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CORRIGENDUM

This has reference to our Tender No. 8/I/NIPGR/S&P/2018-19 towards supply and installation of **GC-MS**. In this context, this is to mention that the dates for submission/opening of Tenders have been revised and extended upto **9/8/2018** (3.00 P.M/3.30 P.M respectively).
Placed below are the revised specifications, however, all other terms and conditions of the tender remain unchanged.

Specification for GC-MS

Triple quadrupole Gas Chromatograph mass spectrometer (Top-of-the-line latest model) with windows base software is needed for qualitative and quantitative analysis of samples for wide range of application in plant biology including targeted metabolomics, plant volatile organic compound measurements. The system must reliably detect ultra-trace quantities of ions, down to the femtogram level, achieving the highest sensitivity levels.

Compliance of system for measurement techniques

It must include a Triple Quadrupole Gas Chromatograph with two injection ports, FID detector, and Triple Quadrupole mass spectrometer with EI and liquid Auto Injector/Sampler and PC workstation with licensed software.

The system should have the following specifications:

a) Injector (s)

1) GC should have one Split/ Splitless inlet and one Programmable Temperature inlet
2) Split/splitless injection unit must be electronically controlled
3) Programmable temperature injector (PTV) should have electronic flow control and suitable for large volume injection (LVI upto 100uL or better) & for thermo labile compounds
4) Cool on column (COC)/on-column injection (OCI) facility or equivalent injector facility may be quoted as optional
5) Inlet should have advanced electronic flow control modules with pressure set points adjustable in increments of 0.001 psi and pressure range up to 100 psi or better
6) The temperature range should be upto 400^{o} C or higher
7) Suitable for all capillary columns from 0.1mm to 0.53mm internal diameter.
8) Equipped with electronically controlled On / Off valves for split and septum purge lines
9) Fully automated liquid auto injector / auto sampler for minimum 100 vials or better
10) It should inject from 0.1 µL to 100 µL or better with variable speed.
11) Remote controlled, cooled injection system.
12) It should have easy-stop function which can easily perform maintenance on injection port inserts and septum safely, without stopping the GC-MS unit.
13) Digital display of gas flow, temperature with electronic pneumatic control /advance flow control through computer software

b) Column Oven

1) Operating temp range of column oven from near ambient to 450°C
2) Column oven should have provision to install two or more columns.
3) Column overheat protection must be present
4) Column oven temperature ramp rate should be120°C or better.

5) Ramped heating program, 10 or more ramp and dwell times/multi-step temperature programming
6) Should be equipped with fast heating and cooling system
7) GC oven cooling time must be rapid without using any insert or accessories
8) Cool down rate from 450°C to 50°C within 4 minutes or less.
9) System should have gas saver mode to reduce gas consumption without compromising Performance.
10) GC should have inbuilt/post column back flush facility.

c) FID (Flame Ionization Detector):

1) Minimum detectable level 1.5pg C/sec (for Tridecane /Dodecane)

2) 450 °C maximum operating temperature.

3) Dynamic Range : $> 10^6$ or preferably more

d) Thermal Desorption system

1) Fully automated Thermal desorption unit to be attached to the GC/MS for dynamic sampling
2) Minimum 50 TD sample tube carousal/tray or better with complete software control.
3) Should be provided with 20 filled and 10 unfilled TD (89mm) tubes for VOC estimation along with caps and O-rings
4) Company should provide servicing for TD Equipment
5) Portable sample collection device (battery operated) to be connected with TD tubes for rapid collection of samples.
6) The TD system must be compatible with samples containing trace (i.e. sub ppt) and high (ppm / low %) concentration levels

e) MS-MS Detector

i) Triple-Quadrupole Mass Analyzer:

a. Mass range<10-1000 or more (da or amu or u)
b. Mass Analyzer- Quadrupole mass filter with pre-rods or equivalent quadrupole technology
c. Quadrupole should be designed to achieve optimum mass filtering and reduce noise
d. Mass Resolution-minimum 0.7 amu or better, Mass Stability 0.1 u/24 hours or more (constant temperature)
e. Sensitivity and capability: EI full scan sensitivity 1.0pg OFN> 1500:1 and guaranteed installation specs for MRM sensitivity 100fg OFN, S/N> 30000:1 or more using 30 m column.
f. MRM Accuracy: Octafluoronaphthalene (OFN) 8 times 2fg IDL ≦ 0.5fg (helium gas) m/z 272 → 222 with 30m column
g. Maximum Collision Energy should be 60 eV
h. Collision Gas should be Argon / Nitrogen or equivalent.
i. GC transfer line (interface) temperature Settable up to 350°C
j. Scan rate 20,000 amu/second or more
k. Should provide both SIM (Selected Ion Monitoring) and MRM (Multiple Reaction Monitoring)
l. MRM speed (transitions/sec) 800 MRM/Sec or more (no factory upgradation allow).
m. Simultaneous analysis of SRM or MRM with full SCAN/SIM and SCAN in one injection
n. Minimum Dwell Time< 0.5 msec

ii) Ion Source.

a. Ionization mode-EI (standard)
b. Electron Energy: 10-150 eV (user selectable)
c. During tuning, the three sensitivity modes (high-concentration mode, standard mode, and high-sensitivity mode) can be selected.

