



DEPARTMENT OF CIVIL ENGINEERING
Indian Institute of Technology Madras
I.I.T.P.O., MADRAS-600 036

Form for Inviting Quotations

Ref.No.CIE/SMSH/2018/AAS/

Date: 25-7-2018

DUE DATE: 9-8-2018 – 5.00 P.M.

To

Dear Sirs,

1. Quotations are invited in duplicate for the various items shown below / overleaf / **Enclosed list.**
2. **The Quotations duly sealed and superscribed on the envelope with the reference No. and due date, should be addressed to the undersigned and contain in 2 bid system i.e. Technical bid and Commercial bid in two separate envelopes should be enclosed in a single envelope only so as to reach on or before the due date stipulated above.**
3. The Quotations should be valid for ninety days from the due date and the period of delivery required should also be clearly indicated.
4. If the item is under DGS&D Rate contract No. and the price must be mentioned. It may also please be indicated whether the supply can be made direct to us at the Rate contract price (Please note that we are not Direct Demanding Officers). If so please send copy of the RC.
5. Relevant literature pertaining to the items quoted with full specifications (and drawing, if any) should be sent along with the Quotations, wherever applicable. Samples if called for, should be submitted free of charges, and collected back at the supplier's expenses.
6. Local Firms : Quotations should be for free delivery to this Institute. If Quotations for Ex-Godown delivery charges should be indicated separately.
7. Firms Outside Madras : Quotations should be for F.O.R. Madras. If F.O.R. consignor station, freight charges by passenger train / lorry transport must be indicated. If Ex-Godown, packing, forwarding and freight charges must be indicated.
8. The rates of GST and other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quoted. Where this is not done, no claim for GST/General Taxes will be admitted at any stage and on any ground whatsoever. IIT Madras is eligible for concessional GST. Relevant certificate will be issued. In case of import supply the price should be quoted without custom duty. I.I.T. Madras is exempted from levy of IGST on Imports and eligible for concessional custom duty (not exceeding 5%) and the price should be quoted on **EX-WORXS** and **CIP** basis indicating the mode of shipment.
9. Goods should be supplied carriage paid and insured.
10. Goods shall not be supplied without an official supply order.
11. Payment : Every attempt will be made to make payment within 30 days from the date of receipt of bill / acceptance of goods, whichever is later.

Yours faithfully,


[Dr. SHIVA NAGENDRA]

- Note: (i) Quotation should be sent by SPEED POST only or to be delivered directly to the concerned.
(ii) Firms are requested to submit the specifications of their product along with supporting technical Documentation / brochure instead of reproducing the specifications sent by us.

Technical Specification for Atomic Absorption Spectrometer (AAS)

System should be designed and manufactured under ISO-9001 and should comply with most of international regulatory, safety and electromagnetic compatibility requirement. The AAS Instrument data system should be based on Microsoft Windows operating system for instrument control, data acquisition and data analysis.

Atomizer System

- 1 The system should have software controlled automatic vertical and horizontal alignment of the flame burner head for optimum light transmission.
- 2 System should come with Standard 10 cm titanium burner head for Air – Acetylene flame for better absorbance.
- 3 System should have software controlled flame ignition.
- 4 A suitable air compressor should be offered with the system.

Lamp support

- 1 The system should have a minimum 4 lamp holder with a provision of automatic lamp selection; slit width selection and wavelength selection.
- 2 Warranty on hollow cathode lamps must be at least 5000 mA hours or 12 months
- 3 System should be offered with built-in power supplies for both the coded hollow cathode lamps and the special lamps (high intensity lamps) that are used for the analysis of volatile elements. (e.g. boosted HCL's ultra lamps, super lamps, electrode less discharge lamps, etc.).

Sample Introduction System

- 1 A high sensitivity nebulizer system including impact bead and flow spoiler with corrosion resistant against the acids like 5% hydrofluoric acid, hydrochloric acid and nitric acid.
- 2 Corrosion resistant spray chamber.

Optical System

- 1 A true double beam spectrometer system with high light throughput.
- 2 Monochromator system with a diffraction grating ruling density of at least 1800 lines/mm blazed in both the UV and Visible regions.
- 3 A focal length of minimum above 250 mm and the Reciprocal Linear Dispersion of 1.6 nm/mm.
- 4 Variable slit width between 0.2 to 2.0 nm with automatic slit selection.

A handwritten signature in blue ink, appearing to read 'Rajendra', is written over a horizontal line. The signature is stylized and includes a checkmark-like symbol to the left of the name.

- 5 System should have the maximum light transmission for the best detection limits with least maintenance and with updated technology like fiber optics for the transmission of light.
- 6 System should automatically adjust to changes in lamp intensity for stable baselines and compensates for drift multiple times per second.
- 7 System should have fast start-up and exceptional long-term stability without recalibration.

Detector

- 1 System should be offered with Solid State Detector, with highest Quantum efficiency.
- 2 Wavelength range: 185 – 900 nm or better
- 3 Operator selectable Read time from 0.1 to 120 sec.

Background Correction Methodology

- 1 High speed Continuum Source (Deuterium Lamp) Background Correction

Gas Flows System

1. Software controlled flame ignition and automatic changeover of oxidant flow from acetylene to nitrous oxide when switching to or from air-acetylene to nitrous oxide - acetylene flame if required.
2. Fully software controlled oxidant and fuel gas flow monitoring.
3. All safety interlocks built-in and additional feature like Burner Head Interlock, Nebulizer/End Cap Interlock and Drain Interlock to be built-in.

Sensitivity:

Vendor should provide report of the quoted system demonstrating >0.9 absorbance with the precision of <0.5% RSD from 5 second integrations for 5 ppm Cu standard.

System should be quoted with vapor/hydride accessory to connect with FLAME in near future the same system should also be coupled with FURNACE ATOMIZER if required, the system for achieving lowest detection limits for Hg and As elements.

1. Hydride system should be used valve and pump to inject the sample by automatic and continuous flow injection. Hydride system should be rinsed continuously with the carrier solution after each sample.
2. The very small amount of sample should be used for the analysis like 500 uL of sample by using loop.
3. Required HCL lamps should be quoted for the below elements, Branded and coded lamps for the mentioned elements (Mn, Fe, Cu, Zn, Cr, Ag, Ni, Na, K, Mg, Ca) and



boosted/Special/high intensity/Electrodeless discharge lamps should be offered for Hg, Se, Pb and As elements and power supply for the special lamps should be in-built with the system and should be offered all required individual element standards 1000 ppm at least 500 mL volume.

4. Vender should offer the HCL lamps for Al, B, Ba elements and Nitrous oxide burner head 5 cm or suitable for the analysis of these elements and single element 1000 ppm standard with 500 mL volume in optional items.
5. Local item like Suitable PC should be offered in the standard quote.
6. Printer, suitable UPS, fume hood; Acetylene gas, Argon gas regulators and purification panels should be quoted optionally.
7. Minimum 1 years warranty should be quoted.
8. A service center must be available in Chennai for service engineers to attend to the instrument for maintenance or troubleshooting.
9. On-site training for the operation of the hardware and software systems should be included.

S. S. Sridhar