

INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE

2A & 2B , Raja S.C. Mullick Road, Jadavpur, Kolkata-700032

NIT No.: IACS/CSS/AM/101

Date: 23/12/2021

Sealed tender in two bids system (technical bid and price bid) is invited from bonafide, resourceful and eligible manufacturer/exclusive distributor/vendors for ONE **GC-MS Instrument**.

Part-I (Technical Bid) of the tender should contain technical specifications in detail as well as commercial terms and conditions. Part-II (Price Bid) should clearly indicate group-wise price, if needed, as mentioned in the technical bid. The Technical Bid and Price Bid are to be submitted in separately sealed envelopes, distinctly marked accordingly and both to be put inside another envelop, that should be sealed and superscribed with tender notice no. and due date. The bidders may submit bids duly signed in their own letterheads.

Completed tender bids should reach the office of the **Registrar, Indian Association for the Cultivation of Science (IACS), 2A & 2B Raja S. C. Mullick Road, Jadavpur, Kolkata-700032** on or before the scheduled date and time specified below:

Tender Notice No.	NIT No IACS/CSS/AM/101 Date: 23/12/2021
Last date and time of submitting tender	20.01.2022 at 12:30 P.M.
Pre-bid meeting (date, time & place) to discuss technical specification	10.01.2022 at 3:30 PM , Online Meeting. Link will be sent to Vendors. Vendors should send an email to icam@iacs.res.in for getting the link on or before 09.01.2022.
Date and time of opening tender (Technical Bids)	20.01.2022 at 3:30 P.M.
Place of opening tender (Technical Bids)	In the office of Dr. Amit Majumdar, School of Chemical Sciences, IACS. Online Meeting. Link will be sent to Vendors. Vendors should sent an email for the link to icam@iacs.res.in on or before 19.01.2022.
Date and time of opening of Price Bid	The Price Bids of the bidders qualifying the technical bid will only be opened, the date of which will be intimated to the short-listed bidders at their email addresses. The rest of the bids will be rejected.
Contact	Email: icam@iacs.res.in Tel: +91 33 2473 4971 (Ext 1165)

The technical bids will be opened first to judge/evaluate the technical specifications of the said instrument and thereafter the price bids of only technically qualified bidders will be opened.

Technical Bid Evaluation: The Technical Bids will be evaluated in the presence of the representatives of intending bidders who will be able to clarify technical aspects of their bids, if any, required by the Technical Evaluation Team.

Opening of price-bid: The Price Bids of the bidders qualifying the technical bid will only be opened, the date of which will be intimated to the short-listed bidders at their email addresses. The rest of the bids will be rejected.

Please note that IACS will not provide any accommodation or reimburse any expenses to any of the bidders for attending opening of technical bid.

Quotations received incomplete or beyond the stipulated time will be summarily rejected.

Bidders should submit their past experience for supplying and successful installation of similar units to other research Institutes/Universities/other organizations in India and abroad. Please provide documentary proofs of such successful installation and supportive documents that the instruments are running successfully.

1. TECHNICAL BID

The technical bid should contain technical specifications and should be kept in a separate sealed envelope duly superscribed as 'TECHNICAL BID' on the outer cover of the envelop as already detailed above. **It should be clearly mentioned on the envelope as "Technical Specification for GC-MS Instrument".**

Technical Specification for GC-MS Instrument

Fully automated GC with EPC/PPC for all pneumatic parameters and self-diagnostic facility

