

Directorate of Research Navsari Agricultural University, Navsari-396450, Gujarat.

Tender Document

For

Purchase of Scientific Instruments

<u>NAU/DR/03-2015-16</u>

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- **Note**: 1. All documents uploaded as well as sent in physical form must BEAR PAGE NUMBERS in sequence, including sequential fresh page numbers given on each page of printed / photocopy material.
 - 2. The same page numbers are required to be mentioned in CHECK LIST provided
 - 3. Provide Photocopy proof of PAN/TIN/TAN/VAT/CST etc. which ever is applicable

Chapter 1: Tender Notice - NAU/DR/03-2015-16

Purchase of Scientific Instruments

Bids from manufacturer/supplier/company are invited for the purchase of Scientific Instruments for Navsari Agricultural University. The list of purchase items under this tender are given underneath. The bids are invited by e-tender through website **www.nprocure.com** or **au.nprocure.com**.

| Tender Fee | Rs. 1000 |
|--|--|
| Period for Bid Document Downloading & Uploading | 25/01/2016 to 15/02/2016 up to 18:00 Hrs. |
| The Last date for online tender submission | 15/02/2016 up to 18:00 Hrs |
| Last date for submission of tender fee, EMD and other documents by RPAD / Courier / Speed post | 17/02/2016 up to 17:00 Hrs |
| Bid Validity Period | 120 Days |
| Earnest Money Deposit (EMD) | As per Chapter-5 of tender document |
| Technical documents available on | www.nprocure.com / au.nprocure.com |

List of Purchase Items:

| No. | Item Name |
|-----|---|
| 1 | NITROGEN ANALYZER |
| 2 | AUTOMATIC FIBRE ESTIMATION SYSTEM (760x620x390 mm, 230 v/50 Hz) |
| 3 | VETERINARY FUNDUS IMAGING CAMERA |
| 4 | BLOOD AUTO ANALYZER |
| 5 | ATOMIC ABSORPTION SPECTROMETER |

Director of Research

Chapter 2: Instructions to bidders for Online Tender Participation

- 1. All tender documents can be downloaded free from the website http://au.nprocure.com or http://www.nprocure.com
- 2. All bids should be submitted online on the website http://au.nprocure.com or http://www.nprocure.com
- 3. All bids should be digitally signed. For the details regarding digital signature certificate and related training involved the below mentioned address should be contacted

(n)Code Solutions
A division of GNFC
301, GNFC Infotower, Bodakdev,
Ahmedabad 380054 (India)
Tel.: +91 79 26857316 / 17 / 18
Fax: +91 79 26857321
Toll Free Number: 1-800-233-1010
www.ncodesolutions.com

- 4. The user can get a copy of instructions to online participation from the website http://au.nprocure.com or http://www.nprocure.com
- 5. The service provider should register on the website through the "New User" link provided at the home page, the registration on the site should not be taken as registration or empanelment or any other form of registration with the tendering authority.
- 6. The application for training and issue of digital signature certificates should be made at least 72 hours in advance to the due date and time of tender submission.
- 7. For all queries regarding use of digital signature certificate should be addressed to personnel in M/s. (n) Code Solutions.
- 8. For all queries regarding tender (except item specification) should be addressed to personnel in tendering office address provided below.

Director of Research, Navsari Agricultural University, University Bhavan, Eru Char Rasta, Navsari – 396 450 (Gujarat) E-mail: dr@nau.in Phone / Fax No.: 02637 283160(0)

9. For queries regarding item specifications, contact concerned person as per chapter 7

Chapter 3: List of Purchase Item

| No. | Item Name |
|-----|---|
| 1 | NITROGEN ANALYZER |
| 2 | AUTOMATIC FIBRE ESTIMATION SYSTEM (760x620x390 mm, 230 v/50 Hz) |
| 3 | VETERINARY FUNDUS IMAGING CAMERA |
| 4 | BLOOD AUTO ANALYZER |
| 5 | ATOMIC ABSORPTION SPECTROMETER |

Note: Detail specifications with special terms and conditions of all above listed 05 purchase items are described under respective files mentioned in above list.

