

## CORRIGENDUM

**1. After concluding the prebid meeting on 23.04.19 the technical specifications of the following equipments have been modified. The modified specifications are as follow.**

### **I. FLUORESCENCE MICROSCOPE**

<b>S.No.</b>	<b>Features</b>	<b>Specifications</b>
1	Stand	<p>Rugged and sturdy inverted stand with low positioned co-axial coarse and fine focus (with 1 micron scaling) knobs with harmonic focusing.</p> <p>It should have built-in electronic power supply for 12V / 100W <del>or LED</del>. Illuminator with conveniently positioned ON/OFF switch and regulating knob.</p> <p>It should have appropriate port and provision for mounting a digital scientific (<del>or SLR</del>) camera for image capturing.</p> <p>This port shall have two beam splitting positions for (1) observation only and (2) part documentation part observation.</p>
2	Optics	<p>The microscope should be suitable for bright field / phase contrast /<del>DIC</del>/ Epifluorescence techniques. Microscope should have infinity color- corrected <del>system (ICS)</del> optics with high contrast and resolution.</p>
3	Nosepiece	<p>Focusable <del>Sextuple</del> revolving objective nosepiece (should accommodate <del>up to 6</del> at least 4 objectives). <del>The nosepiece should have slots for DIC sliders.</del></p>
4	Microscopic stage	<p>Large stage plate with attachable stage of travel range of at least 120 mm X 75 mm.</p> <p>Universal Mounting frame: Shall be able to hold petridishes of size 35-60 mm, <del>6 well tissue culture plate</del> and specimen slides.</p>
5	Observation tube	<p>Binocular tube 45° with field of view of <del>23 mm</del> <del>22</del> or above with swiveling eyepiece tubes with I.P.D. adjustable range at 55-75 mm.</p>

6	Illumination (for bright field)	<p>Built-in illumination with easily changeable <b>metal halide lamp (or LED lamp must be under optional item)</b>. Shall include all types of filters for  340-400nm UV regions;  400-700 nm colour regions and  over 700 nm infrared regions of the spectrum.</p> <p><b>System should be configured for fluorescence applications with dyes DAPI (Ex- 357/44 nm, Em-447/60 nm), GFP/FITC (Ex-470/22 nm, Em-510/42nm), RFP/Cy3/TRITC (Ex-531/40 nm, Em-593/40nm) with suitable dichromatic beam splitter / hard coated band pass filters.</b></p> <p><del>Excitation filters (UV, V, B and G filters) and emission filters/barrier filters (blue or pale yellow in the U-block; green or deep yellow in the B-block; and orange or red in the G-block) with suitable dichromatic beam splitter.</del></p>
7	Condenser	<p>Long working distance condenser with appropriate aperture value with turret comprising aperture diaphragm for bright field, phase stops Ph1, Ph 2 and Ph 3. <del>,-DIC prisms.</del> Shall be compatible with all the filters for epifluorescence as well. Covering 5x-100x range for objectives</p>
8	Objective	<p>Long working distance objectives with high contrast and resolution common for bright field, fluorescence and phase contrast. <del>and DIC technique.</del>  Magnification: <del>5x/10x/20x/</del>40x/100x (adaptable for 5, 10, and 20 X magnification at later stage)  Type: <del>plan-achromat/flour/</del>apochromat</p>
9	Eyepiece	<p>Wide field focusing eyepieces with <del>23mm</del> 22 mm or above field of view with soft rubber eyecups and should be suitable for spectacle wearers.</p> <p>Eyepieces should be suitable for graticule insertion.</p>
10	<del>DIC attachment</del>	<p><del>Complete DIC module with appropriate sliders, polarizer and analyzer that is compatible with quoted objectives. DIC module shall be compatible with plastic petridishes and 96 well plates- 6well plates</del></p>
11	Fluorescence illumination	<p>The reflected light path should be <b>apochromatically</b> corrected for all wavelength. <b>Metal halide</b> fluorescence illumination with a life time of <b>minimum of 3000 hrs.</b> <del>more than 25000 hrs.</del>  Suitable for DAPI, GFP/FITC, TRITC/ Rhodamine</p> <p><b>LED fluorescence illumination can be quoted under optional item.</b></p> <p><b>Coupon for spare lamp must be quoted under optional items</b></p>

12	Camera	Peltier cooled CCD/CMOS camera <del>having dual mode Mono and colour</del> with higher resolution ( <del>≥5MP</del> 3MP) and pixel size value not exceeding 6 μm to document color images. <del>approximately-3.4 μm X 3.4μm</del> Exp. Time: 1msec to 600 sec or <del>better</del> customizable.
13	Fluorescence filter assembly	<del>6 position reflector turret.</del> 4 or more positions for fluorescent filter. The filters should be easily insertable and removable in the reflector by Push & Click method.
14	Software	Compatible licensed software for image processing like annotation, measurement, counting, merging of different filter images and time laps.
15	Accessories	System should be supplied with necessary tools and accessories for filter/optics change and maintenance of microscope.  An undertaking that the vendor will supply all the spares and services for the equipment for at least 5 years from the date of commissioning.

