

TENDER
FOR
SUPPLY & INSTALLATION OF
INSTRUMENTS FOR CHARACTERIZATION LAB
SCHOOL OF BASIC SCIENCES, IIT MANDI



Tender No.: IITMANDI/SBS/TEN/2010-11/CHRLAB/1

Tender date: December 01, 2010

Last Date of submission: December 23, 2010

Indian Institute of Technology, Mandi

Transit Campus: Mandav Hotel, 2nd Floor (Near Bus Stand), Mandi – 175001 (H.P)

Tel.: 01905-237917/7926/7931 **email:** sbs_office@iitmandi.ac.in

Indian Institute of Technology (IIT) Mandi, Mandi invites tender for supply, erection, installation and commissioning, testing, demonstration and training of Characterization Laboratory Equipments, as per specifications given in the Schedule attached to the Tender form annexed hereto. All offers should be made in English and should be written in both figures and words. Tender forms can be downloaded from the website (<http://iitmandi.ac.in/administration/tenderseoi.html>) of the Institute.

The bidders are requested to read the tender document carefully and ensure compliance with all specifications/instructions herein. Non-compliance with specifications/instructions in this document may disqualify the bidders from the tender exercise.

The Director, IIT Mandi, reserves the right to select certain item(s) (in single or multiple units) and reject the others or all mentioned in the Schedule and to reject any quotation wholly or partly without assigning any reason.

Incomplete tenders, amendments and additions to tender after opening or late tenders are liable to be ignored and rejected.

Terms and Conditions:

1. The technical and financial bids should be quoted separately and put in different sealed envelopes marked "**Technical bid**" or "**Financial bid**" as applicable. These separate bids envelopes be put in an outer envelope which should also be sealed.
2. The technical and financial bids should be submitted in duplicate. The financial bid should include the cost of main equipment/item and its accessories. If there is any separate cost for installation etc. that should be quoted separately.
3. Each individual sealed envelope as well as the outer envelope should be marked with the following reference on the top left hand corner:
"IITMANDI/SBS/TEN/2010-11/CHRLAB/1/item no./name of the equipment",
4. The printed literature and catalogue/brochure giving full technical details should be included with the technical bid to verify the specifications quoted in the tender. The bidders should submit copies of suitable documents in support of their reputation, credentials and past performance.
5. The rates should be quoted in figures (typed or printed) and cutting should be avoided. The final amount should be in figures as well as in words. If there are cuttings, they should be duly initialled, failing which the bids are liable to be rejected.
6. The technical and financial bids should be addressed to "The Director, Indian Institute of Technology Mandi, Mandi-175001 (H.P)"
7. Any bids received after **4.00 p.m. on 23rd December, 2010** shall not be considered.
8. While sending rates, the firm shall give an undertaking to the effect that the terms/conditions mentioned in the enquiry letter/Tender Notice against which the rates are being given are acceptable to the firm. In case the firms do not give this undertaking, their rates will not be considered.
9. The quotations should be given for the items in the same order as in the enquiry letter.

10. If the supplier/firm is manufacturer/authorized dealer/sole distributor of any item, the certificate to this effect should be attached.
11. The quantity shown against each item is approximate and may vary as per demand of the Institute at the time of placing order.
12. All tender documents should have to be sent through courier, speed post or registered post only. All tender documents received after this specified date and time shall not be considered. The postal address is:

“The Dean (Academics),

**Indian Institute of Technology Mandi (IIT Mandi),
Academic Block (Vallabh Degree College Campus),
Mandi – 175001 (H.P)”**

13. In the event of any dispute or difference(s) between the vendee Institute (IIT Mandi) and the vendor(s) arising out of non-supply of material or supplies not found according to specifications or any other cause whatsoever relating to the supply or purchase order before or after the supply has been executed, shall be referred to “The Director, IIT Mandi”, Mandi who may decide the matter himself or may appoint arbitrator(s) under the arbitration and conciliation Act 1996. The decision of the arbitrator shall be final and binding on both the parties.
14. The place of arbitration and the language to be used in arbitral proceedings shall be decided by the arbitrator.
15. All disputes shall be subject to Mandi Jurisdiction only.
16. All tenders in which any of the prescribed conditions is not fulfilled or any condition is put forth by the tenderer shall be summarily rejected.

