Global tender for the supply of **Isotope Ratio Mass Spectrometer (IRMS)** to Indian Institute of Science Bangalore.

Contents

This is a global tender for the supply of Isotope Ratio Mass Spectrometer (IRMS)

Section 1 - Bid Schedule

1	Tender No	CEaS-PG/2025/IRMS/01
2	Tender Date	10th October 2025
3	Item Description	Isotope Ratio Mass Spectrometer (IRMS)
4	Tender Type	Two bid system (i) Technical Bid (Part A) (ii) Commercial Bid (Part B)
5	Place of tender submission	Chairperson Office, Centre for Earth Sciences, Indian Institute of Science, Bangalore 560012
6	Last Date & Time for submission of tender	31st October 2025, 5 PM IST
7	For further clarification	Prof. Prosenjit Ghosh, CEaS, Indian Institute of Science Bangalore – 560012, India. pghosh@iisc.ac.in

Section 2 – Eligibility Criteria

Prequalification criteria:

1. The Bidder's firm should have existed for at least 5 years. Bidders should enclose the Company Registration Certificate.

2. Only the Original Equipment Manufacturer or their authorized representatives across the globe shall participate in the bid.

3. The quotations should be CIP-Bangalore Airport.

4. The bidder should sign and submit the declaration for Acceptance of Terms and Conditions as per -Annexure 4.

5. 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 has to be given as per Annexure 3.

6. The order will be placed only on the bidder who participated in the bid.

Section 3 – Terms and Conditions

A) Submission of Tender:

1. All documentation in the tender should be in English.
2. Tenders should be submitted in two envelopes (a two-bid system).
    a. Technical Bid (Part-A) – Technical bid consisting of all technical details and checklist for conformance to technical specifications.

       The technical proposal should contain a technical compliance table with five columns.

        I. The first column must list the technical requirements in the order given in the technical requirement below.
        II. The second column should provide instrument specifications against the requirement. Please provide quantitative responses wherever possible.
        III. The third column should describe your compliance with a "Yes" or "No" only. Ensure that the entries in column 2 and column 3 are consistent.
        IV. The fourth column should state the reasons/explanations/context for deviations, if any.
        V. The fifth column can contain additional remarks from the OEM. You can use this opportunity to highlight technical features, qualify responses of previous columns, provide additional details, compare your solution with your competitors, or provide details as requested in the technical requirements table below.

    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 the tender** and other commercial terms and conditions.

3. The technical bid and price bid should be placed in **separate sealed covers**, superscribing the tender description, tender no., and the due date on both envelopes. Both these sealed covers are to be placed in a bigger cover which should also be sealed and duly superscripted with the Tender No, Tender Description & Due Date.

4. The SEALED COVER should reach the Chairperson Office, Centre for Earth Sciences, Indian Institute of Science, Bangalore 560012, on or before the due date mentioned in the tender notice. If the due

date is a holiday, the tender will be accepted on the next working day. If the quotation cover is not sealed, it will be rejected.

5. All queries are to be addressed to the person identified in "Section 1 – Bid Schedule" of the tender notice.

6. GST/other taxes, levies, etc., should be indicated separately. The BIDDER should mention GST Registration and PAN in the tender document, if applicable.
7. If the price is not quoted in the Commercial Bid as per the format provided in the tender document, the bid is liable to be rejected.
8. The purchase committee reserves the right to accept or reject any bid and annul the bidding process and reject all bids at any time prior to the award of the contract without thereby incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders.

9. Incomplete bids will be summarily rejected.

B) Cancellation of Tender:

Notwithstanding anything specified in this tender document, the IISc purchase committee, in its sole discretion, unconditionally and without having to assign any reason, reserves the rights:

a. To accept OR reject the lowest tender, any other tender, or all the tenders.
b. To accept any tender in whole or in part.
c. To reject the tender, offer not confirming the tender terms.

C) Validity of the Offer:

The offer shall be valid 30 Days from the commercial bid's opening date.