ITEM	Description
Gas Chromatograph	- The system should have touch-screen user friendly interface for direct instrument control in larger routine and method development laboratories. - Column oven can accommodate two columns with a temperature range of few degrees above the ambient temperature to 400 °C (or higher). - Maximum heating rate of 100°C/minute or better. - Oven cool-down from 400°C (or higher) to ~50°C in < 5 minutes or better. - Typical Retention Time Repeatability: <0.008 min or better - Number of Ramps/Plateaus: 30/31 or more. - Typical peak area repeatability: < 0.5 % RSD - Operating temperature range: ambient + few degrees to 400°C (or higher) - Temperature set point resolution: 0.1°C - Ambient rejection: < 0.01 °C per 1 °C - Settable column overheat protection <u>Gas Specification</u> - Up to 18 channels of integrated electronic gas control or better - Pressure set points minimum increments: 0.01 kPa-0.001 psi in all ranges or better - Carrier Gas Control Common to all Injectors - Split ratio: Up to 7500:1 or better - Pressure range: 0-100 psi or better - Modes: Constant and programmed pressures and flows with gas saver and septum purge - Control of split flow in 1 mL/min from 0 to 1250 mL/min or better - Purge flow from 0 to 50 mL/min or better <u>General Specifications</u> - Heated zones: Up to 7 or more - Time events: 63 user-selectable events or better - Instrument should have retention time locking facility as well as browser interface facility for remote access.
Inlet: 02 Nos.	- Split /Splitless Injector with fully EPC with pressure range 0–100 psi or better - The Split/Splitless injector should be user-installable within few minutes, and without any special tool. - The injectors should be able to operate with capillary, wide bore and packed columns. - Maximum temperature should be 400°C or higher in 1°C increments. Heating rate of 1°C/min to 200°C/min or ballistic - Split ratio should be 7500:1 or better. Adjustable split ratio easily for a wide range of

	analysis conditions. vi. Control of split flow in 1 ml/minute from 0 to 1250 ml/minute or better. vii. Purge flow from 0 to 50 mL/minute or better. viii. Large-volume injection of up to 150 µL or more manually
Pneumatic controls	Electronic pneumatic controls should be integral part of injector and detector modules. No extra tubing and wires should be needed to operate electrical valves, and deliver carrier, detector and make-up gases to injectors and detectors. The digital carrier gas controller should allow operating with constant and programmed flow and pressure modes.
Flame Ionization Detector (FID): 01 No.	<u>Flame Ionization Detector (FID): 01 No</u> i. Capillary column optimized compatible with 1/8" and 1/16" packed column ii. Flameout detection and automatic re-ignition iii. Minimum Detectable Level: < 2 pg C/s or better iv. Sensitivity: >0.03 Coulombs/gC or better v. Linear dynamic range: >10⁶ (+/-10%) or better vi. Temperature range: few degrees above the ambient temperature to 400 °C (or higher) in steps of 1 °C or better vii. Air: 0–500 mL/min in 0.1 steps or better viii. H₂: 0–100 mL/min in 0.1 steps or better ix. Makeup gas (N₂ or He) 0–50 mL/min in 0.1 steps or better x. Fast data acquisition rate: 300 Hz or better xi. FID Test Mix
Thermal Conductivity Detector (TCD): 01 No	<u>Thermal Conductivity Detector (TCD): 01 No</u> i. Thermal Conductivity Detector module: dual filament, single column detector with high performance in terms of sensitivity featuring acquisition rate as high as 300Hz; micro-volume Ni/Fe cell. ii. Unique fluidic switching design which provides rapid stabilization from turn-on, low-drift performance. iii. Minimum Detection Limit: <400pg tridecane/ml with He carrier or <20pg tridecane/s or equivalent with a total flow through the cell of 3ml/min or better iv. Linear dynamic range: >10⁵ or better. v. Integrated electronic gas control (IEC) vi. Capillary column optimized (micro TCD) compatible with 1/8" and 1/16" packed column; Max T = 400°C or higher. vii. TCD Test Mix
Mass Spectrometer Detector (Single Quadrupole): 01 no	<u>Mass Spectrometer Detector (Single Quadrupole): 01 no</u> i. Electron Impact Ionization (EI) source with with maximum temperature of 300°C or better, full scan (FS), SIM, and FS/SIM simultaneous within sample injection ii. Mass Range: 1.5–1000 amu or better with unit mass resolution. Mass axis stability ±0.1 amu/48 h or better iii. Scanning speed: 15,000 amu/s or better. iv. Transfer Line Temperature: Settable from 20°C to 350 °C or better. v. Emission Current: Up to 350 µA, with improved regulation at low current vi. Electron Energy: Up to 70 eV or higher. Adjustable from 0 eV to 70 eV (or higher) vii. Mass Filter: Dual-stage mass filter with off-axis ion guide for noise reduction and solid, homogeneous non-coated quadrupole rods viii. Mass Stability: Better than 0.1 u/48 hours/$\Delta_t \leq 2$ K ix. Detector: High-sensitivity electron multiplier electron multiplier and electrometer, linear from 0 to 68 µA or better. x. Sensitivity: EI scan sensitivity 1000:1 or better by 1 µL of 1 pg/µL octafluoronaphthalene (OFN) to produce minimum S/N for m/z 272 when scanning 50–300 amu or better. xi. Instrument Detection limit (IDL), calculated from the chromatographic peak area with