The Technical bid will be opened on **December 27, 2010 at 10.00 A.M** in the Conference Room of the Academic Block. The bidders or their authorized representative may also be present during the opening of the Technical Bid, if they desire so, at their own expenses.

Price bids of only those bidders will be opened whose technical bids are found suitable by the committee appointed for the purpose. Date and time of opening of price bids will be decided after technical bids have been evaluated by the committee. Information in this regard will be posted on Institute’s web site / Notice board. No separate information shall be given to individual bidders. In exceptional situation, an authorized committee may negotiate price with the qualified bidder quoting the lowest price before awarding the contract.

1. Clarifications:

In case the bidder requires any clarification regarding the tender documents, they are requested to contact Dr. Subrata Ghosh or Dr. Pradeep Parameswaran or Dr. Chayan Kanti Nandi, Assistant Professors, IIT Mandi (e-mail: subrata@iitmandi.ac.in, pradeep@iitmandi.ac.in, chayan@iitmandi.ac.in) on or before 15/12/2010.

2. Tender Cost:

A Demand draft of Rs. 1,000/- (Rupees One Thousand only) towards non-refundable tender fee drawn in favour of "The Registrar, IIT Mandi" payable at Mandi should accompany the Technical bid document.

3. Earnest Money Deposit (EMD):

If the cost of the equipment/item is more than 5 lakhs, a refundable amount @ 2% of the quoted price as earnest money deposit (EMD) in the shape of DD drawn in favour of "The Registrar, IITMandi" payable at Mandi should accompany the Financial bid documents. Without EMD the bid will not be considered.

4. Pre – Qualification Criteria:

a. Bidders should be the manufacturer / authorized dealer. Letter of Authorization from original equipment manufacturer (OEM) on the same and specific to the tender should be enclosed.

b. An undertaking from the OEM is required stating that they would facilitate the bidder on a regular basis with technology/product updates and extend support for the warranty as well.

5. Prices:

a) The Prices quoted should be inclusive of all taxes or duties, packing, forwarding, freight, insurance, delivery and commissioning etc. at destination site (IIT Mandi, Mandi). IIT Mandi is on the course of registering with DSIR, Govt. of India and may be exempted from Custom / Excise Duty. Exemption Certificate to this effect may be issued by IIT Mandi. **Hence, prices should be quoted separately inclusive and exclusive of Customs/Excise Duty.** The rates shall be firm and final. Nothing extra shall be paid on any account.

b) In case of imported equipment(s)/item(s), the agency commission, if any, payable in Indian rupees should be mentioned separately. For imported equipment, the Letter of Credit will be opened for the amount excluding agency commission in Indian Rupees. The firm should clearly mention the address of foreign bank in the financial bid.

6. Validity:

The bid should be valid for acceptance up to a period of 180 Days. The Bidders should be ready to extend the validity, if required.

7. Delivery:

The Equipment should be delivered and installed within the period as specified in the purchase order and be ready for use within 16 weeks of the issue of purchase order unless otherwise prescribed. If the bidder fails to deliver and place any or all the Equipment or perform the service by the specified date, penalty at the rate of 1% per week of the total order value subject to the maximum of 10% of total order value will be deducted.

8. Training:

Bidders need to provide adequate training to the nominated person of IIT Mandi at their cost. IIT Mandi will not bear any training expenditure.

9. Warranty Declaration:

Bidders must give the comprehensive onsite warranty as required from the date of successful installation of Equipment against any manufacturing defects and also give the warranty declaration that "everything to be supplied by us hereunder shall be free from all defects and faults in material, workmanship and shall be of the highest quality and material of the type ordered, shall be in full conformity with the specification and shall be complete enough to carry out the experiments, as specified in the tender document."

