# Central Glass & Ceramic Research Institute
# KOLKATA (WEST BENGAL) INDIA

## CORRIGENDUM

**REFERENCE NO. :- P/NC/45/AM/DB(SKM)/GTE/22-23**

**DATE: 16/09/2022**

**NAME OF ITEM: LIQUID CHROMATOGRAPH-MASS SPECTROMETER -1 NO..**

**CONSEQUENT TO THE PRE-BID MEETING HELD ON 13/09/2022 AGAINST OUR TENDER ENQUIRY No. P/NC/45/AM/DB(SKM)/GTE/22-23, the revised technical specifications are given below.**

**Liquid Chromatograph-Mass Spectrometer (LC-MS) Specifications:**

1. **HPLC Quaternary Solvent Manager:**

a) Deliver both Organic and aqueous solvent
b) Maximum operating Pump Pressure: 9500 PSI or higher and flow rates: minimum: 0.001mL/min to maximum 5.000 mL/min for entire flow range
c) Flow ramp rate: 0.001mL; Time settings: 0.01 to 30.00 minutes or better
d) Minimum Gradient Delay Volume: < 1000µL
e) Minimum system band spread: < 100µL
f) Operating Program: Both isocratic and gradient methods
g) Must have "auto select"
h) Must have automatic programmable isocratic and gradient method inputs both in terms of pH and percent organic; pH and salt concentration. No manual intervention.
i) Automatic and continuous compressibility compensation for solvents to be used. No manual intervention.
j) For method development and gradient profiling, there must be a provision of different gradient curves like linear, step, exponential, concave, convex etc.
k) Flow rate accuracy: ±1%, Precision: <0.1% RSD or better
l) Compositional precision: ≤ 0.2% RSD
m) pH range: 1 to 12 or higher

2. **Sample Manager:**

a) Type of Sample Manager having Rheodyne injector with flow through needle technology: Automatic
b) Injection volume range: 0.1 to 50.0 µL or higher
c) Integrated and programmable Injection needle wash along with temperature control from 4°C to 40 °C.
d) Injector precision: Less than 0.25% RSD in 5.0 to 1000.0 µL volume range.
e) Equipped with Auto-Dilution, Auto-Addition and Load Ahead capabilities.
f) Sample carryover: ≤ 0.002%.
g) Sample compartment temperature: 4°C to 40 °C.
h) The injector must have the ability to dilute samples, withdraw from several sample vials and dispense into a single vial automatically.
i) The sample compartment must be able to accommodate HPLC vials having 90 vials (minimum).

3. **HPLC THERMAL COLUMN MANAGEMENT**

a) Column compartment dimensions: Length: 300 mm; Width: 4.6 mm ID
b) Column compartment temperature must be up to 65 °C or higher with Peltier control; temperature accuracy: ± 0.5 °C & temperature stability of ± 0.3 °C.
c) Column usage history tracking technology must be associated with the column so that all the information related to number of injections; solvent consumption, temperature, pressure etc. should be available electronically.

4. **PHOTO DIODE ARRAY DETECTOR:**

a) Wavelength range: 190-800 nm; Wavelength Repeatability: ± 0.1 nm; Wavelength accuracy: ± 1 nm.

b) Optical resolution: 1.2 nm or better with 2D & 3D operating mode
c) Light source: Single Deuterium/Tungsten lamp covering entire range; Lamp should have life of 2000 hrs with warranty. It should be associated with Lamp optimization software.
d) Flow cell design: Taper /Tapered Slit.
e) Flow cell volume: < 10 µl.
f) Sensitivity: 0.0001 – 2.0000 AUFS.