D) Evaluation of Offer:

1. The technical bid (Part A) will be opened first and evaluated.

2. Bidders meeting the required eligibility criteria in Section 2 of this document shall only be considered for Commercial Bid (Part B) opening. Further, agencies not furnishing the documentary evidence as required will not be considered.

3. Prequalification of the bidders shall not imply final acceptance of the Commercial Bid. The agency may be rejected at any point during technical

evaluation or commercial evaluation. The decision regarding acceptance and/or rejection of any offer in part or full shall be the sole discretion of IISc Bangalore, and the decision in this regard shall be binding on the bidders.

4. The contract award will be subject to acceptance of the terms and conditions stated in this tender.

5. Any offer which deviates from the vital conditions (as illustrated below) of the tender is liable to be rejected:

    a. Non-submission of complete offers.
    b. Receipt of bids after the due date and time or by email/fax (unless specified otherwise).
    c. Receipt of bids in open conditions.

6. In case any BIDDER is silent on any clauses mentioned in these tender documents, IISc Bangalore shall construe that the BIDDER has accepted the clauses as of the tender, and no further claim will be entertained.

7. No revision of the terms and conditions quoted in the offer will be entertained after the last date and time fixed for receipt of tenders.

8. The lowest bid will be calculated based on the total price of all items tendered for the basic equipment, accessories selected for installation, operation, preprocessing and post-processing, optional items, recommended spares, warranty, and annual maintenance contract. The purchase committee seeks the most cost-effective solution for obtaining a new tool. Vendors are encouraged to propose all avenues, including but not limited to buy back of the existing tool, turnkey upgrade of existing to, l or purchase of a new tool.

E) Pre-requisites:

The bidder will provide the pre-requisite installation requirement of the equipment along with the technical bid.

F) Warranty:

The complete system has to be under warranty for a **minimum period of 3 years** (year-wise breakup value should be shown in the commercial bid). The vendor should include the cost of any spares needed during the warranty period, including electronics, subcomponents, and software. If the instrument is defective, it has to be replaced or rectified at the bidder's cost within 30 days from receipt of written communications from IISc, Bangalore. If there is any delay in replacement or rectification, the warranty period should be extended.

G) Annual Maintenance Contract:

An annual maintenance contract for at least three years post-warranty may be provided as an essential, optional item upon completion of the warranty period.

H) SPARES:

Vendors must provide a detailed list of spares and a user manual with a detailed Bill of Materials for all Parts. It should include the Spares Column with the Manufacturer part Number, Qty, and availability of stock after 3 Years.

I) Purchase Order:

The quantity of the items in the tender is only indicative. IISc, Bangalore reserves the right to increase /decrease the quantity of the items depending on the requirement.

If the product and service quality is unsatisfactory, IISc, Bangalore reserves the right to cancel or amend the contract.

J) Delivery, Installation, and Training:

The bidder shall provide the lead time to delivery, installation, and made functional at IISc, Bangalore, from the date of receipt of the purchase order. The system should be delivered, installed, and functional within 120 days of receipt of the purchase order. The supply of the items will be considered as effected only on satisfactory installation and inspection of the system and the inspection of all the items and features/capabilities tested by the IISc, Bangalore. **For acceptance, the vendor must demonstrate the technical specifications mentioned in the tender**. After successful installation and inspection, the date of taking over the entire system by the IISc, Bangalore, shall be taken as the start of the warranty period. **No partial shipment is allowed.**

K) Payment Terms:

Full payment (except AMC) will be released after completion of delivery, satisfactory installation, and qualification, subject to TDS as per rules. Advance payment is acceptable based on mutually agreeable terms. As per GFR, no advance payment can be made to domestic vendors unless an equal amount of bank guarantee is provided.

L) Statutory Variation:

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 supported by documentary evidence. However, if any decrease occurs, the advantage will have to be passed on to IISc, Bangalore.

M) Disputes and Jurisdiction:

Any legal disputes arising from any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction in Bangalore, India.