	99% confidence interval: IDL $\leq$ 10 fg or better. xii. Ion source types: Electron Ionization (EI) source with dual filaments in all ionization modes, programmable to 300 °C or higher. xiii. Filament: Dual filament having same geometry & orientation. xiv. Electronic dynamic range > 100 or better. xv. MS PERFORMANCE SPEC KIT. xvi. Heated monolithic hyperbolic quadrupole with temp of up to 200 °C or better may be preferred. xvii. Suitable capillary columns to be offered for GCMS operations with general purpose columns, special columns for VOCs, TAGs, methanol, glycerol etc.
Pumping System	Single Turbomolecular pump, 250L/sec or better.
NIST Library	Latest version NIST Library with Original CD.
Auto Injector /Sampler: 01 No.	<u>Auto Injector /Sampler: 01 No.</u> Auto Injector with 8 or more number vials capacity which may be upgraded in future to increase the capacity of sample vials: 01No i. Syringe: Standard: Up to 10 μL as standard or better ii. Future Upgradeable with Micro-volume: 5 μL iii. Future Upgradeable with Nano-volume: 0.5 μL iv. Injection Parameters Maximum volume: 5 μL Minimum volume: 0.01 μL Increments 0.01 μL steps v. Chromatographic performance: < 0.5 RSD % or better and Carryover <0.001% or better vi. Screw Top 2 ml size autosampler vials with Cap & Septa: 1000 Nos or more. vii. Syringe for Autosampler: 10 Nos or more.
Gas Cylinders	Gas Cylinder with Double Stage Pressure Regulator: Two each for He, H ₂ , N ₂ and Zero Air with Gas Distribution Panel.
UPS	Branded On-line 10 KVA (or better) UPS with Isolation, SMF Batteries, Battery Rack and Battery Interconnecting Cables (Three Phase Input & Single-Phase Output) for 60 minutes back-up or better.
Dual Detector Microfluidics	Dual Detector Microfluidics in order to keep the split ratio between two detectors (FID & MS) 1:1.
Columns	Capillary columns: i. TG-5 MS or any equivalent column 30m X 0.25mm X 0.25 micro meter: 2 Nos ii. TG-BOND Q 30mx.32mmx10μm Column: 1 No
Installation Kit with standards	Installation Kit including tee unions, copper tube, tube cutter, brass nuts and ferrules etc.
Other Items Including Consumables	Below items must be supplied with the system (Exact specification terminologies may change with equivalent ones as suitable for the specific instrument): i. HP-5MS Column 60 meter and 30 meters-1 nos ii. DB-Wax Column 60 meter and 30 meters-1nos iii. 100 meter column for FAME analysis-1nos iv. Brass Front/Back Ferrules: 10 Nos. v. Retaining nuts: 10 nos. vi. Retaining Nut: 10 Nos. vii. Union 1/8 TBG BR SW: 2 Nos. viii. Plug for Tube Fitting: 5 Nos. ix. Pre-Clean Tube: 2 Nos. x. A suitable Wrench: 1 No. xi. A suitable Tube Cutter: 1 No. xii. Package of kits for auto sampler: 1 No. xiii. 5μl SYR FN 50mm Gauge 26, Bevel Tip: 2 Nos xiv. Dual Filament for MS: 2 Sets