**5. Automated Mass Detector**

a) Mass Range: 30 to 1250 m/z or higher.
b) Ionization source: Automatic tuning without any user interference.
c) Should have ability to switch between positive and negative ion modes
d) All the calibrations and tunings should be auto generated by the system. The startup time should be within 30 minutes.
e) The Mass Detector must have a facility to switch ON/OFF with minimum time for switching ON being within 30 minutes.
f) Ion source: Dual off-axis ion guides to remove neutral particles for avoiding matrix interference.
g) The linearity of response must be four orders or higher relative to the sample concentration.
h) Mass resolutions: 0.5 Da or higher
i) Signal to noise ratio for average m/z should be 2000: 1 or better for 100 pg or lesser reserpine.
j) Fully automated mass calibration and verification along with mass resolution control and verification.
k) Detector:
i) Should be photomultiplier detector or equivalent. It should be maintenance free and the positioning of the detector should be in orthogonal with the mass analyzer. Also, the lifetime of the detector should be a minimum of 10 years.
ii) It should come with a clean, differentially pumped, automated vacuum system comprising air-cooled split flow turbomolecular pump and integrated dry (oil-free) exhaust-free vacuum backing pump.
j) Automated acquisition: Automatically optimized single ion recording (SIR)/selected ion monitoring (SIM) and full scan (FS) analysis in m/z range 30-1250 or higher for enhanced data quality for required spectra or points per second (Hz).
k) Simultaneous SIR/SIM and FS modes: The ability to acquire both FS and SIR/SIM at the same time to obtain qualitative and targeted information should be present.
l) SIR/SIM acquisition rate must be automatically optimized for enhanced data quality up to 100Hz or higher.
m) In-source fragmentation experiment: The ability to run functions in a single experiment with varying cone (or equivalent) voltages.
n) Necessary startup kits along with proper tees and splitter must be provided for smooth running of the instrument so that both PDA and Mass Detectors can be utilized simultaneously.

**6. Original Manufacturer's License Software**

The software should have capabilities to perform the following functions:

i) Automated mass calibration, resolution, sensitivity check.
ii) Software tools for addressing screening and component Identification.
iii) Technology for system optimization and status monitoring.
iv) Automated SIR method development.
v) LC/MS system checks-automated on-column performance test.

7. **Workstation and Accessories**

A Workstation should be provided for controlling the mass spectrometer. The LC and the auto-sampler with data acquisition and for data processing as well as analysis is required with following specification: RAM: 60 GB or higher; Hard disk: 10 TB or higher; CPU: Dual-Processor; 3.5 GHz or better; Operating system: Windows 10, 64 - bit or better; one LCD monitor, one Laser jet printer. All hardware and software including drivers, monitor, device interfaces cards/network must be preinstalled and preconfigured on the computer provided.

8. **Nitrogen Generator**

i) A Nitrogen Generator with integrated compressor designed specifically for use with LC/MS instruments must be mentioned.
ii) Specification of the generator: Maximum Outlet Gas Flow – 20 to 30 L/min, Maximum Outlet Gas Pressure - 8 to 10 bar.

9. **UPS**

A suitable 7.5 KVA online UPS with minimum 30 minutes back up is required along with the instruments.

10. **Power Requirement**

It should be safely operable on 400 V ± 5% VAC, 50 ± 3% Hz, three phase 4 wire power line in 32 Amp

11. **Installation and Commissioning**

Installation and commissioning of the LC-MS and training for the equipment should be provided to CSIR-CGCRI, Kolkata – 32 personnel.

12. **Documents to be supplied**

a) Detailed instruction and operational manual along with diagram
b) Operational and preventive maintenance with trouble shooting manuals
c) Warranty and installation certificate

13. **Delivery Period**

90 days from the date of establishment of LC

14. **Warranty**

1 year comprehensive warranty after successful installation and commissioning + 2 years extended warranty on chargeable basis.

**Clause No. 8.6 and SCC Sl. No. 5 of Tender Document may be read as follows:-**

**Delivery of Materials :**

Delivery of all ordered materials is to be made **within 90 days** from the date of establishment of Letter of Credit / Inland Letter of Credit.

The above amendments shall amount to amendments of the relevant terms of our Bid Document for CGCRI Tender No. **P/NC/45/AM/DB(SKM)/GTE/22-23.**

All the other Tender terms remain unchanged.

16.09.2022

**(Anjani Kr. Pandey)**
**Stores & Purchase Officer**

अंजनी कुमार पाण्डेय/Anjani Kumar Pandey
भण्डार एवं क्रय अधिकारी/Stores & Purchase Officer
सीएसआईआर - केन्द्रीय काँच एवं सिरामिक अनुसंधान संस्थान
CSIR - CENTRAL GLASS & CERAMIC RESEARCH INSTITUTE
196, राजा एस. सी. मल्लिक रोड / 196, Raja S. C. Mullick Road
कोलकाता / Kolkata- 700 032