## II. LIQUID NITROGEN DEWAR

Features	Technical Specifications
Capacity	30-35 liter
Static evaporation rate	0.2 to 0.25 liter/day with suitable neck opening
Static holding time	≥ 90 days
Accessories	Suitable canister, side rubber rings, bottom pad and trolley, optional-dispensing unit
Vacuum warranty	Minimum 5 years

## III. TENSILE STRENGTH TESTER

Load capacity	: 5 KN
Test machine	: Single column
Test speed	: 0.001 to 500mm/min
Probe	: 500N and 1KN
Gripping width	: 50mm
Stroke	: above 500 mm
Power supply	: 220VAV 50Hz

### Grip accessories

- Tensile Wedge grip: load cell min 250N, max thickness 8mm
- Compression: 50mm plate, 100mm plate and 15mm plate
- Flex grip: length 50mm and dia 10mm

- 180degree peel fixture: Test plate length 200mm
- Puncture attachment ASTM D5748

Optional features: Micro printer, system (8GB RAM, 500 GB hard disk, windows operate), software, control devices and other testing

Measure tensile, peeling, tearing, heat sealing, adhesive, puncture force of plastic films, plastic flexible multilayer materials, soft package materials, adhesive tape, aluminium foil, non-woven fabrics, rubber, paper, etc

## **2. Specifications of the following equipments have been further modified depending upon the needs.**

### **I. GC – MS / MS**

#### **GC-MS/MS (Triple Quadrupole) Head Space with fully automated SPME**

##### **GC system**

A compact high sensitive GC-MS/MS system suitable for the analysis of Organochlorine pesticides, Organophosphorous pesticides, Synthetic Pyrethroids, PCBs and VOCs in food products and water at <1 ppb level with user friendly software. The system should have a Triple Quadrupole geometry, capable of carrying out MS and MS/MS experiments.

##### **Column oven**

The system should have All temperature and time functions controlled by microprocessor-controller /Suitable softwares and should show on the touch- screen display.

- Temperature: Operating Range Ambient +4°C to 450°C
- Heating rate: from 50 to 450 °C within 5 min.
- Cooling down rate: from 450 to 50 °C in less than 5 min.
- Temperature programming facility.
- Ramps : minimum 15 ramps with 16 plateaus or more
- Maximum inlet temperature ramp rate : 120 degree C / minute or better for all voltages  
Should have oven power safety(power off when door is open)

##### **Column**

GC capillary column having dimensions; 30 meter length, 0.25mm I.D. and 0.25µm film thickness.

- Dimensions; 30m x 0.250mm x 0.25µm
- □HP-5MS/ DB-1MS or equivalent) (02 no.)
- DB-5/ HP-5 or equivalent (01 No)
- DB 1301 or equivalent (01 No)

##### **Inlet**

The system should have

- Programmable Temperature Vaporizer (PTV)/ One S/SL
- Temperature ramped split / splitless and large volume injection modes.
- Electronic pressure/ flow control.
- Pressure setting range 0 to 100psi or more

## MS/MS System

The system should have

- **Mass range:** Quadrupole 10 to 1000 amu or more.
- **Mass resolution:** minimum 0.7 (width at half height).
- **Mass axis stability:**  $\pm 0.1$  amu over 24 hours or more
- **Linear Dynamic range:** minimum 6th order of magnitude.
- **Scan rate (electronic):** 20000 amu/sec or better

**Ionization modes:** Independent EI Source (Electron Ionization) and Independent CI Source (chemical Ionization) modes (Negative chemical ionization (NCI) and positive chemical ionization (PCI) . Ion source should have heating capacity of 350°C or more.

- CI: must be capable to operate with different reagent gasses & electronic flow control for reagent gasses. Methane as CI reagent Gas to be offered
- Collision cell gas pressure must be electronically/Software controllable.
- Collision energy must be variable.

