सीएसआईआर-केंद्रीय खाद्य प्रौद्योगिक अनुसंधान संस्थान
CSIR- CENTRAL FOOD TECHNOLOGICAL RESEARCH INSTITUTE
मैसूरु / MYSURU-570 020, भारत / INDIA
(Constituent Laboratory of CSIR, New Delhi (Ministry of Science & Technology)
An ISO 9001:2008, ISO 14001:2004 & ISO 17025:2005, NABL Accredited Laboratory

Corrigendum: Tender for Gas Chromatograph-Mass Spectrometer (GC-MS)

Corrigendum Title: Revised Technical Specification based on PBC

Tender Ref: CFTRI/74246/2023 Date: 19-10- 2023

Tender ID: 2023_CSIR_171524_1

The revised specification based on the proceeding of the Pre Bid Conference held on 30-10-2023 @ 11. 00A.M is uploaded herewith.

All the prospective bidders are requested to take cognizance of the revised specification and submit their bids accordingly on or before 21/Nov/2023 by 02.00 p.m.

All other terms and conditions of the tender remain unaltered.

Stores &Purchase Officer
CSIR-CFTRI, Mysore

Revised Technical Specifications for Gas Chromatograph-Mass Spectrometer (GC-MS)

A) Basic unit as well as other major components from the same manufacturer

1. Gas Chromatograph: Qty.- 1 Number

1.1. Gas Chromatograph with Capillary Flow / Programmable Pneumatic Control / Advanced Flow for simultaneous programming of pressure, temperature and flow and fully computer controlled injectors, Oven, Detector, Electronic Pneumatics Control and related electronic components
1.2. Fully functional touch screen to monitor and control the real time status of the Gas Chromatograph.
1.3. Setting of method parameters & control through application software as well as through touch screen of the instrument
1.4. Large Column Oven, which is capable of holding capillary columns of various lengths up to 100 meters and 0.05 mm to 0.53 mm internal diameter
1.5. Oven Temperature range from ambient to 450 °C
1.6. Temperature set point resolution 0.1 °C
1.7. Oven Cool Down Time: 450 °C to 50 °C within 4 minutes
1.8. Retention time repeatability: ≤ 0.0008 minutes
1.9. Peak Area repeatability: ≤ 1 % RSD (or) better
1.10. Column oven should have possibility to program minimum 20 temperature ramps (or) more
1.11. Maximum Oven heating rate: 110°C per minute (or) more
1.12. Maximum Programming time of a sample run: 999 minutes
1.13. The system should have back flush capability and septum purge facility, user settable purge flow rate and time to eliminate high-boiling co-extractives, undesired, contaminant compounds.
1.14. Inbuilt feature of overheat protection, diagnostics and comprehensive self-testing facility, column oven power must turn off automatically when the lid/door is opened, automatic carrier gas shut off and inlet pressure drops significantly.
1.15. Built in Memory protection during power failure

2 & 3. Injectors- Qty. - 2 Numbers

B) Both injection ports should be independently temperature controlled

2.0. Multi-Mode Inlet with split/split less injection & back flush facility (or) Programmable Split/Splitless Capillary Injector with back flush facility (or) Programmable Temperature Vaporization Injection Unit with back flush facility: Qty-1 Number
2.1. Two-ramps temperature programmable inlet with large volume injection capability of 50 µL sample. The user selectable flow or pressure change option through software, Injectors facilitate easy maintenance and septa, liner changes
2.2. Compatible for all capillary columns having dimension of 0.05 to 0.53 mm internal diameter
2.3. Settable pressure range from 0 to 100 psi with set point resolution of 0.01 psi from 0 to 100 psi range
2.4. Split ratio range: 0 to 9,999.9:1 (or) better, suitable for all capillary columns
2.5. Maximum operating temperature up to 450°C

2.6. Control of split flow: From 5 to 1250 mL/min for helium
2.7. Purge flow: settable up to 30 mL/min
2.8. Efficient gas saver to reduce gas consumption during standby without affecting performance.