Chapter 4: Terms and Conditions

Note: Terms and Conditions listed under chapter 4 are applicable to all purchase items. In addition to this, the product specification document of items may contain additional terms and conditions applicable to respective items.

1. <u>General:</u>

- 1.1 Navsari Agricultural University (hereinafter referred to as "NAU"), for its various Departments (hereinafter referred to as "the purchaser") for their requirement of Items (as mentioned in Chapter-3) intend to invite offers for supply and installation of Scientific Instruments across the various offices at Head Quarter as well as its sub centers across the seven districts (Surat, Bharuch, Navsari, Dang, Narmada, Tapi and Valsad) of South Gujarat region of Gujarat state. The scanned copy of the demand draft of the Tender Fee and Earnest Money Deposit (EMD) as well as other relevant documents as per check list of the tender are required to be submitted online with the commercial bid on the website www.au.nprocure.com / www.nprocure.com. It is compulsory to submit the original / attested photocopies of these all the documents (except commercial bid), company printed literature / catalogue and other necessary documents physically in hard copy to the Office of the Director of Research, Navsari Agricultural University, University Bhavan, Eru Char Rasta, Navsari-396 450, Gujarat State on or before 17/02/2016 up to 17.00 hrs.
- 1.2 Authorized dealers can quote their rates provided they attach a certificate of authorized dealership issued during current financial year: 2015-16 from the manufacturer / principal company. Authorized dealers representing the same company / instrument are free to compete for price, terms, warranty period etc.

In case the vendor is a distributor authorized by an OEM (Original Instrument/Machinery Manufacturer), the following documents must be additionally provided

- Certificate from OEM that the dealership/channel partnership arrangement with the bidder is in force for a minimum of 2 years.
- A letter by the OEM stating that they shall honor the supply/ warranty/ AMC commitments independent of continuation of the dealership/ channel partner arrangement with the authorized dealer/channel partner.

Irrespective of whether the bidder is an OEM or a distributor authorized by the OEM, the following eligibility criteria must be fulfilled

- The bidder should have made a positive operating profit
- The bidder should not be blacklisted by any Government or Government entity.
- The bidder should be in existence for a minimum of three years.

- 1.3 Technical Supporting Documents (TSD) should contain original Demand Drafts of Tender Fee and Earnest Money Deposit (EMD). In addition to these, TSD should also contain the original / photocopy of relevant documents as per check list of the tender (except commercial bid), company literature / catalogue, VAT/CST registration certificate. The envelope must be marked as "E-tender-3-2015-16: Technical Supporting Documents (Technical bid)". If bidder fails to submit the TSD offline within time limit, the commercial bid will be disqualified. Please note that the scan copy of any document uploaded must tally with physical submission of original / attested photocopies.
- 1.4 The prices shall be inclusive of all freight, packaging and forwarding, transit insurance, installation charges, applicable taxes like Central Sales Tax, VAT, Excise Duty, Other prevailing taxes / charges as per government rules & regulations as well as FOR destination. The rate should be quoted per unit as specified in Chapter 3.
- 1.5 The bid is non-transferable.
- 1.6 Amendment of bidding documents (corrigendum)

1.6.1 At any time prior to the deadline for submission of bids, NAU may, for any reason, whether its own initiative or in response to the clarification request by a prospective bidder, modify the bidding documents.

1.6.2 The corrigendum will be published on website **http://www.nau.in** and **www.nprocure.com** only.

1.6.3 In order to allow prospective bidders reasonable time to take into consideration the amendments while preparing their bids, at its discretion, NAU may extend the deadline for the submission of bids.