Any deviation in the material, and the specifications from the accepted terms may liable to be rejected and the bidders need to supply all the goods in the specified form to the satisfaction / specifications specified in the order / contract and demonstrate at the their own cost.

If the cost of an equipment is above Rs. 25 lakhs, a performance bank guarantee for an amount equal to the price for the duration of the warranty period will be taken from the supplier or Indian agent.

10. **Terms of Payment:** Payment will generally be made only after delivery and satisfactory installation, testing, commissioning etc. This must be specified in the tender/quotation.

- In case of Imported supplies, payment (excluding Indian agency commission, if any) will be made through Letter of Credit.

11. **Tender expenses and documents:** All costs incurred by the bidder in the preparation of the tender shall be at the entire expense of the bidder.

12. **Tender Evaluation Criteria:** The technical bids will be opened on 27th December 2010, at 10.00 AM. After evaluation of the technical bid, the financial bid for only those offers which have qualified in the evaluation of technical bid will be opened.

13. Return of EMD:

- The earnest money of the successful bidder will be returned to them without any interest after completing the successful contract.

- The earnest money of unsuccessful bidders will be returned to them without any interest within fifteen working days after awarding the contract.

14. **Manual and documentation:** All the manuals necessary for operating and servicing the equipment (including details of electronic circuits) will have to be provided along with the instrument.

BID PARTICULARS

1. Name of the Supplier :
2. Address of the Supplier :
3. Availability of demonstration of equipment : Yes / No
4. Tender cost enclosed: : Yes/No if yes

D.D. No. _____ Bank _____ Amount _____

5. EMD enclosed : Yes / No if Yes

D.D. No. _____ Bank _____

6. Name and address of the Officer/contact person to whom all references shall be made regarding this tender enquiry.

Name :

Address :

Telephone No. :

Fax No. :

Mobile No :

e-Mail :

Web :

Annexure-1

Item No. 1: Spectrofluorometer

Qty. 01 Nos.

SPECIFICATIONS:

Optics All-reflective for focusing at all wavelengths

Source Ozone-free xenon lamp

Spectrometers: Grating (blazed at a wavelength to provide maximum light in UV and visible region) monochromators for excitation and emission (250-800 nm or better) side.

Excitation 250 nm or less to 800 nm or more, optimized in the UV

Emission 250 nm or less to 800 nm or more, optimized in the visible

Wavelength Accuracy ± 1.5 nm or better

Emission Detector Photomultiplier, range 200–850 nm

Signal to noise ratio: 450:1 or better using Raman band of water.

Available Power supply: 220/230V, 50/60 Hz

May be Upgradable for Nanosecond fluorescence lifetime

Accessories: Fluorescence polarization measurement. PC having latest configuration. Windows based Operating software should have built in features. Powder Sample Holder & Solid sample holder. Peltier cooled temperature controlled unit with temperature range from 0-90 degree C. Magnetic Stirrer Accessory, & Temperature measurement accessories.

The quoted system should be certified as complete for carrying out the following types of experiments and any necessary accessories must also be included in the quotation:

- Dynamics of DNA-protein interaction in bulk solution via FRET approach
- To characterize the fluorescence properties of DNA linked nanoparticles, organic quantum dots
- To determine the fluorescence property and quantum yield of organic and organo-inorganic molecules.
- To study the change in fluorescence property of a particular species in presence of various chemical environment (e.g., in presence of acids, bases, metal ions etc.)
- To study the change in fluorescence property of host molecules in presence of guest molecules.
- To study the change in fluorescence property of monomeric and polymeric state of a particular species.

We may need to shift the instrument to a new campus in the near future. Offer your estimate for shifting and re-installation of the instrument.

- **Three year on-site extended warranty on all parts.**
- **Annual Maintenance Contract may be quoted as optional**

Annexure-2

Item No. 2: UV-Vis Spectrophotometer

Qty. 01 Nos.