	xv. Split Straight of appropriate size, Pk of 5: 4 Nos xvi. Helium trap: 1 No. xvii. Vacuum Pump Fluid: 1 L x 3 - xviii. Column nut, pk of 5 for SSL + m SSL Back flush: 10 Nos xix. MS performance spec kit:1 Set xx. Vespel Ferrule capillary nut 0.1-0.25 Pk of 10:10 Nos xxi. Vespel Ferrule capillary nut 0.32 Pk of 10:10 Nos xxii. Septa BTO 11MM PK of 50: 5 Nos - xxiii. Septa 11mm, pk of 50: 5 Nos xxiv. O-ring: 20 Nos. xxv. 10UL FN GT SYRINGE 50MM LGTH 26 GAUGE BE xxvi. 10uL FN SYRINGE, 50MM LGTH, 25 GAUGE
Computer & Software, Data Handling	Complete system should be supplied with branded Computer and Laser Jet Printer with Original software and license to control GCMS and other accessories, should be operated from the main chromatography data handling software and integrated with it. i. Should provide full control of the system. ii. User should have facility to login with a valid password and select analysis so that software can take over. iii. All method functions should have access through icons. iv. Should have real time display of all chromatograms. v. Should have custom report generator facility using Microsoft Word (latest versions) vi. Software should have graphic method editor to optimize integration parameters and to add component names to known peaks in a method. vii. Should have calibration options (bracketing with overlap, bracketing without overlap and bracketing by grand average). viii. Should have interface with memory for data security. ix. Should have dynamic data exchange facility.
Warranty and Service	i. Minimum 1 year from the date of installation & demonstration. ii. Vendors should separately quote two years additional warranty charges and two years AMC charges from the date of expiry of the standard one year warranty. iii. Application support preferably from Kolkata center followed by efficient service support as & when needed. Contact details of the concerned persons with mobile number, email ID & experience. Supplier should mention their details of service setup and manpower in Kolkata who are responsible for after sales support. Response time should be within 24 hours. iv. Supplier should arrange for the application training free of cost by their personnel for minimum three working days after the installation of the system. v. List of the users (at least 10) with contact details from reputed institutes in India. vi. At least 5 installations in the eastern region (with installation certificates).
Other Important Points	i. Future upgradability options to be available (provide the details of upgrade options). ii. All specifications offered needs to be supported with original literature. iii. The offer to be made in details with all technical specifications, item details with part numbers. iv. Extensive training to be provided at installation site with a qualified application specialist. v. <u>Compliance table must include the specifications along with “Complied” / “Not Complied” note.</u> Only “yes” or “no” will not suffice. See the compliance table format later for reference. vi. GC and all the major components such as MS, TCD, FID must be manufactured by the same company and have USA or Germany or United Kingdom or France or Switzerland or Italy as the country of origin.

Installation: Free installation and user training at IACS.

Warranty: Minimum one-year warranty. Vendors should separately quote two years additional warranty charges and two years AMC charges from the date of expiry of the standard one year warranty.

Please SUBMIT ITEMIZED QUOTES with separate pricing for each accessory.

Installation/Demonstration/Application training at site: Installation & user training at IACS, free of cost by the supplier.

Service facility: In India, preferably Kolkata, supplier should mention their details of service setup and man powers who are responsible for after sales support. Response time should be within 24 hrs.

A compliance table (see below) must be prepared and submitted along with the technical bid.

Sr. No	Tender specification	Your offered instrument specification	Extent of compliance

Tender will not be accepted if the technical compliance chart is NOT provided following the above format.

2. PRICE BID

The financial bid indicating (item-wise) price for the item(s) mentioned in the technical bid should be kept in a separate sealed envelope duly super scribed as 'PRICE BID' on the outer cover of the envelop as already detailed above. Price bids of only technically qualified bidders will be opened and they will be intimated the date and time of the opening of price bid at their e-mail ids. Rest of the bidders will stand rejected.

PRICE: Price to be quoted on BOTH CIF Kolkata and FOB basis.