- 1.7 Bid currency Prices shall be quoted in Indian Rupee only.
- 1.8 The items shown in the Chapter-3 are subjected to requirements and the same may be purchased or may not be purchased without assigning any reason.
- 1.9 The successful bidder shall have to execute the purchase orders placed on any date during the validity of the tender at the rate, terms and conditions of the tender.
- 1.10 All the electronics items should comply to international standards for safety, Electromagnetic Emissions, Electromagnetic Immunity etc.
- 1.11 NAU may not issue 'C' or 'P' form of sales tax or any other type of tax relaxation form of Government and the bidders are therefore requested to quote the rates of sales tax or any other taxes payable in absence of such forms/declarations.
- 1.12 Rate should be quoted along with excise duty / custom duty and other taxes. However, NAU being educational institute, therefore, NAU is eligible for exemption of such duty from final payment.

- 1.13 The lowest price is not the criteria and emphasis is placed on quality and specifications of the material. The NAU has right to reject any or all the offers and invite fresh quotations if need arises. The NAU further reserves the right of selecting the brand and accepting or otherwise any of the conditions stipulated by bidder.
- 1.14 If in any case the quoted item is not available in the market, the successful bidder will have to supply higher version/replacement of that item in the quoted cost in the same time duration with prior approval of NAU.
- 1.15 The successful bidder will held responsibility for the items sufficiently and properly packed for transport so as to ensure their being free from loss / damage / injury on arrival of destination NAU premises. The material should be supplied in the original company's packing which shall indicate packing details and other particulars as required under the statutory provisions. Inner and outer packing of boxes / cartons should be of standard design. The final packing of cartons of corrugated boxes shall be complying with ISS standards. A packing slip shall indicate clearly and legibly the name of the product, batch number, quantity, date of manufacturer, date of expiry, gross and net weight, and consignee's name & address and other particulars as required. In the event of breakages or loss of items during transit / installation against requisition order the said quantity will have to be replaced/supply by the supplier (Selected bidder) without any additional charges.
- 1.16 Tender Supporting Documents (TSD) received late and/or not submitted in the prescribed formats or in the prescribed manner, incomplete in any respect or not accompanied by prescribed documents are liable to be rejected. NAU will not be responsible for non-receipt of tender within the specified date and time due to any reason including postal delays.

1.17 All rights are reserved with the University Authority to accept or reject any or all the tenders received without assigning any reasons thereof.

- 1.18 The NAU may place repeat orders against the acceptance of tender within a period of validity, subject to the same terms and conditions originally provided in advertised tender and selected bidder shall accept the same.
- 1.19 Successful bidder failing to provide after sales services would be permanently blacklisted.
- 1.20 All documents uploaded as well as sent in physical form must BEAR PAGE NUMBERS in sequence, including sequential fresh page numbers given on each page of printed /photocopy material. The same page numbers are required to be mentioned in CHECK LIST provided.

2. <u>Payment:</u>

Advance or part payment will not be entertained.

3. <u>Delivery:</u>

The application for extension of delivery period shall be sent to concerned ordering office of Navsari Agricultural University at least 5 days prior to the expiry of delivery period of each items. The officer in charge, who is placing the order may grant extension or reject the application and their decision in the matter shall be final and binding to all.

4. <u>Warranty:</u>

- 4.1 Period of Warranty: The bidder must provide comprehensive onsite warranty for **minimum 2 years or as asked in specifications,** from the date of installation for all items. Please clearly mention the parts, which are not covered under warranty, separately.
- 4.2 If any instrument(s), properly not working and repetitively fault is found, say twice a week during the warranty period, the bidder shall replace the item with new item without any additional cost to the purchaser.

5. <u>Demonstration:</u>

Supplier has to perform on-site live demonstration as per trial requirements of concerned scientist with bidders'/ suppliers' consumables and reagents.

6. <u>Dispute:</u>

In case of any dispute, final decision of The Executive Engineer, Navsari Agricultural University, Navsari – 396 450 will be binding upon all. In case of any dispute arises in respect of this tender, a suit in that behalf shall be subject to Navsari Jurisdiction.