Specifications:

PC based UV-Vis Spectrophotometer with the following specifications :

Photometric System	:	Double beam optics
Photometric Accuracy	:	+/- 0.004 Abs. or better at 0.5 - 1.0 Abs & +/- 0.002 Abs. or better at 0 - 0.5 Abs
Wavelength Range	:	190 to 900 nm or more
Wavelength Accuracy	:	+/- 0.3nm or better
Wavelength Repeatability	:	+/- 0.1nm or better
Photometric range	:	Up to 5 Abs or better Transmittance, Reflectance 0 to 99.9% or better
Spectral Bandwidth	:	Selectable from 0.1 nm to 5 nm or better
Wavelength Scan Speed	:	Up to 2500 nm/min or better
Stray light	:	0.05% or less
Detector	:	Photomultiplier or silicon photodiode
Light source	:	Tungsten and Deuterium lamp
Quartz Cuvette	:	1 ml capacity 10 mm path length

Available Power supply: 220/230V, 50/60 Hz

Windows based Operating software should have built in features. PC having latest configuration, necessary software for data processing and other relevant accessories to be quoted. Powder Sample Holder & Solid sample holder. Magnetic Stirrer Accessories & Temperature measurement accessories. Peltier based temperature controller with temperature range of 0 to 90 Deg C or better must be quoted

The quoted system should be certified as complete for carrying out the following types of experiments and any necessary accessories must also be included in the quotation:

- Metal and ligand centered charge transfer transitions.
- To calculate the concentration of expressed proteins, synthesized different DNA linked nanoparticles, rods (gold or silver).
- Characterization of the surface plasmon resonance of nanomaterials via absorption techniques
- To determine the absorption property of organic and organo-inorganic materials.
- To study the change in absorption properties of a particular species in various chemical environment (for example, in presence of acids, bases, metal ions etc.)
- To study the change in absorption property in monomeric and polymeric state of a particular species.

We may need to shift the instrument to a new campus in the near future. Offer your estimate for shifting and re-installation of the instrument.

- **Three year on-site extended warranty on all parts.**
- **Annual Maintenance Contract may be quoted as optional**

Annexure-3

Item No. 3: FT-IR Spectrophotometer

Qty. 01 Nos.

Specifications:

- Spectral range : 500 – 6000 cm^{-1} or better
- Optics : should be ZnSe to work smoothly in high humidity area. Gold coated mirrors.
- Spectral resolution : 0.9 cm^{-1} or better
- Wave number accuracy: better than 0.01 cm^{-1} @ 2,000 cm^{-1}
- Sampling modules such as Universal ATR (for solid, liquid, gel, paste) and Transmission modules must be available. Change between different modules must be easy.
- All the required accessories for Transmission and Universal ATR modules should be supplied.
- Sampling modules must be automatically identified and spectral test routines must automatically start to verify accessory performance
- Spectrometer components like source, laser, detector, interferometer must be continuously monitored and the software must offer detailed information about the nature of any failure and suggest possible remedy.
- Optical components like detector and source must be electronically coded, so that these components are automatically recognized when placed in the spectrometer. Appropriate parameter must be automatically transferred to the application software.
- The system must include a replacement desiccant.
- The system must incorporate an automated internal instrument validation unit.
- SOFTWARE specifications: The instrument should be PC controlled. The software must be "all-in-one" software for data measurement, manipulation and evaluation. The software must come with a free starter library. The software must include search capabilities as well as the possibility to create user own libraries. The software must come with a quantification tool. The software must include an automatic instrument test.
- Minimum Ten years warranty on Interferometer (May be quoted separately).
- Local accessories : Suitable branded PC, Hydraulic Pellet press 15 ton, Agate & Pestle, KBr die set, Assorted Rectangular Teflon Spacers, KBr Circular Windows, Universal KBr pellet Holder, reusable desiccant pack.

- Available Input power: 220 V one phase/three Phase, 50 Hz
- The quoted system should be certified as complete for carrying out the measurement of FT-IR spectra of a variety of samples such as solids, liquids, gels etc and any necessary accessories must also be included in the quotation:

- We may need to shift the instrument to a new campus in the near future. Offer your estimate for shifting and re-installation of the instrument.
 - **Three year on-site extended warranty on all parts.**
 - **Annual Maintenance Contract may be quoted as optional**

Annexure-4

Item No. 4: Dynamic Light Scattering (DLS) with auto titrator

Qty. 01 Nos.