N) General:

1. All amendments, time extensions, clarifications, etc., within the tender's submission period, will be communicated electronically. No extension of the bid due date/time shall be considered due to a delay in receipt of any document(s) by mail.

2. The bidder may furnish any additional information necessary to establish capabilities to complete the envisaged work successfully. It is, however, advised not to furnish superfluous information.

3. With prior intimation, the bidder may visit the installation site before tender submission.

4. Any information furnished by the bidder found to be incorrect, immediately or later, would render the bidder liable to be debarred from tendering/taking up work in IISc, Bangalore.

Section 4 – Technical Specifications

Desired Instrument (IRMS) Configuration:

Indian Institute of Science planned to procure an extended geometry Stable Isotope Ratio Mass Spectrometer with auto-sampler module(s) for isotope analyses of C, N, 0, S and H, including carbonate clumped Isotopes and Triple Oxygen in CO_2, H_2O, N_2, SF_6 and H_2 samples from geological archives. The instrument is to be optimised for continuous flow operation, but with a clear option for exclusive operation in dual-inlet mode. Alternative specifications allowing similar performance may also be considered.

The general configuration of the instrument should have the following components:

Item I:

High-Sensitive Isotope Mass Spectrometer for analysis of Stable Isotopes in CO_2, H_2, SF_6 and N_2O in operational voltage range 3-10 KVA

1. Analyser Configuration:

1.1. The analyser is to be designed in a monolithic and weld-free unit, and it should also consist of an integrated heating option with computer-controlled operation.

1.2. Mass range & Resolution: Mass range from 1 to 150 u (and above) at full acceleration voltage. For Carbon, Nitrogen, Oxygen, Sulphur: m/Δm > 200 (10% valley); For Hydrogen: m/Δm > 25 (10% valley)

1.3. The Collector (Faraday cup) assembly:

- *Faraday cup assembly* suitable for all standard applications involving N_2 and CO (28, 29, 30), NO (30, 31, 32), 0_2 (32, 33, 34), CO_2 and N_20 (44, 45, 46, 47, 48 and 49), and $S0_2$ (64, 66).
- *H/D Collector system*- Apart from the Collector assembly, additional Faraday cup(s) should be provided for H/D applications in Dual Inlet and Continuous Flow mode, with separate collectors for H_2 and H_3
- Stable, linear high Voltage to Frequency Converters (VFC) with zero dead time.

1.4. Abundance sensitivity to be at least or better than 2 ppm ($C0_2$) in continuous flow modes.

1.5. High sensitivity, electron impact source with self-aligning source magnets and filament. Sensitivity to be ~900 molecules per m/e = 44 ($C0_2$) ion in continuous flow mode of operation, whereas in dual inlet mode it should be ~600.

1.6. Source linearity to be better than 0.02 ‰ per nA at a beam intensity of 2 x 10^{-8} A for CO_2, measured on the 45/44 ratio. This is equivalent to less than a 0.3 ppm change in 45/44 ratio per nA.

1.7. The same source filament should be used for all the species to be analysed.

1.8. Sets of operating parameters (including ion source parameters) for IRMS and preparation systems to be stored in parameter files, which can be recalled and edited for automatic sample runs. An option should also be there for automatic/manual control routines for source tuning.

1.9. H_3^+correction factor to be < 10 ppm per nA .

1.10. Programmable electromagnet with closed-loop feedback field control.

2. Vacuum System

2.1. Novel strategy for true differential pumping via 70 *l/s* drag stage turbo-molecular pumps *(make:* Peiffer), backed by a minimum two-stage rotary pump (make: Edwards). The turbo pumps should also have an active cooling device for their smooth operation. The system could be capable of operating in the high vacuum (~10^{-8} mbar) range.

2.2. Automatic system protection in case of power failure.

3. **Dual-Inlet (DI) Interfaces**

3.1. Dual micro-inlet of mono-block construction and ultra-low dead volume. Viscous flow adjustable crimp capillaries. Turbo pump (70 *l/s) (make:* Peiffer) for changeover valve HV pumping and two-stage rotary pump.