Chapter 5: Tender Fee, EMD and Security Deposit

Bidder has to submit non refundable Tender Fee Rs. 1000 in the form of Bank Draft in favor of "Navsari Agricultural University Fund A/C", payable at Navsari.

Earnest Money Deposit Calculations:

The bidder shall calculate Earnest Money Deposit (EMD) Amount is depending upon the items quoted. EMD for the respective items is listed in below table.

| No. | Item Name | EMD amount in Rs. |
|-----|---|-------------------|
| 1 | NITROGEN ANALYZER | 22500 |
| 2 | AUTOMATIC FIBRE ESTIMATION SYSTEM (760x620x390 mm, 230 v/50 Hz) | 18000 |
| 3 | VETERINARY FUNDUS IMAGING CAMERA | 30000 |
| 4 | BLOOD AUTO ANALYZER | 14500 |
| 5 | ATOMIC ABSORPTION SPECTROMETER | 45000 |

Example (for learning purpose only): If bidder is quoting for Item No.2 and Item No. 3, then EMD will be 18000+30000=48000.

Earnest Money Deposit: Tender shall be accompanied by an Earnest Money Deposit, without which tenders will not be considered. The amount should be deposited in the form of Bank Draft only, in favor of "Navsari Agricultural University Fund A/c", payable at Navsari.

Refund of Earnest Money: The earnest money of unsuccessful Bidder will be refunded.

Forfeiture of Earnest Money: The earnest money will be forfeited in the following cases:

- When Bidder withdraws or modifies the offer after opening of tender but before acceptance of tender.
- When Bidder does not execute the agreement if any, prescribed within the specified time.

Security Deposit: Successful bidder has to submit 5 % of purchase order as a Security Deposit in the form of Bank Draft only, in favor of "Navsari Agricultural University Fund A/c", payable at Navsari.

Refund of Security Deposit: The amount of security deposit will be refunded after successful installation/demonstration of the instruments and same will be released after two years of installation on the demand made by the bidder.

Forfeiture of Security Deposit: The security deposit will be forfeited if,

- 1. Successful bidder fails to supply the items within the delivery period.
- 2. Supplier fails to comply specifications of instruments, installation/demonstration of the instruments.
- 3. Supplier is not providing satisfactory post sale services and support.

Tender Fee, EMD and Tender Supporting Document Submission Address:

The Director of Research, University Bhavan, Navsari Agricultural University, Eru Char Rasta, Navsari – 396450 (Gujarat)

Chapter 6: Technical Bid Document (TBD) Submission

This chapter consists of forwarding letter, company detail, declaration and signed terms and conditions.

All these pages required to be submitted in hard copy with physical document submission. While Company Detail page is also required to be submitted in n-procure as well.

Do not provide other unnecessary documents like explaining company profiles, nature of the company, services and miscellaneous things which is not inquired.

Do not put financial bids of the Items anywhere in the Technical Bid Document submission under physical submission.

From :

Τo,

The Director of Research Navsari Agricultural University, Navsari 396 450, Gujarat

Subject: Submission of tender for the purchase of Scientific Instruments [NAU/DR/03-2015-16]

Sir,

I/We hereby submit the offer (duly filled) in response to the advertisement/tender notice **NAU/DR/03-2015-16** for **Scientific Instruments** in accordance with the terms and conditions of such supply and declare as under:-

I/We hereby offer to supply to Navsari Agricultural University, Navsari in accordance with the terms and conditions, hereto annexed and at the prices given by me/us in commercial section of online tendering.

I/We enclose herewith Tender Fee and EMD in favor of "Navsari Agricultural University Fund Account" drawn on State Bank of India, Navsari [Branch Code No. 3889.] with following details.

| | Amount (Rs.) | Amount in Words | DD No. and Date |
|------------|--------------|-----------------------|-----------------|
| Tender Fee | 1000 | Rs. One Thousand only | |
| EMD | | | |

I/We carefully read and understood and agree to abide by the said terms and conditions set in the tender document hereto annexed and the description/ specifications of the items.