3.0. Split/splitless Injector: Qty. - 1 Number
3.1. The user selectable flow or pressure change option through software, Injectors facilitate easy maintenance and septa, liner changes
3.2. Compatible for all capillary columns having dimension of 0.05 to 0.53 mm internal diameter
3.3. Settable pressure range from 0 to 150 psi with set point resolution of 0.01 psi from 0 to 100 psi range
3.4. Split ratio range: 0 to 9999.9:1 (or) better suitable for all capillary columns
3.5. Maximum operating temperature up to 400°C
3.6. Control of split flow: From 5 to 1250 mL/min for helium
3.7. Purge flow: Settable up to 30 mL/min

4. Auto sampler: Qty. - 1 Number

4.1. Sample injection method: Liquid sample injection through micro syringe
4.2. Capable to fit in both injector ports comfortably
4.3. Facilitates for easy removal and mounting of Auto sampler assembly for manual and SPME injections
4.4. Number of sample vials: Capable of accommodating 100 vials or more at a time
4.5. Vial capacity: 2 mL
4.6. Washing Solvent: At least 2 different washing solvents or more in 4 ml vials
4.7. Sample injection volume: Selectable between 1 and 10 microliter or more should be available
4.8. Injection Speed: Normal/slow/fast/variable options
4.9. Syringe sizes: Should accommodate 1 µL, 5 µL, 10 µL volume micro syringes
4.10. Injection Reproducibility: 0.3 % RSD (or) better
4.11. Viscosity Delay: 0 to 6 seconds or more

5. Mass Spectrometer: Qty. - 1 Number

5.1. Electron impact ionization with automatic tuning facility.
5.2. The Ion Source assembly should be located in front (or) side access type for easy, quick removal and maintenance. The ion source dismantling, cleaning and re-assembly must be user friendly.
5.3. Capable to collect SIM data and full scan data in a single acquisition/run simultaneously
5.4. Mass analyzer type: Quadrupole rods with contamination removing facility by pre-rod/pre-filter/ Pre-heater/Entrance lens/ any other proven means for noise reduction & should be maintenance-free.
5.5 The mass spectrometer must use an ion source where the metallic parts are constructed from inert material.
5.6. Sensitivity: Through EI Full Scan Injection of 1 µL of 1 pg/µL concentration of octafluoronaphthalene (OFN) should produce 1500:1 (or) better Signal to Noise (S/N) performance for m/z 272 ion when scanning between the range of m/z 50 - 300
5.7. Mass Range: m/z 1.5 to 1000
5.8. Electron Ionization Voltage: 10-100 eV (or) better range
5.9. Emission Current: 5 µA to 200 µA (or) better range
5.10. GC Interface/Transferline Temperature: 100°C -350°C (or) better range
5.11. Ion Source Temperature: 150°C - 300°C (or) better range

5.12. Must be unit mass resolution
5.13. Mass Axis Stability: ± 0.1 amu/48 hours
5.14. Detector: High Sensitivity, long life Electron Multiplier
5.15. Electronic Dynamic Range: 10^6
5.16. Scan Rate: up to 12,500 amu/second (or) better
5.17. Number of SIM Groups/Run: Minimum 30 groups (or) more & Number of ions/Group: Minimum 30 ions (or) more.
5.18. Pumping System: High efficient turbo molecular pump with the capacity of 255 L/sec (or) higher and Suitable Auxiliary pump/ Foreline roughing pump for initial Vacuum build-up support **Qty. - One each**

6. Mass Spectral Library

6.1. NIST Mass Spectral Library Latest Version original software to be loaded on Data Station at the time of installation and commissioning and perpetual licensed backup CD Compatible with operation software (MS Win 10 and above) - **Qty. - One number**.

7. Data Acquisition System

7.1. A 64 bit MS Windows based Software Should Provide Single Point Control of the whole system including Gas Chromatograph, Mass Spectrometer, injectors and additional accessories like headspace sampler assembly might be annexed in future in the instrument.
7.2. Capable of System Auto Tuning with tuning standards and air, water checks, and vacuum leak checks
7.3. Application software must be capable of seamless multi-tasking of accurate and reproducible Integration, Deconvolution, Multilevel Calibration, Baseline correction, Background subtraction, Spike recoveries, calibration verification, Qualitative Analysis, Quantitative Analysis, Customizable report formats
7.4. Software should have provision for calculation of retention indices, Automatic adjustment of retention time (AART) function, and Retention time locking (RTL)
7.5. Flexible report format (i.e.) for Acquisition method, Chromatogram, Mass Spectrum, Peak table, Peak area, Peak area sum Percentage, Qualitative reports, Quantitation reports, calibration curve, Status Log, texts, graphics, post run analysis facility with flagging.
7.6. Complete Software must capable of controlling the vacuum system with Auto Start-up / Shut-down and vacuum protection against Power Failures.
7.7. Software must be working with latest Windows 10 operating system. If any upgrade in Windows OS, OEM should provide compatible software upgrade free of cost in future, for a period of 7 years from the date of installation and commissioning.

