Ref. No.: CEH/SRO/2024/0002 Date: 11th October, 2024

Tender Notification for the Procurement of Two-dimensional gas chromatography (GCxGC) system with Mass spectrometer (MS) and Flame Ionization Detectors (FID) (Last Date for Submission: 4th November 2024)

This is a Request for quote (RFQ) from domestic (India-based) manufacturers only for procurement of one number of two-dimensional gas chromatography (GCxGC) system with Mass spectrometer (MS) and Flame Ionization Detector (FID) at the Center of Excellence in Hypersonics, Indian Institute of Science, Bangalore. With respect to this tender, the rules laid out by the Government of India in order No. P45021/2/2017-pp-BE-II issued by the Public Procurement Section, Department or Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, dated 4th June 2020 will be followed. As per this order, the government has defined a 'Class-I local supplier' as "a supplier or service provider whose goods, services or work offered for procurement, has local content equal to or more than 50%". A 'Class-II local supplier' is "a supplier or service provider, whose goods, services or works offered for procurement, has local content more than 20% but less than 50%". Only Class-I and Class-II local suppliers are eligible to participate in this open domestic tender. Any "Non-local supplier" i.e., "a supplier or service provider, whose goods, services or works offered for procurement, has local content less than 20%" is ineligible to participate in this tender. The tender should be submitted in two separate sealed envelopes: one containing the technical bid and the other containing the commercial bid, both of which should reach us, duly signed on or before 5 PM on 31st October 2024.

The bids should be addressed to:

The Chairman,
Center of Excellence in Hypersonics,
Indian Institute of Science
Bangalore 560012, India.
Kind attention: Prof. Srisha Rao M V
email: srisharao@iisc.ac.in, jaggie@iisc.ac.in

1	Section 1	Bid Schedule	As specified by IISc
2	Section 2	Eligibility Criteria	As specified by IISc
3	Section 3	Specifications	Technical specifications
4	Section 4	Terms and Conditions	As specified by IISc
5	Section 5	Technical bid	Annexure 1: Bidder details
			Annexure 2: Declaration regarding experience of Bidder
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			Annexure 4: Declaration of acceptance of Terms and conditions
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Section 1: Bid Schedule

1.	Tender No	CEH/SRO/2024/0002
2.	Tender date	11th October 2024
3.	Instrument	Two-dimensional gas chromatography (GCxGC) system with Mass spectrometer (MS) and Flame Ionization Detectors (FID)
4.	Tender type	i) Technical bid (Part A) ii) Commercial bid (Part B)
5.	Place of tender submission	The Chairman, Center of Excellence in Hypersonics, Indian Institute of Science Bangalore 560012, India. Kind attention: Prof. Srisha Rao M V
6.	Last date and time of tender submission	4th November 2024, 5 PM
7.	Contact for further clarification	Prof. Srisha Rao M V Department of Aerospace Engineering Indian Institute of Science Bangalore 560012, India. Ph: +91-80-2293-2426 email: srisharao@iisc.ac.in

Section 2: Eligibility Criteria

Prequalification criteria:

1. Quote should come only from Indian Original Equipment Manufacturer (OEM) or their Indian authorized distributor.
2. The quotations should be on FOR-IISc Bangalore basis in INR only.
3. The Bidder's firm should have existence for a minimum of 3 years (Enclose Company Registration Certificate).
4. The Bidder should belong to either Class 1 or Class 2 supplier distinguished by their "local content" as defined by recent edits to GFR. They should mention clearly which class they belong to in the cover letter.
    a. Class 1 supplier: Goods and services should have local content of equal to or more than 50%.
    b. Class 2 supplier: Goods and services should have local content of equal to or more than 20 % and less than 50%.
5. Purchase preference as defined by the recent edits to GFR (within the "margin of purchase preference") will be given to Class-1 supplier.
6. The bidder should sign and submit the declaration for Acceptance of Terms and Conditions as per - Annexure 4.
7. Bidders offering imported products will fall under the category of non-local suppliers. They cannot claim themselves as Class-1 local suppliers/Class-2 local suppliers by claiming the services such as transportation, insurance, installation, commissioning, training, and other sales service support like AMC/CMC, etc., as local value addition.
8. MSMEs can seek an exemption to some qualification criteria. IISc follows GFR2017 for such details.
9. The Bidder must be not blacklisted/banned/suspended or have a record of any service-related dispute with any organization in India or elsewhere. A declaration to this effect has to be given as per Annexure 3.