4. SAMPLE PREPARATION MODULE(S) (Optional items)

- *4.1. Device (or measurement of Carbonates- quantity* 1). For the analysis of carbonate samples with extremely low amounts (10-20 micrograms), with excellent linearity, using its Interface options with a Mass Spectrometer. The device must have automated sample preparation capabilities for the precise determination of the isotope ratios of gases like CO_2 from air or CO_2 released from carbonates. The Auto-sampler or multi-position sampler (to be operated by the mass spectrometer's host computer) should present successive samples to the preparation system, and it should have an option for 50-100 sample positions in different vial capacities (1-10 ml).
- **4.2 Continuous Flow Interface** The continuous flow interface should be capable of delivering at least 5 or more reference gases without any hardware modifications. The interface should have a provision for software-controlled dilution of analyte gases. The interface must have a “gas saver mode” for all reference gases, in which there is zero. consumption of reference gas when it is not required in the analytical program.
- **4.3 Elemental Analyser** The system must have two separate furnaces with independent temperature control. The furnaces should be able to achieve a temperature of 1100 ^oC or higher in case of combustion (CNS mode). The system should be offered with an auto sampler for

continuous analysis of 80 samples or more. It should be possible to analyse Sulphur at a higher column temperature than Carbon and Nitrogen within the same run. The temperatures of the column should be acquired by the software during sample analysis for monitoring and diagnosis purposes. CNS precision should be guaranteed for all three isotopes in a single run. The external precision (1σ) (at 50µg absolute content of C, N, and S) each should be: $\delta^{13}C$ (CO_2): ≤ 0.10 ‰ $\delta^{15}N$ (N_2): ≤ 0.15 ‰ $\delta^{34}S$ (SO_2): ≤ 0.20 ‰ EA should be capable of operating as a standalone unit for CNS elemental analysis. It should have a suitable water trap in all analytical modes to avoid peak broadening and the opportunity for memory, as well as to simplify maintenance and lower operating costs. Performance (specifications must be demonstrated during technical evaluation and installation).

5. Electronics

Flashover-resistant source electronics with full control and monitoring of all instrument parameters through on-board microprocessors (distributed intelligence) and software

6. Host Computer and associated components.

6.1. The mass spectrometer and any specified preparation system attached to it shall be driven from a dedicated computer system having >3 GHz or faster processor speed and 8 GB or more RAM, and running through Windows 10 or the latest version of the operating system.

6.2. The computer system must include a Read/Write DVD-ROM drive for archiving, a network card with the capability to network graphical data to users' e-mail terminals. 1 GB graphic card.

6.3. The computer system should include a 19" or 21" LCD screen and desktop colour laser printer.

6.4. A Notebook PC for analyzing & plotting data generated from the IRMS shall also be supplied with latest specification (Pentium Dual Core, 2.8 GHz or faster processor,4 GB or more *RAM, 5* TB HDD, and latest Windows OS with *15*" TFT screen, DVD/CD-RW combo, 56 K modem USB Ports etc.).

7. Software (Quantity 1)

7.1. The software shall provide fully integrated control of analysers and sample preparation systems.

7.2. The software shall be capable of safe machine operation, be able to read output values of all important parameters involved in machine operation and should be exportable to a common MS-Office format.

7.3. The software should allow incorporation of user-written routines in a suitable flexible programming language.

7.4. Software to be fully compatible with Windows' latest version.

7.5. Source code to be made available to the user.

7.6. Free software upgrades to be ensured for the lifetime, excluding the cost of any hardware

upgrade deemed necessary.

7.7. Software should also be compatible with Remote diagnostic protocol(s) using a telephone modem link (to be provided by the supplier).

