 MS UI - 30 mtr, 0.25 mm ID, 1<math>\mu</math>m FT or equivalent – 01 No.</li> <li>DB 624 MS UI - 30 mtr, 0.25 mm ID, 1<math>\mu</math>m FT or equivalent – 01 No</li> <li>DB WAX - 30 mtr, 0.25 mm ID, 1<math>\mu</math>m FT or equivalent – 01 No.</li> </ul>
12	Supply requirement	230 V AC $\pm$ 5 V AC, 50 Hz
13	Warranty	<ul style="list-style-type: none"> <li>1 year standard + 2 Year extended warranty for instrument should be provided from vendor</li> </ul>
14	Training & Demonstration	<ul style="list-style-type: none"> <li>Vendor should have an application support center in India in case of any demonstration is required vendor should be able to demonstrate the system in India.</li> </ul>

**System 2 : Gas Chromatograph Triple Quadrupole Mass Spectrometer with Electron Ionization and Chemical Ionization.**

Sl. No	Requirement	Description
<b>Gas Chromatography: GC with automated flow &amp; Pressure Electronic /Pneumatic controlled for injector and detector ports and able to support 2 inlets, 2 detectors. GC Graphical User Interface (GUI)</b>		
1	Column Oven	<ul style="list-style-type: none"> <li>Accommodate two capillary columns</li> <li>Temp. Range: Ambient +4 to 450°C</li> <li>Ramp rate: maximum 120°C/min or more</li> <li>Cooling rate: 450°C to 50°C in less than 4 min</li> <li>Typical Retention Time Repeatability: &lt;0.008 min or better</li> <li>Number of Ramps/Plateaus: 20/21 or more</li> </ul>
2	Injector port – 1 No.	<p>Split/split less capillary injector should be able to operate with capillary, wide bore column</p> <ul style="list-style-type: none"> <li>Maximum temperature: 400 °C</li> <li>Split ratio 7500:1 or more</li> <li>Purge flow from 0 to 50 mL/min</li> </ul>
3	Auto Sampler	<ul style="list-style-type: none"> <li>Automated liquid sampler with 100 Vials capacity</li> <li>Syringes <ul style="list-style-type: none"> <li>Size : 5 µL, 10 µL</li> <li>Compatible with standard, gas-tight and plunger in-needle syringes</li> </ul> </li> </ul>
<b>Triple Quadrupole Mass Spectrometer with Electron Ionization Source &amp; Chemical Ionization Source</b>		
4	Electron Impact Ionization	<ul style="list-style-type: none"> <li>Ion Source temperature: up to 350°C</li> <li>Electron energy range up to 150 eV or better</li> <li>Ionization modes: EI &amp; System should have dual filament with automatic filament switching.</li> <li>EI Scan sensitivity: 2000:1 for 1pg of OFN for the mass m/z 272 using 30 m column</li> </ul>
5	Chemical Ionization	<p>Instrument detection limit &lt; 2 fg</p> <p>Mode : Positive Chemical Ionization (PCI) &amp; Negative Chemical Ionization (NCI)</p> <p>S/N ration : In PCI – 2500:1, In NCI – 10000:1</p>
6	Triple Quadrupole Analyzer	<ul style="list-style-type: none"> <li>Mass Range: 10 to 1000 amu or better.</li> <li>The collision energy must be adjustable in the range of 1 – 60 eV in user-programmable increments of 1 eV.</li> <li>The collision cell must support minimum SRM dwell time of 500 µs.</li> <li>Mass axis stability: ±0.1 amu over 48 hours</li> <li>Mass resolution: 0.4 to 3.0 amu (FWHM)</li> <li>MRM/SRM speed: 800 transition / second.</li> <li>Dwell time: &lt; 0.5 msec</li> <li>Scan rate: 20000 amu/second (Q3 Scan)</li> <li>The instrument control must have the ability to alternate between Full Scan MS and SRM/SIM target analysis on successive scans. .</li> </ul>