Section 3: Technical Specification for the GCxGC system with MS and FID

Mandatory Specifications of two-dimensional gas chromatography (GCxGC) system

S.No.	Item	Description
1	Gas Chromatograph	• Column Oven can accommodate two columns with maximum temperature range up to 450 °C with set point resolution of 0.1 °C. • It should support 15 ramps & maximum temperature ramp rate of 100 °C/min. • Cool down of Oven from 400 °C to 50 °C in less than 5 minutes. • Auto retention time adjustment feature or retention time locking/equivalent feature • Touch screen display • Reverse Flow modulator • Gas sampling valves for Gas introduction
2	Inlets	• Inert Split, Splitless Injector for split, splitless with fully EPC and pressure range up to 100 psi. • Maximum temperature should be 400 °C. • 2 quantity. • Sample splitter for simultaneous detection of samples in two detectors (MS and FID) shall be provided – 1 no
3	Auto Sampler/Injector	• Auto sample injection device • Software controlled sampler. • 2 ml vial volume for liquid injection. • Vial capacity for both should be 10 nos or more.
4	Flame Ionization Detector (FID) – 1 No	• Maximum temperature should be 400 °C or more. • Minimum detection limit should be as low as 1.2 pg C/sec or better. • Data acquisition rate of more than 500 Hz. • Flameout detection and re-ignition should be possible.
6	Mass Spectrometer	• Electron Ionization (EI) source with maximum temperature of 300 °C or better. • Dual Filament design. • Variable Electron energy from 50-200 eV is preferred but the ability to have 70 eV set-point is mandatory. • Mass Analyzer: Single heated Quadrupole or Prefilter or pre-rod with quadrupole system • Feature for self cleaning the ionization source, but not mandatory
7	Mass Range	• 15 to 1,050 m/z
8	Scan Rate	• Scan rate of 18000 amu/sec or more.
9	Sensitivity	• EI scan sensitivity 2000:1, by 1 microliter injection of 1 pg/ul OFN standard scanning from 50 to 300 amu at nominal 272

10	Instrument detection limit (IDL)	• Less than 10 fg with the injection of 100 fg OFN. IDL should be demonstrated at installation and proof of data in company's specification sheet.
11	Turbo Molecular Pump	• Turbo molecular pump with capacity of 250L/sec or more.
12	Library	• Latest NIST library with licensed version with part number.
13	Software	• Original software with license to control GCMS • GC image or similar software- 1 qty.
14	Columns	• First dimension column and second dimension columns: 1) 20 m, 0.18 mm, 0.18 µm: DB-5MS or similar column and 5 m, 0.25 mm, 0.25 µm DB-17MS or Similar type of columns 2) 30 m, 0.25 mm, 0.25 µm: DM-17MS or similar column and 0.8 m , 0.25 mm, 0.25 µm, DB-1MS or similar type of column
15	Consumables	• Screw cap vial – 100 nos. • 10 ul syringe – 2 nos • Ferrule, 0.5mm Graphite 0.32 col – 20 nos • Ferrule, 0.4mm VG cond 0.25 col – 20 nos • Ferrule 0.53mm id column – 20 nos • Septa Non-Stick BTO Inlet 11mm 20 nos • Column Nut for MS interface – 4 nos • Column nut, universal – 4 nos • Glass wool pesticide - 10gm • Liner, UI, split, straight, Glass Wool, - 5 nos • Liner, UI, spltls, sngl tpr, no wool - 5 nos • EI Filament – 2 nos • FID Jet, universal fit – 1 nos • Syr. 10ul tapered, FN 23-26s/42/HP, 2 nos • GCMS Tuning Standard – PFTBA, 1 no • GCMS Tool Kit and cleaning, 1 no • Gas purification trap for Helium – 1 nos • Vacuum oil – 2 L • Liner O-ring – 10 nos.
16	Warranty	• 3 Year warranty on complete instrument.
17	Installation and Training	• Installation should be done by factory trained engineer, followed by operational training by an experienced application specialist for at least 7 days or until completion of training as per the satisfaction of the user. • All the quoted specifications must be experimentally proved during installation and training.

