



DEPARTMENT OF CIVIL ENGINEERING
Indian Institute of Technology Madras
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Form for Inviting Quotations

Ref. No. CIE/KRAG/2017/FTIR/SPL

Date: June 5, 2017

SPEED POST

To

Dear Sirs,

DUE DATE: June 27, 2017

1. Quotations are invited in duplicate (two bidding covers) 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 Head of the Department 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 sixty 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 rate of sales / General Taxes and the percentage of such 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 Sales / General Taxes will be admitted at any stage and on any ground whatsoever. The taxes leviable should take into consideration that we are entitled to have concessional Sales Tax applicable to non Government Educational Institutions run with no profit motive for which a concession. Sales Tax Certificate will be issued at the time of final settlement of the bill.
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

[PROF. K. RAJAGOPAL]

- 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 Specifications of FT-IR Spectrometer

We would like to purchase a FT-IR spectrometer, which has capability to integrate with a TGA/DTA accessory, with the following technical specifications.

1. The spectrometer should be able to record the spectrum of a sample in the wavelength region of 400-11000 cm^{-1} .
2. The spectral resolution should be better than 0.1 cm^{-1} .
3. The spectrometer must include a user replaceable helium-neon laser reference source. The laser must be of a modular design permitting simultaneous replacement of the laser emission head and power supply.
4. The infrared source must have a guaranteed lifetime of a minimum of 5 years and must be user replaceable.
5. The Interferometer must be a dynamically aligned, non-air bearing/air bearing/any other advanced type Michelson design. Non-air bearing one will be given priority.
6. The interferometer must be capable of supporting an optional Automatic Beamsplitter Exchanger accessory without modification.
7. Standard warranty on the interferometer must be a minimum of 5 years.
8. The spectrometer must have the capability of optional rapid scan features to scan at a minimum rate of 50 scans per second at a spectral resolution of 16 cm^{-1} .
9. The interferometer must permit insertion of a wide range of Beamsplitters without requiring replacement. Beamsplitters must be available for the instrument to cover the spectral range at least from 25,000 to 50 cm^{-1} .
10. The spectrometer must have a motorized, continuously variable aperture, for optimal peak shape collection of data.
11. The instrument must be capable of at 50,000:1 peak to peak signal to noise, measured at 4 cm^{-1} resolution in the well proved standard region of 2200-2100 cm^{-1} .
12. The system must be able to support a white light source to be used for near-IR or visible operations, mounted in a similar manner to the infrared source and similarly user-replaceable.
13. The spectrometer cover shall be **sealed and desiccated** and must be equipped with CaF_2 coated KBr sample compartment windows. The instrument must be equipped with the necessary internal plumbing and external connector for purge operation.



14. The instrument must support up to **three detectors**.
15. The system should have one DLaTGS detector to function at room temperature and a MCT-A detector with associated liquid nitrogen cooling facility.
16. Both DLaTGS detector and MCT Detector should be mounted in the detector compartment in the factory itself. Each detector should be selectable by an optional rotating mirror with the help of software, for use with the sample compartment. We do not want to store the detectors outside for replacement.
17. The spectrometer must support optional third detector externally.
18. The system must be able to provide left and right **external beams** for supporting additional sampling modules.
19. The spectrometer must support optional **external beam entry ports** for use with external sources.
20. The optional Automated Beamsplitter Exchanger shall provide locations for up to **3 beamsplitters** supported by the interferometer. This device shall allow full spectral range for available beamsplitters to be realized without manual handling of the fragile optical components and without interruption of the purge or sealed and desiccated condition of the spectrometer.
21. The FT-IR spectrometer should be upgraded with a TGA accessory and required hyphenation kit should be quoted optional. It should include Time-resolved infrared data collection, Advanced 2D and 3D tools simplify data evaluation and capability to have 5 profiles to be displayed for comparisons, Region selection for focusing the analysis on a subset of the data, Output of overall profile, search results, profiles of each component, Pre-analysis algorithm for estimating the number of components
22. The software must be fully compatible with Microsoft Windows 7 (32-bit and 64-bit) or higher versions.
23. Software must support one-click operation using clearly visible icons to switch to any sample compartment from any other sample compartment and load proper experiment settings to collect data.
24. The software must support stability testing for sample compartments such as, NIR Integrating Sphere and Main Sample compartment to indicate to users when the instrument is ready for collection.
25. Software must support loading of Automatic Beamsplitter Exchanger, beamsplitters and identifying them.
26. Software must support both Advanced and Basic experiment setup functionality. The Basic functionality must support measurement time/number of scans, resolution, final

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format, spectral region (over the full range supported by the available hardware) and indicate current source, beamsplitter and detector. The Advanced experiment setup functionality must support additional parameter settings such as Corrections, Background collection number of scans, Gain selection, Optical Velocity selection and Aperture settings.

27. Software must support all possible background handling options.
28. An extensive set of spectral libraries (licensed version with at least 30,000) which should also include Vapor Phase Library must be available.
29. ATR with diamond crystal should be quoted. ATR accessory should be able to select either DLaTGS or MCT-A detector using software. The ATR accessory with diamond crystal should cover the complete pH range of 1-14, with a spectral value of at least 400 cm^{-1} . The germanium crystal plate should be quoted optional.
30. The spectrometer should have a capability to upgrade with an inbuilt ATR, in future, by the service engineer.

General specifications

1. The FT-IR spectrometer must be installed by the technical persons of the vendors/principles.
2. Proper demonstration/training should be given to the students at the time of installation.
3. All the necessary accessories to record spectra (both solid and liquid) should be provided.
4. The spectrometer should have a minimum of 2 years warranty.
5. The list of at least ten users of quoted model installations in India including contact details (name of the person in-charge, email and phone number) is to be provided.
6. The cost should include 24 month warranty and CIF/CIP up to Chennai.
7. There must be a local service agent in India.
8. Payment conditions: 90% LC at sight and 10% after installation and training.
9. The Vendor must be an OEM.
10. Optional items must be quoted separately.
11. The system should be delivered within 6 weeks from the opening of the letter of credit or issue of purchase order, whichever is later.
12. Individual costs should be indicated for the different items (parts) quoted. IIT Madras reserves the right to exclude some items from the purchase items must be quoted separately.
13. Costs and related information should be given only in the financial bid.

1/Jan