### Scan Modes:

- i. Should be able to do Scan, SIM, MRM/SRM, Parent ion scan, Product ion Scan, and Neutral loss scan-time segment based.
- ii. Simultaneous Full Scan-SIM or Full Scan/MRM or SRM whenever required.
- iii. SRM/MRM Speed: minimum of 800 MRM/sec
- iv. Minimum MRM dwell time of 0.5 milliseconds or better.
  - Installation checkout sensitivity must be better than –
  - Instrument detection limit: 4 fg or less octafluoronaphthalene (OFN)
  - EI Scan sensitivity : 1  $\mu$ l of 1 pg/ $\mu$ l Octafluoronaphthalene (OFN) should give S/N greater than 1000:1 in scan mode 1  $\mu$ l injection from m/z 50 to 300 for m/z 272.
  - EI MRM Sensitivity : 1  $\mu$ L of 100 fg/ $\mu$ L Octafluoronaphthalene (OFN) should produce the following minimum signal-to-noise for the transition from m/z 272 to m/z 222: 6,000:1 or better on 30 mt. column.
  - Turbomolecular pump: Air cooled turbomolecular pumps, Rotary vane fore-line pumps supporting the turbo- molecular vacuum pump
  - Noise reduction cover for fore line pump.
  - Software controlled auto-tune or manual-tune to enable quick start-up for quantitative analysis.
  - Independently heated GC / MS interface.

- Extended dynamic range Electron Multiplier or off-axis high-energy detector with configuration to direct the charged ion of interest away from the neutrals with long life and better sensitivity.
- The instrument supplier has to demonstrate that the machine is suitable for the analysis of Organo-chlorine pesticides, Organo-phosphorous pesticides, Synthetic Pyrethroids, PCBs and VOCs in Fish, vegetables and water at < 1ppb level.

### **System Controller and Operating system**

- Should have capability to run the mass spectrometer in all the modes specified in Scan mode.
- Data acquisition, integration, calibration, quantification and QC calculations must be automated
- Manual and Auto tune options should be provided.
- Automatic MRM/SRM method Development
- NIST latest release and 'MassWorks' for MS formula ID must be included in the offer.
- Pesticides and endocrine disruptors, PCB's, VOC's, Fatty Acid Methyl Esters, and artificial flavors. MRM Database for minimum 800 GC molecules
- Only 21 CFR Part 11 feature in the software for food safety compliance., ( Audit trail feature may not be required )

### **Mass Libraries –**

Should have Latest version of licenced NIST 17 library, Licenced full version Wiley Library 11th edition

- ❖ Wiley Flavors/Fragrances (FFNSC)
- ❖ Wiley FAMEs Fatty Acid Methyl Esters: Mass Spectral Database

### **Quantitative analysis- Qualitative analysis Features**

- Imports information directly from the acquisition method
- Provides a curve-fit assistant to test all fits and statistics on curve quality
- Integrates with an automated, parameter-free integrator that uses a novel algorithm, optimized for triple Quadra pole data
- For fast method development, this software is used to quickly review the qualitative aspects of the data, such as the optimum precursor to product ion transitions.
- Qualitative Analysis program to present large amounts of data for review in one central location.

- Extract chromatograms
- View and extract peak spectra
- Subtract background
- Integrate the chromatogram
- Find compounds

### **Nitrogen Concentrator**

The system should be provided with a suitable Nitrogen evaporator system of 20- 25 samples processing capacity in one batch along with proper fume hood system. The specification along with the model should be provided at the time of tendering.

### **Ultra sonicator**

The system should be provided with a ultra sonic water bath system (3-5 lit) of extraction solvent cleaning purpose. The specification along with the model should be provided at the time of tendering.

### **Fully automated Auto sampler with Head space and SPME**

#### **SPME**

Only SPME kit -5 nos, (each with 2 fibres for both volatile and semi volatile to be offered ) .Must perform automated SPME. Must include SPME fibre conditioning module. Head space Syringe -1 ml, 2.5ml and 5ml. SPME vial with cap and Septa 10 ml- 1000 nos, SPME vial with cap and Septa 20 ml- 1000 nos

#### **❖ VERSION FOR LIQUIDS**

Must be able to house up to 150 2-mL sample vials Must allow installation of two needle length syringes, so to be able to address any injection mode or injector type. Must allow installation and automation of syringes featuring volumes from 0.5 to 2000 µl. Must handle any Large Volume injection techniques.

#### **❖ VERSION FOR HEADSPACE**

Must allow housing of up to 60-positions sample trays Must allow headspace injection without using any transfer line or loop valve. Must include an incubation/ agitation oven, to be heated up to 200°C, and featuring 6 positions for 10/20 ml vials. The syringe must be heated and feature a gas line for purging with inert gas, when required. Must allow installation and automation of gas tight syringes featuring volumes from 1 to 5 mL. Minimum headspace injection volume of 0.1 ml.