T2. Mandatory requirements/features:

1. The GCxGC system must be capable of analyzing both gaseous and liquid samples. Gaseous samples should be introduced through a pneumatic valve (e.g., a 6-port pneumatic valve with a sample loop) with standard end connections available with Swagelok for gas inlet, while liquid samples shall be injected using the autosamplers. If the end-connection for gas inlet is not

available in Swagelok catalog, the type of connection required should be mentioned. It is preferable that the pneumatic valve could be heated to a minimum of 120 ℃.

2. The GCxGC system should be able to detect a range of gaseous hydrocarbon mixtures, including methane, ethane, ethylene, propane, propyne, butane, and butene, along with vaporized liquid samples such as benzene, toluene, and xylene, all in a single injection using both MS and FID. Any limitations of the MS in identifying lower hydrocarbons in GCxGC mode should be addressed by the FID, thus avoiding the need for multiple injections. For a given injection, either a gaseous or a liquid sample mixture will be injected, but not both simultaneously.
3. GCxGC should also have the ability to work in normal GC-MS and GC-FID mode of operation.
4. The GCxGC system should be installed by a technical expert of either the manufacturer or their authorized Indian technician. Complete training should be given on the operation, and maintenance of the GCxGC system. The technical expert should demonstrate 2-dimensional spectra of Diesel or similar fuel with resolved Paraffin, Olefins, Naphthenes, and Aromatics molecules.
5. Supporting document in the form of Application note and/or published literature of 2D chromatogram showing Paraffin, Olefins, Naphthenes, and Aromatics molecules of JP-7 or JP-8 or RP-7 or Gasoline or Diesel or similar fuels should be attached as part of Technical bid. It also needs to include data to support possibility to calibrate GCxGC system (detectors) for components of such fuels. For example Toluene, xylene, decane, isododecane, tetradecane etc.
6. Complete transfer of analytes from the 1D to the 2D column, or a well-defined, repeatable, and known concentration transfer of analytes from the 1D to the 2D column.
7. Cryogen-free operation for routine GCXGC.
8. Repeatability of rigid retention time and peak area RSDs should be less than 5%
9. Displayed and saved data should be in absolute values (for ex. Total Ion for MS) and not as normalized values.
10. Software specifications:
    - The software should save the chromatogram up to the stoppage time when the user decides to abort the run at any point.
    - Flexible Graphical User Interface to display instrument status, show real time plot and change all instrument set points.
    - Software should record and display data in absolute numbers and not as a normalized value.
    - The software should offer a variety of interactive visualizations for example: 1D graphs, 2D chromatogram views, 3D views, and tabular views.
    - Software should have the ability to draw a mesh/line/polygon between peaks to separate functional groups of the molecules.
    - The software should support data from a wide range of multispectral detectors, including MS, FID and TCD. An array of tools support spectral matching, library search, and selected ions/channels analysis, with options for handling adducts.
    - The Project interface should support managing and batch processing sequences of runs, and generates and exports reports to external software such as Excel
11. Other software features that can help in the functioning of GCxGC that might be proprietary to the company should be mentioned.
12. Manual/brochure of software should be included in the Technical bid
13. Number of detectors that can be mounted should be specified.
14. Feasibility of connecting Thermal Conductivity Detector (TCD) and/or (Electron Capture Detector) ECD along with the MS and FID should be mentioned.
15. The year GC commercial introduction should be specified along with the assured number of serviceable years from the date of installation needs to be mentioned.
16. Warranty conditions at least 36 months from the date of installation
17. Compatibility with existing single-phase 240 V and 50 Hz power supply.
18. Input and output phase requirement for the UPS needs to mentioned.
19. Delivery: Within 3 to 4 months from the date of purchase order.