Specifications:

- Light scattering techniques based instrument with standard software.
- The instrument should perform particle size & zeta Potential measurements
- The system should have temperature control, giving control over the range 15 °C (ambient dependent) to 80 °C or better.
- Particle size measurement of molecules from 0.6 nm to 6 microns
- Molecular weight: 1000 to 2×10^7 Da
- The sample concentration range must be between 0.001 to 40 % by weight (or better) for sizing applications.
- The position of the sampling volume within the measurement cell must be variable, with both automatic and manual control.
- The system must utilize a backscattering arrangement.
- Zeta potential - in aqueous and non-aqueous dispersions
- Windows based Operating software should have built in features. PC having latest configuration, necessary software for data processing and other relevant accessories to be quoted.

Specifications for autotitrator

- Should be compatible with the DLS equipment
- Number of titrants connected simultaneously - minimum 2 or more
- Should have option to attach external containers for the titrant and hence the titrant volume must not be limited
- Minimum dispense volume - 0.28µL or less
- Should have a pH probe
- pH range 1 - 13
- pH calibration should be user definable
- Provision for inert gas atmosphere for sample must be there
- Sample stirrer should be inbuilt
- Materials in contact with sample should be chemically inert
- Option for sample filtering must be there
- Sample Holder

The quoted system should be certified as complete for carrying out the following types of experiments and any necessary accessories must also be included in the quotation:

- To determine the size and nature of self-assembled nano-aggregates in solution.
- To determine surfactant like properties of compounds resulting in micelles, vesicles etc.
- For particle size measurement and characterization of morphology of DNA linked nanomaterials.

We may need to shift the instrument to a new campus in the near future. Offer your estimate for shifting and re-installation of the instrument.

Optional: Any additional feature or accessories or hyphenated techniques that enhance the applications may be quoted as optional.

Three year on-site extended warranty on all parts.

Annual Maintenance Contract may be quoted as optional.

Annexure-5

Item No. 5: HPLC

Qty. 01 Nos.

Specifications:

Pump Delivery System :

- Quaternary Pump, 4 Channel Online Degasser Solvent cabinet, Four solvent bottles and cable.
- **Flow Rate:** 0.001 to 10.0 ml/min or more, with 0.001 ml increments
- **Flow Accuracy:** $\pm 1\%$ or better
- **Flow Precision:** 0.07% RSD or more
- **Operating Pressure range:** At least 0-400 bar
- **Composition precision:** $< 0.20\%$ SD, at 0.2 and 1 ml/min or better
- **Gradient formation:** Quaternary, Ternary, Binary formation and Isocratic.

Diode Array Detector: Wavelength range: 190-950 nm or more
Wavelength accuracy: ± 1.0 nm or better.

Lamp: Deuterium Lamp and Tungsten lamp (for checking wavelength).

Manual Injector: Rheodyne manual injection valve, 20 μ l sample loop, 50 μ l syringe and mounting stand

Suitable Software for controlling the HPLC and Detector and for data processing.

PC having latest configuration and other relevant accessories to be quoted

One chiralpak AD-H Column: 150x4.6x5 μ m

One chiralpak AD-H Column: 150x4.6x5 μ m

Available Input power: 220 V one phase/three Phase, 50 Hz

The quoted system should be certified as complete for carrying out the following types of experiments and any necessary accessories must also be included in the quotation:

- To study the kinetics of a reaction.
- To determine the enantiomeric excess of a reaction product (in case of asymmetric catalysis)
- To determine the diastereomeric excess of a reaction product (in case of asymmetric catalysis).
- To determine the % of impurities of a reaction product.
- To determine the no. of products present in a reaction mixture.
- To be used to purify modified DNA or expressed proteins

The equipment may also be upgraded later with different columns for different experiments.

We may need to shift the instrument to a new campus in the near future. Offer your estimate for shifting and re-installation of the instrument.