3. BID SECURITY:

An Account payee Demand Draft of any of the Commercial Banks for Rs. 1,00,000/- (Rupees One Lakh only) drawn in favour of "Indian Association for the Cultivation of Science (State Bank of India, Jadavpur University Branch, A/C No. 11079699211, IFSC: SBIN000093, MICR Code: 700002048)" is to be furnished by the bidders along with Technical Bid, except Micro and Small Enterprises (MSEs) as defined in MSE Procurement Policy issued by Department of Micro, Small and Medium Enterprises (MSME) or are registered with the Central Purchase Organisation or the concerned Ministry or Department.

Alternatively, the bidder shall have the option to furnish EMD in the form of Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee from any of the Commercial Banks. The Bid-Security should have at least 90 (ninety) days validity period beyond the final bid validity period.

In case of non-award of the work the Bid Security money would be returned to the unsuccessful Bidders.

4. PERFORMANCE SECURITY:

An Account Payee Demand Draft on any commercial bank of India or Bank Guarantee (BG) of any Commercial Bank preferably located at Kolkata of 10% of the order value in the name of “Indian Association for the Cultivation of Science” is to be furnished by the successful bidder as Performance security. Performance security money should remain valid for a period of 60 days beyond the date of completion of all contractual obligations of the supplier including warranty obligations. Bid security money or EMD will be refunded to successful bidder on receipt of the Performance security money.

5. TERMS OF PAYMENT:

Payment will be made through irrevocable Letter of Credit in two instalments. 90% of the money will be released on submission of shipping of documents. Remaining 10% will be released after successful installation of the instrument and upon submitting PBG.

6. GENERAL INSTRUCTIONS:

1. Validity of tender: Tender submitted should remain valid for at least six months from the date of opening the tender. Validity beyond six months from the date of opening of the tender shall be lapsed by mutual consent.
2. The tender should accompany a compliance chart.
3. Incomplete and conditional tenders as well as tenders received after the due date will be summarily rejected without assigning any reasons thereof.
4. At any time prior to the bid due date, IACS may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder during pre-bid meeting, modify the bidding documents. The amendment(s) will be notified on the institute website. Prospective bidders are advised to occasionally to visit the website (www.iacs.res.in/tender) for any amendment.
5. Installation/Demonstration/Application training at site: Installation & user training at IACS, free of cost by the supplier.
6. Service facility: In India, preferably Kolkata, supplier should mention their details of service setup and man powers who are responsible for after sales support. Response time should be within 24 hrs.
7. The model number, make and a printed literature of the product should be submitted positively.
8. Proposed delivery schedule should be mentioned clearly.
9. Manufacturers / exclusive distributors / vendors should have history of supplying this type of instruments to this or other scientific organizations. Availability of a list in this regard would be preferred.
10. Authorized dealership certificate should be provided in case of principal manufacturing company is not quoting directly.
11. Guarantee certificate, users manuals etc. are to be handed over to the user after successful commissioning of the system.
12. In the event of date being declared a closed holiday for purchaser's office, the due date for submission of bids and opening of the technical bids will be the following working day at the appointed time.
13. In case of any dispute, the decision of IACS authority shall be final and binding on the bidders.
14. In case of any litigation the matter will be dealt within the jurisdiction of the High Court of Calcutta only
15. For any clarification regarding technical specifications, information etc., please send your queries to Dr. Amit Majumdar (icam@iacs.res.in).
16. The authority of IACS reserves the right to reject any or all of the tenders received without assigning any reason thereof.

Acting Registrar

N O T E :

- 1) **WARRANTY:** Minimum one-year warranty. Vendors should separately quote two years additional warranty charges and two years AMC charges from the date of expiry of the standard one year warranty.
- 2) **PRICE:** Price to be quoted on BOTH CIF Kolkata and FOB basis or as per the requirement of the indenter.
- 3) **BID SECURITY:** Amount of bid security may be accepted in the range between two percent to five percent of the estimated value of the goods to be procured.
- 4) **PERFORMANCE SECURITY:** Performance Security may be accepted for an amount of five to ten percent of the value of the contract as specified in the bid documents.
- 5) **TERMS OF PAYMENT:** As per nature of the transaction.