T3. Optional requirements/features:

1. Price of the following Accessories:
   - Compatible branded PC that directly comes from the factory with instrument.
   - TCD detector
   - ECD detector
   - Required Gas panels and tubing from the gas cylinder.
   - Interested vendors can visit and inspect the site and distance from lab to cylinder place.
   - Any other accessory for smooth running and operation.
2. Any unit/ assembly of units that allows the user have the possibility to heat the gas sampling valve and gas lines in the GC to more than 120 °C. If the gas sampling valve needs any additional accessories, its cost can be included in the unit/assembly of units.
3. A valve or any component that can automatically stop and start the flow of "Test gas mixture" after it filled inside the sample loop of the gas sampling valve. Here Test gas mixture refers to gases that are expected to be separated in the GCxGC system.
4. Auto sampler with self-dilution without compromising the sensitivity of the detection, including area of the peak, retention time and shape of the peak.
5. Additional 2 years CMC must be quoted.

T4. Commercial bid price break-up

In the commercial bid, please provide the price of individual components, preferably in the following manner.

1. GCxGC system with all mandatory items, per unit cost and total cost.
2. TCD detector
3. ECD detector
4. Optional: 2 years CMC
5. Optional: Accessories : Compatible branded PC, and Gas panels

Section 4: Terms and Conditions

1. All documentations in the tender should be in English.
2. Tender should be submitted in two envelopes (two bid system).
   a) Technical Bid (Part-A) – Technical bid consisting of all technical details and checklist for conformance to technical specifications. The proposal should contain a compliance table. The compliance table should include all the items of the technical specifications in the same order and format. The first additional column should describe product specifications. The next column should indicate compliance in a "Yes" or "No" response.
   b) Commercial Bid (Part-B) – Indicating item-wise price for the items mentioned in the technical bid, as per the format of quotation provided in tender, and other commercial terms and conditions.
3. The technical bid and price bid should each be placed in separate sealed covers, superscribing on both the envelopes the tender no. and the due date. Both these sealed covers are to be placed in a bigger cover which should also be sealed and duly superscribed with the Tender No, Tender Description & Due Date.
4. The SEALED COVER superscribing "**Two-dimensional gas chromatography (GCxGC) system with Mass spectrometer (MS) and Flame Ionization Detectors (FID)**" tender number and due date & should reach the office of the Chairman, Center of Excellence in Hypersonics,

Indian Institute of Science Bangalore 560012, India. Kind attention: Prof. Srisha Rao M V, on or before the due date mentioned in the tender notice. In case the due date happens to be a holiday, the tender will be accepted and opened on the next working day. If the quotation cover is not sealed, it will be rejected.