8. Data Processing and Storage System

8.1 A branded Computer (HP/Dell/Lenovo) with configuration CPU Intel i7 or better, 16 GB RAM, 512 GB SSD and 1 TB HDD loaded with software, Additional LAN Card, MS Windows 10 Professional 64 Bit upgradeable to MS Windows 11, with media and license, 27 inch Full HD/LED (1080p) 1920 x 1080 monitor- **Qty. - One number.**

9. Gas Cylinder and Gas, Regulator and Purification panel-1set

9.1. High pressure Carbon Steel cylinder filled with 99.9999% ultra-high purity Helium gas volume of 10 cubic Meter per cylinder – **Qty. - Two Numbers.**
Cylinder should be ISI marked confirming to IS 7285 flat bottom fitted with value as per IS:3224 complete with neck ring and cap painted as specified under Gas Cylinder Rules 1981. Gas cylinder should be supplied with hydraulic test certificate and explosive certificate from Chief Controller of Explosives, Nagpur.
At present GC-MS instrument should works with helium as carrier gas, however there should be the facility to upgrade to hydrogen as carrier gas in future in the instrument.
9.2. Two Stage Stainless Steel Regulator with steel diaphragm for helium gas (Matheson or Swagelok brand) – **Qty. - One Number**
9.3. Complete set of MS Powder coated 200 LPM capacity gas purification panel for helium gas containing re-generatable silica gel and Molecular sieves filters to remove the moisture and traces of moisture from Helium gas and Oxytrap filter to remove Oxygen from the carrier Helium gas line – **Qty. - One set**

10. Maintenance Tool kit

Complete tool kit contains necessary tools for the periodic maintenance of Gas Chromatograph, Mass Spectrometer and Vacuum pumps - **One set**.

11. Capillary Columns

Low bleed, capillary columns with the dimensions of 30 m X 0.25 mm I.D X 0.25 µm of following:
11.1. Column contains 5% Phenyl / 95% Dimethyl Polysiloxane, MS certified - **Two Numbers**
11.2. Column contains of 100% Polyethylene Glycol, MS certified - **Two Numbers**
11.3. Column contains 70% Cyanopropyl Polysilphenylensiloxane (or) equivalent Chemistry based column - **Two Numbers**

12. Essential Spares & Consumables requirement to be quoted

12.1. Injector septa: **100 Nos.**
12.2. Vials, 2 mL capacity: **200 Nos.**
12.3. Auto sampler septa and caps: **200 Nos.**
12.4. Auto Sampler Micro Syringe 10 µL capacity: **6 Nos.**
12.5. Auto Sampler Micro Syringe 1µL capacity: **2 Nos.**
12.6. Vacuum pump oil: **1 Ltr.**
12.7. Liners for split operation: **20 Nos.**
12.8. Liners for splitless operation: **20 Nos.**
12.9. Split vent traps: **6 Nos.**
12.10. Necessary mass calibration solutions (with certificate of analysis) - **1 Set**
12.11. Ferules for 0.25mm I.D column (MS side): **20 Nos.**
12.12. Ferules for 0.25mm I.D column (GC side): **20 Nos.**
12.13. Column nuts (GC Side): **5 Nos.**
12.14. Column nuts (MS Detector side): **5 Nos.**
12.15. Filament: **02 Nos.**
12.16. Brass/stainless steel ferules (for GC plumbing): **20 Nos.**
12.17. Copper tube with connectors, (for GC plumbing): **5 Meters length.**
12.18. Copper tube cutter: **1 No.**

13. Training

The principal supplier/ Authorized Service Provider has to impart on-site operational training at the time of installation to CSIR-CFTRI staff followed by operational training and application training analysis on operation, maintenance, method development, software training, data interpretation (qualitative and quantitative) at the installation site including analysis of oils, flavours, VOCs and Pesticides in food samples at least **FIVE working days**.

14. Warranty

Comprehensive warranty with spares for minimum **1 year** from the date of complete installation of the instrument should be covered. Post warranty AMC charges to be mentioned in the Quote for a period of **FIVE years**.

15. General conditions of supply:

1. The supplier/manufacturer should have Indian agent to provide after sales service.
2. The principal should provide a certificate that they will provide the spares in future for at least ten years, from the date of satisfactory installation.
3. The main unit and all the sub units of the instrument should be serviced by the Indian representative of supplier.
4. The bidders should provide a list of minimum of Three installations in Government Research Organizations, with complete address including E-Mail and Phone Numbers.
5. The OEM's service engineer should be located near to Mysuru (or) preferably in Bengaluru, Karnataka