iii) Detector:

a. Sealed long-life electron multiplier
b. Must have wide dynamic range

iv) Vacuum System: It should have high performance turbo molecular pump.

f) Software

1. Should provide the latest version of NIST 2017 library with license number, and Software for routine GC, GC-MS quantification. Wiley (latest version) must be quoted as optional
2. Independent software for MRM Metabolomics database or equivalent with separate part nos. should be provided to perform relative & absolute quantification.
3. Software should be able to perform the statistical analysis like PCA plot.
4. Original and licensed universal perpetual software and all interfacing hardware and software for instrument control, data acquisition and data processing must be supplied compatible to the GC-MS/MS system.

g) Columns

1) 1 Fused silica column (30 m x 0.32 mm ID, 0.25µ) 5% Diphenyl/95% Dimethyl Polysiloxane or similar should be provided
2) 1 number 5MS GC column (30 m x 0.25 mm ID, 0.25µ) equivalent to DB-5-MS or similar should be provided
3) Fused silica column (60 m x 0.25 mm ID, 0.25µ)) cross linked 5% phenyl methyl silicon equivalent to DB-5-MS- 1 Nos or similar should be provided
4) 1 WAX column (30 m long, 0.25 mm i.d., 0.25 µm film thickness)
5) General columns - EC-5, DB-1, TG-5 column or equivalent – 1 Nos. each may be quoted as optional

Accessories

1. Calibration kits should be quoted.
2. Gas Cylinder with regulator for Helium, hydrogen, nitrogen, argon and zero air (two sets each) and gas purification panel and regulators for all gases must be provided and installed.
3. SPME Syringes (5ul and 10ul- 5 nos each), Filaments (10 Nos.), Septa (100 Nos), glass inserts split (1 Nos.), glass inserts splitless (1 Nos.), Liquid autosampler vials of 1.5 ml with caps (2000 Nos.), Vespel ferrules (10 Nos.), nut slit (5 Nos.), etc. to be included in the offer.
4. MS system should be provided with 2 computers- 01 for data acquisition and 01 for data processing, 1 printer (Heavy duty, Color and Auto duplex) and 2 UPS each and compatible with GC-MS libraries and with latest and compatible operating system which can be upgradable at no extra cost. The PC should have following minimum specification or better (PC 27" monitor, iCore7, 32 GB RAM, 1 TB HDD) or better.
5. Online 10 KVA UPS with 60 minute backup for GC-MS system must be supplied
6. Company should provide a trained and qualified person (Post graduation or higher) for functioning and maintenance of the instrument at NIPGR (full time) for 1 year after installation. Manpower for 2nd year to be quoted as optional.
7. Vendor should assure the availability of the spares for next 10 years from the date of installation.
8. Only Principal/Manufacturer or authorized supplier should quote.
9. All specification must be supported by the official brochures from the company.
10. Provide list of installations in leading Indian universities/institutes.

Warranty:

1. 5 Year comprehensive warranty should be quoted for the whole instrument and parts. Comprehensive warranty should be provided by principal equipment manufacturer and for all other related accessories including but not limited to third party supplies.
2. Instruments must be attended within 48 hr in case of any breakdown. The uptime for the facility should be 95% per year or more.
3. Two preventive maintenances for the complete platform should be performed every year during the warranty period.

Installation and Training

Complete systems should be installed and commissioned at NIPGR. After successful installation selected scientific/technical personnel from NIPGR should be provided with hands-on and in-depth training on the operation and maintenance of the system as well as specific application training by factory engineers and application specialists for not less than 10 days.

Optional:

1. SPME holders and its accessories must be quoted as optional
2. A separate heating oven of 100 lit or more volume (max. temperature at least 210 °C) may be quoted as optional.
3. CMC for additional 5 years post warranty should be optionally quoted year wise.

Corrigendum for GC-MS tender after pre-bid

1) Injector-
    a) Proprietary term MMI deleted
    b) Added *or equivalent injector facility* - Cool on column (COC)/on-column injection (OCI) facility **or equivalent injector facility** may be quoted as optional
    c) Changed the capillary column diameter- from 0.1mm to 0.53mm internal diameter
    d) Changed auto sampler vial number- Auto injector/auto sampler for minimum 100 vials or better
2) Column Oven
    a) Added GC should have inbuilt/**post-column** back flush capacity
3) Thermal Desorption system
    a) Term headspace deleted
    b) Added tray or better to TD sample tube
4) MS-MS detector
    a) Deleted term *metal* from quadrupole mass filter as its proprietary term
    b) Added a general sentence that quadrupole should be designed to achieve optimum mass filtering and reduce noise
    c) Added *30m column* in MRM accuracy
    d) In ion source deleted point number c, e and f as they are very specific
    e) In detector removed point b
5) Columns
    a) added the column chemistry for fused silica columns (30m) and (60m)

6) Software- Added MRM metabolomics database *or equivalent*

6) Accessories
    a) SPME holders and accessories shifted to optional
    b) Manpower- 1 year full time asked for and for 2nd year changed to optional
7) Software-MRM database or "equivalent" added.