7.8. Software should be of an open platform type

8. Instrument performance

8.1. Quotation to include a full printed public domain document booklet or leaflet or website of the principal describing the specification of mass spectrometer performance, including both internal and external precision in measurement of H,C,O isotope ratios on standard gases in CO2, SFe, Clumped isotope in CO2 in DI modes, as appropriate.

9. Analytical Performance

9.1. Quotation to include printed document stating clear, unambiguous statements of expected routine performance or the various preparation systems in combination with the mass spectrometers. It should slate:

9.2. The overall precisions derived from analyses of multiple replicate samples of standard materials, with a clear indication of any effects in relation to sample size (especially important in the case of carbonate samples).

9.3. Overall sample analysis times and expected throughput of samples per day using batch loading of multi-position sampler/auto-sampler.

10. Manuals and diagnostic tools

10.1. Full service manuals printed as well as soft copy with circuit diagrams and circuit descriptions must be supplied, along with diagnostic tools including interface cards and software, plus any specialised mechanical tools required for instrument servicing or repair.

10.2. Quotation should include an option for training for two persons in routine operation and maintenance of all instruments and modules supplied, to include instruction in fault diagnosis, servicing and on-site repair procedures. Training should be given on the site of installation as well as at an internationally well-established laboratory or at the laboratory of the manufacturer.

10.3. Where operation requires provision of liquid gases, compressed air or compressed gases, the quotation should include provision of all appropriate connectors, valves and control systems for these. Suitable vessels (e.g. Dewar) should either be included or a clear indication of requirements provided, including appropriate volumes and qualities for routine, trouble-free operation for these. For each module (mass spectrometer, preparation system) the quotation should include an indication 01' all consumables required per full batch of samples.

10.4. The quotation should include a clear statement of all site requirements for installation and operation of the equipment specified.

11. Supporting Facilities to be quoted

The supporting facilities for Mass Spectrometry are

12.1 Dehumidifier: This is required for eliminating atmospheric moisture, which may affect measurements.

12.2. Wall-Mounted Gus Supply Purification System for CF operation.

12.3. UPS System: An appropriate, branded UPS system (at least 20 KVa) is required for complete operation of the system (IRMS+ attachments) with a backup of 1 hour. *Isolation transformer. This is required for eliminating spikes so that they* cannot damage the electronics console.

12. Standards for the calibration and further use: A set of elemental and isotopic standards (in international practice) for the calibration for C, H, 0, N and S analysis covering the testing (and further laboratory use) of all the mentioned sample attachments/modules (Gas Bench, FA, Carbonate analysis system etc) should be provided with the purchase. Therefore, the cost of the important standards should be given clearly in quotation.

13. Installation and commissioning:

14.1. The representative of the supplier firm will install the instrument in the laboratory and fully demonstrate the analysis of some test samples to the satisfaction of the user. The demonstration should be given covering all aspects of the analysis. The time given to this activity (explanation of the instrument parts and functioning and demonstration of the sample analysis) should be adequate and not less than 10 days. *A* certificate to this effect will be issued by the user department.

14.2 All the arrangements regarding the testing and commissioning of the instrument (IRMS, along with its attachments and associated gadgets /reagents/connections/Gas/Cylinders with regulator, etc) must be completed by the supplier on a turn-key ***basis.***

15 Personnel Training

15.1. Two weeks of training (instrumental, trouble & standard analytical protocols, etc.) at the factory (free for operation and maintenance for two persons that are covered in the IRMS basic system, as well as inlets and peripherals ordered with the system) and Air Ticket, lodging and boarding, including incidental expenses.

15.2. During the installation of the IRMS, appropriate training in handling the instrument shall be provided to the group of IRMS users.

NOTE / Pre-Qualification criteria:

A) Equipment offered must be a model from the current serial production range of the manufacturer. Customised or One-off Manufactured models will not be accepted. Offer should be supported with a printed catalogue/depiction on the company website.

B) The local vendor of OEM must have supplied at least 10 IRMSs to IITs, IISERs and other Govt of India organisations. Please attach a reference list of supplies over the last 2 years with contact details (Name, Phone, email address) of users.