I/We agree to hold this **offer open till 120 days** from the date of due date of opening of the tender.

I/We agree that in case of dispute, if any, the decision of the The Executive Engineer, Navsari Agricultural University, Navsari 396 450 shall be final and binding upon me/us.

> Signature of bidder (with Stamp, Name and Designation)

<u>COMPANY DETAIL</u>- supported by document proof

| 1. Name of supplier / firm | : | | |
|----------------------------|---|-------------------|------------------|
| 2. Complete postal address | : | Documentary proof | with Page Number |
| | | | |
| | | | |
| 3. Telephone Number | : | | |
| | | | |
| 4. FAX Number (if any) | : | | |
| 5. E-mail address (if any) | : | | |
| | | | |
| 6. Sales Tax No. | : | Documentary proof | with Page Number |
| | | | |
| 7. VAT / TIN No. | : | Documentary proof | with Page Number |
| | | | |
| 8. PAN No. | : | Documentary proof | with Page Number |
| 9. Registration No. | : | Documentary proof | with Page Number |
| | - | P 001 | |
| | | | |

10. Any other details:

I/We agree to abide by the terms and conditions of supply mentioned in this tender document.

Signature of Bidder (With Stamp, Name & Designation)

Check list- COMPULSORILY DULY COMPLETED

| Sr. No. | Document / Certificate | Attached Yes/No | Sequential Page Number |
|------------|---|--------------------|------------------------------|
| 1 | Tender Fee: Demand draft of Rs. 1000/- (Non-Refundable) | | |
| 2 | EMD : Demand draft as applicable (Refundable) | | |
| 3 | Company details (only in given tender format) and Proof of Address, PAN/TIN/TAN/VAT/ CST documents as applicable | | |
| 4 | Valid Registration Certificate of bidder's firm. (Shop Act Registration / Partnership deed / Memorandum of article / Registration of firm / Small Scale Industry Registration etc.) | | |
| 5 | Original affidavit from the bidder that business entity is not blacked listed (notarized on Rs. 100 stamp paper) | | |
| 6 | IT returns of last 3 financial years i.e., 2012-13, 2013-14, 2014-15 | | |
| 7 | Manufacturer certificate / subsidiary company certificate / Fresh Authorization Certificate (whichever is applicable) | | |
| 8 | Specification Supporting Documents with color catalogue | | |
| 9 | Valid quality certificate like ISO or equivalent | | |
| 10 | Signed Terms & Conditions (Chapter -4) | | |

- **Note**: 1. All documents uploaded as well as sent in physical form must BEAR PAGE NUMBERS in sequence, including sequential fresh page numbers given on each page of printed / photocopy material and same should be provided in the CHECK LIST above
 - 2. All photocopied documents must be attested with seal and signature **bearing page numbers**.
 - 3. List of Institutes/organizations where supply of quoted item/s is made is preferable.

DECLARATION

I/We solemnly declare that we have attached all the documents mentioned here above and mentioned in the tender. It is verified that all the certificates / permissions/ documents are valid and current as on date and have not been withdrawn / cancelled by the issuing authority.

I/We further undertake to produce on demand the original certificate / permission / document for verification at any stage during the processing of the tender.

I/We also understand that non-compliance of any documents will be treated as nonrespective tender and we will lose our claim to participate in the Tender Enquiry automatically and our tender will be liable to reject.

Name of the Firm:

Signature of Bidder (With Stamp, Name & Designation)

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Chapter 7: Contacts and Correspondence details

Correspondence address for submission of Physical documents :

The Director of Research, University Bhavan, Navsari Agricultural University, Eru Char Rasta, Navsari – 396450 (Gujarat) Mo. 9099062297, 9998212785 (For Overall queries related to tender, Contact in office hours only)