Sl. No	Requirement	Description
		<ul style="list-style-type: none"> <li>The instrument control must support the following scan modes:               <ol style="list-style-type: none"> <li>MS Mode: full scan (FS), SIM and FS/SIM simultaneous within a single sample injection,</li> <li>MS/MS Mode: full scan (FS), SRM and FS/SRM simultaneous within a single sample injection</li> </ol> </li> <li>Instrument Detection Limit : IDL <math>\leq</math> 0.3 fg OFN</li> </ul>
7	Detector	<ul style="list-style-type: none"> <li>Detector with off-axis, discrete dynode electron multiplier</li> <li>linear range of <math>&gt;10^7</math></li> </ul>
8	Vacuum pump:	<ul style="list-style-type: none"> <li>Dual inlet turbo molecular pump with capacity of 300 L/sec or better.</li> </ul>
9	Database and software	<ul style="list-style-type: none"> <li>NIST 2023 library with license, Library data base in digital storage media</li> <li>Compatible license software for instrument control and data analysis for qualitative &amp; quantitative workflow</li> </ul>
10	Computer & Printer	<ul style="list-style-type: none"> <li>Compatible latest PC with i7 processor or equivalent with 1 TB hard disk and 8 GB RAM and 24" TFT monitor with color printer</li> </ul>
11	Consumables	<ul style="list-style-type: none"> <li>10 <math>\mu</math>l SYR Bevel Tip -10 Nos</li> <li>5 <math>\mu</math>l SYR Bevel Tip -10 Nos</li> <li>Filament for MS - 10 Nos.</li> <li>Liner for Split/Splitless Pk of 5 -5 Nos</li> <li>Column nut, SSL Pk of 10 -10 Nos</li> <li>OIL, vacuum pump, 1 liter -3Nos</li> <li>MS performance spec kit -1 Set</li> <li>Vespel Ferrule capillary nut 0.1-0.25 Pk of 10 -10 Nos each</li> <li>Vespel Ferrule capillary nut 0.32 Pkof 10 -01 Nos</li> <li>Septa BTO PK of 50 – 10 Nos</li> <li>Ion source cleaning compound – 1 pack</li> <li>Cleaning paper – 10 Nos.</li> <li>1000 qty autosampler vials with caps</li> <li>Tool Kit for GC &amp; MS</li> <li>Wall mount Gas purification and control system for gases with gas regulators</li> <li>Column : DB 5 MS UI - 30 mtr, 0.25 mm ID, 1<math>\mu</math>m FT or equivalent – 01 No.</li> <li>DB 5 MS UI - 60 mtr, 0.25 mm ID, 1<math>\mu</math>m FT or equivalent – 01 No</li> <li>DB WAX - 30 mtr, 0.25 mm ID, 1<math>\mu</math>m FT or equivalent – 01 No.</li> </ul>
12	Supply requirement	230 V AC $\pm$ 5 V AC, 50 Hz
13	Warranty	<ul style="list-style-type: none"> <li>1 year standard + 2 Year extended warranty for instrument should be provided from vendor</li> </ul>
14	Training & Demonstration	<ul style="list-style-type: none"> <li>Vendor should have an application support center in India in case of any demonstration is required vendor should be able to demonstrate the system in India.</li> </ul>

**Annexure – II**  
**Qualification Requirement**

**Pre-Qualification & Eligibility Criteria**

Sr. No.	Qualification requirement	Documents required	Complied / Agreed Submitted Document
1.	Vendors / supplier / manufacture / Indian agent should not be debarred /black listed by any government organization / GeM for any product for the past three years. If the same is detected at any stage the contract will be terminated.	Undertaking to be submitted on company letter head separately	
2.	Performance certificate or installation report and purchase order of 02 users from government organization or State government or Central University or PSU for the past two years.	Copies of the Minimum 02 Certificates and Minimum 02 Purchase orders	
3.	Installation, Operational and Performance qualification (IQ/OQ/PQ) must be performed at site CSIR-NEERI Nagpur	Undertaking to be submitted on company letter head separately	
4.	Bidder must Quote latest model complying the technical specification mentioned in chapter 4	Undertaking to be submitted on company letter head separately	
5.	Vendors should have their application lab in India	Undertaking to be submitted on company letter head separately	
6.	Vendors should have their application note on public domain and on their web site	Undertaking to be submitted on company letter head separately	

Agreed & Submitted with Seal & Sign:- .....

Seal & Signature of the Principal / Indian Agent

**Annexure – III**

**तकनीकी विनिर्देश अनुपालन एवं विचलन प्रपत्र**

**Technical Specification Compliance cum Deviation Form**

नीरी निविदा सं के अनुसार तकनीकी अनुपालन / Technical Compliance against NEERI Tender No.

Sr. No.	NEERI's Technical Specifications	Vendor Quoted Specification	In case of Compliance, supporting printed technical literature mentioning page no. Column & line has also to be highlighted	Deviations to NEERI specifications if any,	Reasons for deviations	Special Remarks if any,
1.	2.	3.	4.	5.	6.	7.

स्थान / Place:

तारीख / Date:

निर्माता / बोलीदाता के हस्ताक्षर एवं सील

Signature and Seal of the Manufacturer/Bidder