5. The covering letter should clearly state that whether the vendor is a Class-I or Class-II local supplier. Failing this the bid will be automatically rejected.
6. The Bidder must not be blacklisted/banned/suspended or have a record of any service-related dispute with any organization in India or elsewhere. A declaration to this effect should be provided.
7. The lead-time for the delivery of the equipment should be less than 3 to 4 months from the date of receipt of necessary documents. It should be clearly mentioned in the technical and commercial bids.
8. The vendor must provide a compliance statement in a tabular form concerning each technical specification in the tender document duly supported by the manufacturer's literature and published papers. Any other claim will not be accepted and may lead to the rejection of the bid.
9. Wherever requested, data must be supplied along with technical compliance documents. Technical bids without supporting data will be deemed as technically non-compliant.
10. The institute reserves the right to verify the accuracy and seek clarification of submitted specifications after opening the technical bids. Based on such clarification, if specifications are found to be unsuitable, the technical committee reserves the right to disqualify vendors. Any discrepancy between the promised and verified specifications will be deemed as technical non-compliance.
11. The technical bid should also contain warranty details and terms. Further, any periodic maintenance requirements for regular operation should be specified in detail, along with the extent of coverage under warranty for such maintenance activity.
12. The bidder will provide the prerequisite installation requirement of the equipment along with the technical bid. The vendor is responsible for the installation of the system at the institute, along with the training of end-users.

13. In the commercial bid, the price should be inclusive of all discounts. The price quotation should include the cost of installation and training of potential users if any.
14. The quotations should be on FOR-IISc Bangalore basis in INR only.
15. Any statutory increase in the taxes and duties subsequent to the bidder's offer, if it takes place within the original contractual delivery date, will be borne by IISc, Bangalore, subject to the claim being supported by documentary evidence. However, if any decrease takes place, the advantage will have to be passed on to IISc, Bangalore. Any information furnished by the bidder found to be incorrect, either immediately or at a later date, would render the bidder liable to be debarred from the bidding process.
16. The vendor must submit a list of all Indian customers (only Government of India organizations) where similar systems have been installed. References from this list can be used to disqualify vendors with a poor track record of service, build quality, system performance, or poor availability of spares. Additionally, IISc shall have the absolute right to take the opinion of other departments/institutes for their opinion/experience about the bidder's services/sales. Based on such input, IISc may decide about the rejection of a bid of such bidder(s).
17. The vendor shall include up to five testimonials from existing users of a GCxGC system indicating the capabilities of the system to resolve hydrocarbon-based fuels.
18. Notwithstanding anything specified in this tender document, IISc Bangalore, in its sole discretion, unconditionally and without having to assign any reason, reserves the rights:
    a) To accept OR reject the lowest tender or any other tender or all the tenders.
    b) To accept any tender in full or in part.
    c) To reject the tender, offer not conforming the tender terms.
19. The indenter reserves the right to relax any or all of the above conditions without assigning any reason.

Annexure 1:

Details of the Bidder: The bidder must provide the following mandatory information & attach supporting documents wherever mentioned:

Sr. No.	Type	Details
1.	Name of the Bidder	
2.	Nature of Bidder (Attach attested copy of Certificate of Incorporation/ Partnership Deed)	
3.	Registration No/ Trade License, (attach attested copy)	
4.	Registered Office Address	
5.	Address for communication	
6.	Contact person- Name and Designation	
7.	Telephone No	
8.	Email ID	
9.	Website	
10.	PAN No. (attach copy)	
11.	GST No. (attach copy)	

(Signature of the Bidder)
Name: Date:
Designation, Seal

Annexure 2:

Declaration regarding experience

To,

The Chairman,
Center of Excellence in Hypersonics
Indian Institute of Science
Bangalore 560012, India.
Kind attention: Prof. Srisha Rao M V

Ref: Tender No:

Dated:

Sub: Supply of two-dimensional gas chromatography (GCxGC) system with Mass spectrometer and Flame Ionization Detectors

I have carefully gone through the Terms & Conditions contained in the above referred tender. I hereby declare that my company / firm has----- years of experience in supplying and installing GCxGC systems. As proof of GCxGC systems' ability to carry out Paraffin, Olefins, Naphthenes, and Aromatics analysis of hydrocarbon fuel, technical document(s) are attached in the Technical bid.