Any necessary accessories must also be included in the quotation.

- **Three year on-site extended warranty on all parts**
- **Annual Maintenance Contract may be quoted as optional**

Annexure-6

Item No. 6: Atomic Absorption Spectrophotometer (AAS)

Qty. 01 Nos.

Flame

- Wavelength range : 190 – 900 nm or better
- Focal length : 290-300 mm
- Optics. : Double beam, (echelle optics or equivalent preferable)
- Background Correction : D2 background correction
- Detector : PMT or solid state (preferable)
- Instrument should be controllable through external PC.
- Fully automatic and software programmable gas control box, automatic gas sequencing, oxidant and fuel monitoring and control.
- Software controlled safety check, fully automatic preferred.
- Computerized gas flow control
- Latest branded PC with AAS control software
- Upgradability : Fully Upgradable to Graphite furnace and autosampler
- Lamps for elements such as W, Mo, V, Nb, Li, Na, K, As, Pb, Cu, Mn, Fe should be supplied with the instrument.
- 10 cm solid titanium burner
- High temp. Acetylene - N₂O burner heads
- Air compressor, Air-acetylene filter units and regulators, N₂O regulator with preheater, gas box
- All required gas cylinders such as Acetylene cylinder, N₂O cylinder, Ar cylinder with regulators
- Air compressor with air filters for moisture, dust, oil and mist removal
- Hydride vapor generation system
- Accessories supplied by original AAS instrument manufacturer will be given preference.
- Exhaust Fume hood and vent assembly (10 Ft duct length)
- Instrument should support both HCL and EDL/Super lamps/high efficiency lamps/ultra lamps. Instrument should have in-built power supply for HCL and EDL/Super lamps/high efficiency lamps/ultra lamps.
- Available Input power: 220 V one phase/three Phase, 50 Hz
- The quoted system should be certified as complete for carrying out the quantitative estimation of various elements present in ppm levels in a sample, and any necessary accessories must also be included in the quotation.
- We may need to shift the instrument to a new campus in the near future. Offer your estimate for shifting and re-installation of the instrument.

- **Three year on-site extended warranty on all parts.**
- **Annual Maintenance Contract may be quoted as optional**

Annexure-7

Item No. 7: Electrochemical Workstation

Qty. 01 Nos.

Specifications:

Electrochemical work station (Potentiostat) with PC interface and all necessary electrochemical softwares for data acquisition and analysis supplied with latest PC and other specifications and accessories as mentioned below.

Current range: +/- 250 mA or better

Potential range: ± 10 V or better

Scan rate: at least 0.1 mV/s to 200 V/s (at 0.01 mV increment) or better

Electrochemical techniques required (minimum):

Cyclic Voltammetry, Linear Sweep Voltammetry, Differential Pulse Voltammetry, Tafel plot, Chronoamperometry, Chronocoulometry, Bulk electrolysis with Coulometry, Square Wave Voltammetry, Open circuit potential-time,

Essential Accessories

Microelectrodes (3 Nos each) : Pt, Au, Ag, GC

Working electrode (3 Nos each): Pt, Au, Ag, GC

Counter electrode (3 Nos): Pt wire

Reference Electrode, aqueous and non aqueous (3 Nos): Ag/AgCl electrode

Glass cells (3 Nos) with cell stand and other necessary attachments; gas purging assembly

Cell stand and Electrode polishing kit (2 Nos).

All necessary information and accessories (data, standards, and reference material) for calibration of the instrument must be provided. PC should be included along with necessary softwares, provision for data transfer to computer.

Available Input power: 220 V one phase/three Phase, 50 Hz

The quoted system should be certified as complete for carrying out the above mentioned Electrochemical Techniques for a sample, and any necessary accessories must also be included in the quotation:

We may need to shift the instrument to a new campus in the near future. Offer your estimate for shifting and re-installation of the instrument.

- **Three year on-site extended warranty on all parts.**
- **Annual Maintenance Contract may be quoted as optional**

Annexure-8

Item No. 8: TGA-DSC-DTA

Qty. 01 Nos.