Item wise Contact Persons

(For queries related to item specifications only, contact in office hours only)

| 1 | NITROGEN ANALYZER | 9227421212 |
|---|---|------------|
| 2 | AUTOMATIC FIBRE ESTIMATION SYSTEM (760x620x390 mm, 230 v/50 Hz) | 9227421212 |
| 3 | VETERINARY FUNDUS IMAGING CAMERA | 9879687630 |
| 4 | BLOOD AUTO ANALYZER | 9998949710 |
| 5 | ATOMIC ABSORPTION SPECTROMETER | 7600059128 |

Specifications of Tender No: NAU/DR/03-2015-16 Items

1. NITROGEN ANALYZER

A) UDK 129 Distillation Unit – 385x780x416 mm

B) VELP DK Digesters- Digester model DK 6, 230 v/50-60 Hz

With following Accessories -Support system -Sample rack with Heat Shield -Suction cap -Test tubes

2. AUTOMATIC FIBRE ESTIMATION SYSTEM (760x620x390 mm, 230 v/50 Hz) Raw Fiber Extraction system should meet for AOAC, AACC compliance.

| Construction material | epoxy painted stainless steel structure |
|----------------------------|--|
| Type of extractions | cold and hot extractions |
| Number of samples | 6 positions |
| Samples | individually processed |
| Sample quantity | from 0.5g to 3 g |
| Sample removal | Air Pump |
| Reagent discharge | Peristaltic Pump |
| Digital timer | 0 - 99 minutes with acoustic signal at the end |
| Temperature | electronic regulation |
| Reagents and cooling water | separated outlets |
| Reproducibility (RSD) | ± 1% |

3. VETERINARY FUNDUS IMAGING CAMERA

Specifications

- Dimensions: 82.30 (w) x 166.50 (h) x 66.50 (d) mm
- Power supply: Rechargeable Ni-MH Battery

Handset features

- High resolution 2.4" TFT-LCD display with 262000
- Colors and antireflective coating
- 2 GB SD memory card
- Bayonet connector for attachable optics modules
- Integrated lens for general imaging

• Average usage time 1 h 30 min continuous use with full battery

Imaging Functionality

- 5 Mega Pixel CMOS image sensor
- Image format: JPEG
- Video format: MPEG-4/MPEG-1
- Resolution in general mode: 2560 x 1920 Pixels
- Autofocus

Connectivity

• PC with USB port – no driver installation needed

Fundus imaging camera

- Imaging with a wide 40° field of view
- Targeting and image capturing with white light or infrared (IR) light
- Image resolution: 1920 x 1440 Pixels
- Dimensions/weight: 132.10 (h) x 55.20 (d) mm/180 g
- Diopter compensation: -20 D to +20 D

Anterior segment lens

- White and blue LEDs for image targeting and capturing
- Autofocus and optional manual adjust
- 6 x Digital zoom
- Image resolution 2560 x 1920 pixels
- Dimensions / weight: 79 x 70 mm / 80g

4. BLOOD AUTO ANALYZER

- 1 Fully automated
- 2 Specially designed for **Veterinary Hematology Analysis**
- 3 Compatible with routinely used anticoagulants
- 4 Able to analyze all important parameters (**listed in Column no. 6**) of following species, preferably Cattle, Buffalo, Sheep, Goat, Horse, Dog, Rat, Mice
- 5 Four/ five part analysis

Rates for four parts as well as five parts analyzer is to be quoted separately with all other specifications will remain same.

6 Shall analyze the following parameters:

RBC Parameters: Total Erythrocyte Count (TEC), Hemoglobin (Hb, Hgb), Hematocrit (Hct), Mean Corpuscular Volume (MCV), Mean Corpuscular Hemoglobin (MCH), Mean Corpuscular Hemoglobin Concentration (MCHC), Red Cell Distribution Width (RDW),

WBC Parameter: Total Leukocyte Count (TLC), Absolute and Relative Neutrophil Count, Absolute and Relative Lymphocytes Count, Absolute and Relative Monocytes Count, Absolute and Relative Eosinophil Count,