C) The company should be the original equipment manufacturer (OEM) of the IRMS. Please attach exclusive authorisation certificate(s) specific to this tender with the quote, without which the bid will be rejected.
D) The manufacturer must be an ISO9001 company & equipment model must be with CE compliance. Please attach relevant certificates.

Section 5- Technical Bid

The technical bid should furnish all requirements of the tender along with all annexures in this section and be submitted to:

The Chairperson,
Attn: Prof. Prosenjit Ghosh
Centre for Earth Sciences, Indian Institute of Science,
CV Raman Ave. Bangalore – 560012, India.

Annexures

Annexure 1:

Details of the Bidder

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

Details of the Bidder

Sl. No	Items	Details
1.	Name of the Bidder	
2.	Nature of Bidder (Attach an attested copy of the 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
Designation, Seal Date:

Annexure 2:

Declaration regarding experience

To,
The Chairperson,
Attn: Prof. Prosenjit Ghosh,
Centre for Earth Sciences, Indian Institute
of Science,
CV Raman Ave. Bangalore – 560012, India.

Ref: Tender No: XXXXXXXXX Dated: XXXXX

Dear Sir/Madam

I have carefully reviewed the Terms & Conditions in the above-referred tender. I hereby declare that my company/firm has years of experience in supplying and installing the proposed equipment.

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

Annexure 3:

Declaration regarding track record To,

The Chairperson,
Attn: Prof. Prosenjit Ghosh,
Centre for Earth Sciences, Indian Institute of Science,
CV Raman Ave. Bangalore – 560012, India.

Ref: Tender No: XXXXXXX
Dated: XXXXX

Dear Sir/Madam,

I have carefully reviewed the Terms & Conditions 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 a competent officer in my company/firm to make this declaration.

Or

I declare the following

Sl.No	Country in which the company is Debarred /blacklisted / case is Pending	Blacklisted/debarred by Government / Semi-Government/Organizations /Institutions	Reason	Since when and for how long

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

Yours faithfully (Signature of the Bidder)

Name
Designation,
Seal

Date:

Annexure 4:

Declaration for acceptance of terms and conditions

To,
The Chairperson,
Attn: Prof. Prosenjit Ghosh,
Centre for Earth Sciences, Indian Institute
of Science,
CV Raman Ave. Bangalore – 560012, India.

Ref: Tender No: XXXXXX

Dated: XXXX

Dear Sir/Madam,

I have carefully reviewed the Terms & Conditions mentioned 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.

Yours faithfully,

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

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

Instructions to bidders:

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

Section 6 – Commercial Bid

The commercial bid should be furnished with all requirements of the tender with supporting documents as mentioned:

Addressed to

The Chairperson,
Attn: Prof. Prosenjit Ghosh,
Centre for Earth Sciences, Indian Institute
of Science,
CV Raman Ave. Bangalore – 560012, India.

Section 7 – Checklist

(This should be enclosed with a technical bid- Part A)
The following items must be checked before the Bid is submitted:

1. Sealed Envelope "A": Technical Bid

1. **Section 5- Technical Bid (each page signed by the authorized signatory and sealed) with the below annexures:**
    a. **Annexure 1: Bidders details**
    b. **Annexure 2: Declaration regarding experience**
    c. **Annexure 3: Declaration regarding clean track record**
    d. **Annexure 4: Declaration for acceptance of terms and conditions**
    e. **Annexure 5: Details of items quoted**
2. **Copy of this tender document duly signed by the authorized signatory on every page and sealed.**

2. Sealed Envelope "B": Commercial Bid

Section 6: Commercial Bid

Your quotation must be submitted in two envelopes: **Technical Bid (Envelope A) and Commercial Bid (Envelope B),** superscribing on both the envelopes with, Tender description, Tender No. and due date and both of these in sealed covers and put in a bigger cover which should also be sealed and duly super scribed with Tender No., Tender description & Due Date.