## Accessories

- GC capillary column having dimensions; DB-624, 30-meter length, 0.25mm I.D. and 0.25 $\mu$ m film thickness – 1No
- Required gas cylinders (with requisite certificate) for Helium and Argon or Equivalent (5 each) should be provided with accessories like Gas regulators and gas purification system etc.,
- Required Gas regulators and gas purification systems should be provided, installed and commissioned for all the gases used in the instrument including gas tubing, manifold.
- Gas purification panel with following cylinders and appropriate dual stage steel diaphragms regulators (two for each type of gas) :
  - i. Helium ( $\geq 99.9995\%$ ) – 4No.'s
  - ii. Argon / Nitrogen (99.999%)-2No.'s
  - iii. Nitrogen (99.999%) – 2No.'s
  - iv. Methane ((99.999%) – 2No.'s
- QuEChERS Kits AOAC Method - QuEChERS Extract with Tubes (200 nos), Dispersive 2 ml, Universal kit, 100/pk (200 nos each) for Pesticides etc in different matrices:
- SPE Cartridges Silca & C18 (300nos each)
- Consumables for operation of the system for main unit are required to be quoted for analysis in multiples samples.
  - ❖ Column Ferrules- injector end and interface end (20 No. each).
  - ❖ Septa for injector (25 No.).
  - ❖ Appropriate nuts to fit capillary columns to the injector and MS interface (2 each).
  - ❖ Inlet liner for Splitless, Split (with glass/quartz wool at optimum position) and PTV (with glass/quartz wool at optimum position) (10 No. each)
  - ❖ O-ring for injector liner (20 No.)
  - ❖ Split vent trap (2 No.)
  - ❖ EI Filaments (5 No.) & CI Filaments (5 No.) –Total 5 pairs
  - ❖ Column cutter (2 No.)
  - ❖ Gas tube cutter.
  - ❖ Oil mist trap for pump (2 No.).
  - ❖ Tool kit.
- Operation kit comprising all required items for startup/regular operation of instrument.

## Computer System

Processor: Core i7 8 generation

RAM: 16 GB

Hard disk: 1 TB

Monitor: 21.5 "

OS: Windows 10 pro (Optional)

Graphics Card: 4 GB (Optional)

## II. PROBE SONICATOR

Features	Specifications
Display	Digital Microprocessor Controlled Programmable System
System type	Standard Detachable Anti-corrosive probe Minimum two probes Horn made up of titanium
<b>Power</b>	<b>750 W</b>
Frequency	20kHz
Temperature	10-80 °C
Volume range	5-200 ml
Time range	30 sec to 1 hour
Programs setting	5Nos, Cyclic On/Off Timer
Other requirements	Stand mounted device combining generator (power supply) and transducer (Converter) in single housing Adjustable table to hold the sample <b>Provision to upgrade the probes</b>
Accessories	Toolkit to fix different horns, sound protection boxes made preferably made up of wood and vinyl based material with adjustable table
Warranty	Minimum 1 year

### III. COOLING CENTRIFUGE

Features	Specifications
Display	Digital For setting RPM, time and temperature
Speed(max)	20000-22000 $\times$ -g rpm
Temperature	-10 °C to 40°C
Safety system	Rotor identification or indication Lid interlock to prevent cover opening during centrifugation Overcurrent overheating safety cutoff for motor protection
Control system	Dynamic brake and imbalance detector with cutoff
Angle rotors	Rotors for 2 ml, 15 ml & 50 ml
Number of tubes	For 2ml – minimum 24 Nos For 15ml & 50ml- minimum 6 Nos each
Certifications	US FDA

### IV. OXYGEN TRANSMISSION RATE ANALYSER

#### Oxygen Transmission Rate analyzer/oxygen permeability tester

##### Technical specifications

Test range : 0.05 to 2000 cm<sup>3</sup>/m<sup>2</sup>.day

Number of specimen : 1

Repeatability :  $\pm$ 2%

Test method : Coulometric

Fil area : 50Cm<sup>2</sup>

Temperature range : 15 to 40°C

Temperature accuracy:  $\pm$ 0.2°C

Humidity range : 5-90% RH

Test gas : Air or O<sub>2</sub>

Specimen size :  $\phi$  100-110 mm

Optional features: Micro printer, software, control devices and indicators, accessories for package test, sample preparation kits and reference film etc.

Applications: food packaging materials including plastic films, multilayer film, extruded films, metalized film, aluminum foil and others.

Test instrument conforms to the following standards ISO 15105-2, ASTM D3985, ASTM F2622, ASTM F1307, ASTM F1927, GB/T 19789

**3. The standard warranty period, charges for additional warranty and AMC / CMC should be strictly as per the clause 10 given in page no. 5 of the tender document under the head instruction to the tenderers.**