Specifications for Simultaneous Thermogravimetric Analysis (TGA)-Differential Scanning Calorimeter (DSC) cum - Differential Thermal Analysis (DTA) instrument:

The instrument should be able to perform simultaneous TGA-DSC as well the option to perform TGA-DTA. The instrument should have options to upgrade with evolved gas analysis using FT-IR or MS.

Furnace:

- Furnace Temperature: ambient to 800 °C or higher
- Furnace opening and closing should be automatic
- Furnace heating range: 0.01 to 100 °C or better
- Temperature measurement accuracy: ± 0.1 °C or better
- Isothermal temperature holding accuracy: ± 1 °C or better
- Temperature measurement precision: ± 0.02 °C or better
- Fast cooling rates, ideally with cooling accessories
- Should be able to handle reactive gases.

Top loading balance with sample at the top and balance at the bottom

- Balance measurement range: 5 g or more
- Minimum mass measurement: 200 mg or less
- Weighing resolution : 0.02 microgram or better
- Baseline dynamic drift: less than 10 microgram per hour

DSC:

- Dynamic range: ± 175 mW minimum or better
- Resolution: minimum 10 microWatt or better
- Accuracy/precision: $\pm 2\%$ based on metal standards or better.

DTA:

- Sensitivity: 0.001 °C or better
- The thermocouples should be protected

Software:

The latest Microsoft windows based user friendly software should be supplied. The software should have the ability to data access, storage and analysis. The software should also have the ability to:

- Plot thermal curves for both TGA and DTA/DSC simultaneously against time and or/temperature.
- Calculate derivative of TG data and plot DTG curves
- Baseline correction
- DTA/DSC peak identification, integration and prepare overlay of curves
- Possibility of converting data into ASCII format and export the same for further manipulation.

Available Input power: 220 V one phase/three Phase, 50 Hz

Accessories:

Personal Computer: A windows based PC from a reputed branded manufacturer with latest, compatible licensed version of operating system and with latest hardware specifications.

Atmosphere: Options for flowing inert and/or reactive gases as well as option for vacuum atmosphere.

Sample crucibles: Entire range from aluminium (100 Nos), platinum (4), silica (4) and quartz (4) crucibles with crimping machines (if necessary).

Chiller (if necessary)

All other accessories that is essential for the running of the instrument.

The quoted system should be certified as complete for carrying out the following types of experiments and any necessary accessories must also be included in the quotation:

- Thermal stability of materials such as polymers, organic and inorganic compounds, ceramics, metals etc.
- Determination of phase transition temperature as well as enthalpy of transitions.
- Glass transition temperature determination.
- Accurate quantitative determination of volatiles in a sample.
- Three year extended warranty on all parts

Optional accessories:

Mass flow controllers: Gas handling systems including digital mass flow controllers. Separate MFCs for the flow of inert and reactive gases. Ideally the MFCs be integrated in the instrument.

Autosampler with a minimum 10 sample position may also be quoted.

Gas handling system for computerised injection of small volumes of gases may be quoted as optional.

We may need to shift the instrument to a new campus in the near future. Offer your estimate for shifting and re-installation of the instrument.

- **Annual Maintenance Contract may be quoted as optional**

Annexure-9

Item No. 9: Magnetic Susceptibility Balance

Qty. 01 Nos.

Specification:

Specifications: Manual type.

The instrument should be supplied with calibration standard tube, the necessary manuals, Software and multi-headed PSU.

The following accessories should be supplied with the instrument.

Sample Tube, normal bore (0.400 cm OD, 0.324 cm ID) X 6 Nos

Sample Tube, narrow bore (0.400 cm OD, 0.200 cm ID) X 6 Nos

Available Input power: 220 V one phase/three Phase, 50 Hz

The quoted system should be certified as complete for carrying out the room temperature magnetic susceptibility estimation experiments of powdered samples and any necessary accessories must also be included in the quotation:

Three year on-site extended warranty on all parts.

Annual Maintenance Contract may be quoted as optional