Platelets Parameter: Total Platelet Count, Mean Platelet Volume

- 7 Allows analysis of low volume (50 microliter) samples
- 8 Cyanide free reagents shall be used by analyzer
- 9 Minimum run of 20 blood samples per hour
- 10 Analysis of other body fluids is preferable
- 11 Inbuilt touch screen
- 12 Inbuilt blood sample mixer
- 13 Supplied with inbuilt / external printer
- 14 USB port for easy software and data management
- 15 Shall have integrated cleaning system and blood clot shall not be formed in the system
- 16 Three years warranty

5. ATOMIC ABSORPTION SPECTROMETER

Design

- All connections on the side of the instrument
- Easy access lamp carousel
- Debris collection tray under flame compartment
- Furnace vision system included as standard

Operation

- Automatic operation and multi-element capability
- Flame atomic absorption/emission measurement
- True dual atomization
- No operator intervention needed to change over from flame to furnace analysis

Optics & Background

- 6 lamp auto-aligning turret with dedicated power supplies for each lamp
- 2 sets of auto-aligning turret for agriculturally important minerals and heavy metals (Fe, Mn, Zn, Cu, Co, Bo, As, Pb, Cd, Mg, Ag, Ni) should be supplied
- Can accommodate un coded or data coded and single or multi-element lamps
- Double beam Stockdale optics
- High energy, silica coated, sealed optical system with self calibrating Echelle monochromator
- Reciprocal Linear Dispersion 0.5 nm/mm at 200 nm
- Wavelength range 185-900 nm
- Spectral bandpass of 0.1, 0.2, 0.5 or 1.0 nm should be automatically selectable
- Deuterium lamp background correction system modulated at 200/240 Hz,
- Guaranteed background correction for up to 2 Abs of background with maximum error of 2%.

Flame System

- Universal Finned Titanium 50mm burner suitable for air/acetylene and nitrous oxide/acetylene flame types supplied as standard
- Inert fluoro-plastic spray chamber incorporating externally adjustable inert impact bead and flow spoiler.
- An inert over-pressure membrane housed in the rear of the spray chamber.
- Automatic gas system using binary flow control and programmable array state logic for reliability
- Full safety interlocks, including pressure sensors on both lines, power failure protection, burner interlock and flame sensor
- Fuel and oxidant flow rates software controllable
- Automatic flame ignition
- •One spray chamber configuration and burner for all gas mixtures and sample types
- Automatic flame optimization

Furnace System

- Choice of Deuterium background correction furnaces
- Mount directly in dedicated compartment
- Furnace head is in an all graphite containment with end loaded contacts
- Cuvettes are self aligning and can be rapidly exchanged with a single lever movement
- Binary flow controlled internal gas system

- Choice of alternate or inert gases
- Uses voltage feedback control
- Furnace cycle to allow up to 20 phases to be programmed
- Cuvette firings counter
- Furnace auto-sampler with furnace head and power supply
- Sample collected and dispensed via an inert PTFE capillary tip
- Slow injection and uptake options
- 'Fast' furnace operation with concurrent operation of furnace, spectrometer and auto-sampler.
- Wash and waste vessels as part of the auto-sampler system and not occupy extra floor space

Software:

- Operating AA software supplied as standard
- Compatible with latest Windows OS.
- Wizard based interface
- Complete user help facility with comprehensive AA Cookbook for all elements.

Context sensitive help

- Automatic programming of up to 16 elements
- Operable through an appropriate data station
- Facility to record lamp usage
- Capable of automatically switching lamps on and off in an intelligent manner.
- Normal, standard addition and standard curve calibration methods supported
- Flexible and comprehensive results database filters
- Export of data to other applications possible
- Integrated Quality Control protocols
- Language options

Additional items:

- Choice of single coded lamps
- Hydride generation analysis
 - Operating on the continuous flow principle
 - o Software controlled
 - Mercury and heated hydride measurements
 - Electrically heated atomization cell to be accommodated

ISO/CE/ equivalent certificate is mandatory

• Required PC and softwares

Instrument installed in working configuration