(Signature of the Bidder)
Name: Date:
Designation, Seal

(Signature of the OEM)
Name: Date:
Designation, Seal

Annexure 3:

Declaration of track record

To,
The Chairman,
Center of Excellence in Hypersonics
Indian Institute of Science
Bangalore 560012, India.
Kind attention: Prof. Srisha Rao M V

Ref: Tender No:

Dated:

Sub: Supply of two-dimensional gas chromatography (GCxGC) system with Mass spectrometer and Flame Ionization Detectors

Sir,

I have carefully gone through the Terms & Conditions contained in the above referred tender.

I hereby declare that my company / firm is not currently debarred / blacklisted by any Government / Semi-Government organizations / institutions in India or abroad. I further certify that I am competent officer in my company / firm to make this declaration.

OR

I declare the following:

Sr. No.	Country in which the company is debarred/ blacklisted / having pending case	Blacklisted / debarred by Government / Semi Government Organizations or Institutions / having pending case	Reason	Time Period

(Note: In case the company / firm was blacklisted previously, please provide the details regarding period for which the company / firm was blacklisted and the reason/s for the same).

(Signature of the Bidder)
Name: Date:
Designation, Seal

Annexure 4:

Declaration of acceptance of terms and conditions

To,
The Chairman,
Center of Excellence in Hypersonics
Indian Institute of Science
Bangalore 560012, India.
Kind attention: Prof. Srisha Rao M V

Ref: Tender No:

Dated:

Sub: Supply of two-dimensional gas chromatography (GCxGC) system with Mass spectrometer and Flame Ionization Detectors

Sir,

I have carefully gone through the Terms & Conditions contained in the above referred tender document. I declare that all the provisions of this tender document are acceptable to my company. I further certify that I am an authorized signatory of my company and am, therefore, competent to make this declaration.

(Signature of the Bidder)
Name: Date:
Designation, Seal

Annexure 5:

Details of items quoted:

a. Company Name
b. Product Name
c. Part / Catalogue number
d. Product description / main features
e. Detailed technical specifications
f. Remarks, if applicable

Instructions to bidders:

1. Bidder should provide technical specifications of the quoted product/s in detail.
2. Bidder should attach product brochures along with technical bid.
3. Bidders should clearly indicate compliance or non-compliance of the technical specifications provided in the tender document.

Section 5 – Commercial Bid

The commercial bid should be furnished with all requirements of the tender with supporting documents as mentioned below:
Please provide the price of individual components, preferably in the following manner.

1. Two-dimensional gas chromatography (GCxGC) system with all mandatory items, per unit cost and total cost.
2. Optional 2 years CMC
3. Optional Accessories : Compatible branded PC, Gas panels, TCD and ECD

Items requested in the mandatory specification section

S.No	Description	Cat. Number	Quantity	Unit Price	Sub total
1.	Essential items noted in the technical specification				
2	… (details of essential items)				
3.	Warranty (years)				
4.	FOR-IISc Bangalore only				

Items requested in the optional specification section

S.No	Description	Cat. Number	Quantity	Unit Price	Sub total
1.	Optional items noted in the technical specification				
2	… (details of Optional items)				
3.	Warranty (years)				
4.	FOR-IISc Bangalore only				

Section 6 - Checklist

The following items must be checked before the bid is submitted.

1. Sealed Envelope "A": Technical Bid
   Technical bid (signed by the authorized signatory and sealed) with the below documents:
   a. Annexure 1: Bidders details
   b. Annexure 2: Declaration regarding experience and Technical publication(s).
   c. Annexure 3: Declaration of track record
   d. Annexure 4: Declaration of acceptance of terms and conditions
   e. Annexure 5: Details of item quoted.

2. Sealed Envelope "B": Commercial Bid

Your quotation must be submitted in two separate sealed envelopes: Technical Bid (Envelope A) and Commercial Bid (Envelope B) super scribing on both the envelopes with, Tender title, Tender No. and due date. These envelopes should be put in a bigger cover which should also be sealed and duly superscribed with Tender title, Tender No., & Due Date.