

**Request for Quote for the procurement of
Gel Permeation Chromatographic setup with a hyphenated (in-line) triple detector system
(Tender notification date: June 22, 2022; Last date: 11 July 2022)
GTE Approval No. IISc-GTE-2022-175**

This is a Request for Quote (RFQ) for the procurement of a Gel Permeation Chromatographic setup with an in-line triple detector system, consisting of a refractive index (RI), differential viscometer (DV), and dual/multi-angle light scattering detector, for the Department of Inorganic and Physical Chemistry (IPC) of the Indian Institute of Science, Bengaluru, on C.I.P. Bangalore basis (by Air Freight only). The bids must mention the terms of delivery, delivery schedule, estimated delivery date, and payment terms. The duly signed tender must be submitted in two separate sealed envelopes: (i) containing the technical bid and (ii) containing the commercial bid, both of which should reach us on or before **17:00 hours on Friday, 11 July 2022**.

The bids should be submitted to the Department of IPC office and addressed to:

The Chairman

Department of Inorganic and Physical Chemistry,
Indian Institute of Science, Bengaluru,
Karnataka – 560 012, India.

Kind attention: **Prof. S Ramakrishnan**

I. Procedure:

1. Vendors will be required to submit a technical bid and a commercial bid in **two separate sealed envelopes**. The technical bid should contain all commercial terms and conditions, except the price. Only vendors who qualify the technical evaluation will be considered for the commercial evaluation.
2. The technical bid must contain a point-by-point technical compliance document. The technical proposal should contain a compliance table with 5 columns (refer Annexure 1).
 - a. First column must list the technical requirements, in the order that they are given in the technical requirements below.
 - b. The second column must provide specification of the instrument against the requirement (please provide quantitative responses wherever possible)
 - c. The third column should describe the compliance with a “YES” or “NO” only. Ensure that the entries in the column 2 and column 3 are consistent.
 - d. The fourth column should clearly state the **reasons/explanations/context** for deviations, if any. Without clear explanation, just stating YES” or “NO” will not be considered.
 - e. The fifth column may contain additional remarks. It can be used to highlight the technical features, qualify response of previous columns, or provide additional details.

3. Items in addition to that listed in the technical table that the vendor would like to bring to the attention of the committee, such as data sheets, technical plots etc. can be listed at the end of the compliance table. Vendors are also encouraged to highlight the advantage of their tools over comparable tools from the competitors.
4. The commercial bid must include the best discounted price of all items. All accessories needed for the instrument to function as per the technical specification must be listed.
5. Please provide itemized cost for any suggested accessories/add-ons that may enhance the usability, capability, accuracy, or reliability of the tool. Vendors are encouraged to quote for as many add-ons as their tool portfolio permits.
6. Provide itemized cost for required spares for 3 years of operation. For sake of calculation the vendor may assume the active instrument usage of 35 hours/week.
7. The commercial bid should indicate the following separately: (a) equipment price (b) optional items (c) freight and insurance cost (d) shipping cost and (e) the total cost.
8. List of customers and references: The Bidder should have supplied similar equipment in in **Govt. of India funded institutes (IITs, IISc, IISERs and NITs) and central universities**. Please provide the details and contact information.

The deadline for submission of the bids is **11 July 2022, 5:00 PM Indian Standard Time**. Proposals should arrive at the office of Department of Inorganic and Physical Chemistry, Indian Institute of Science, Bengaluru, Karnataka – 560 012, India. Direct all questions concerning the acquisition to **Prof. S Ramakrishnan** at: raman@iisc.ac.in

II. General terms and conditions:

1. The decision of the purchase committee will be final. The Institute reserves the right to accept or reject any bid, or to annul the bidding process and reject all bids, at any time prior to the award of contract without thereby incurring any liability of the affected bidder or bidders.
2. The quote must also include references from previous installations of the similar equipment in India. Please provide the names and contact addresses of the referees, so that the committee can contact them independently. Details of such systems with model numbers and users should be provided. The references can be used to disqualify vendors with poor track record of service, build quality, system performance or poor availability of spares.
3. The Bidder must not be blacklisted/banned/suspended or have a record of any service-related dispute with any organization in India or elsewhere. A declaration to this effect should be provided.
4. The vendor should be able to repair and maintain the equipment once it is installed. The bidder should have qualified technical service personnel based in India and must assure a prompt response, after receiving a service request.
5. All the quotations must be valid for at least 90 days at the time of submission.

6. The quotations should clearly indicate the terms of delivery, delivery schedule, tax, and payment terms.
7. After the award of purchase order, the vendor must provide an Order Acknowledgement within 30 days from the receipt of the Purchase Order.
8. The lead-time for the delivery of the equipment should not be more than 3 months from the date of receipt of our purchase order.
9. 100% payments will be released after the completion of delivery and satisfactory installation. As per GFR no advance payment can be made to domestic vendors unless an equal amount of bank guarantee is provided.
10. The bidder is responsible for the installation of the equipment in the IISc campus.
11. Necessary training to operate the procured setup and required literature support (in English language) should be provided without additional cost.
12. Bidders should undertake to support the system with spares and software bugfixes, if any, for the next 5 years or more.
13. Wherever requested in this specification sheet, data must be supplied along with the technical compliance documents. Technical bids without supporting data will be deemed as technically non-compliant.
14. Printed literature and published papers in support of all compliance to the prescribed specifications may be provided.

III. Technical requirements for the Gel Permeation Chromatographic setup with a hyphenated (in-line) triple detector system

Sample injection and separation module

Isocratic Pump

Flow rate range: 0.05 mL/min - 10 mL/min

Flow rate accuracy: $\pm 1\%$ mL/min

Pressure range: 0 - 5000 PSI (34.5 MPa)

Pulsation: 0.1456% @ 1 mL/min in water

Sample injector

Injection volume range: 1 - 300 μ L

Injection volume accuracy: $>99.5\%$

Injection volume precision:

$<0.3\%$ RSD in full loop mode

<0.5% RSD in partial loop mode
<1% RSD in μL pickup mode
Injection overhead volume: 0 μL in μL pickup mode
Syringe volume: 250 μL standard

In-line degasser

Degassing capacity: >90%
Volume: 960 μL

Column oven

Column capacity: up to 4 standard (300 mm length and 8 mm diameter) GPC columns
Temperature control range: 20°C - 65°C

Triple Detector System

Refractive Index Detector

Dynamic range: $\pm 2.5 \times 10^{-4}$ RIU
Baseline noise: $< 10^{-7}$ RIU
Baseline drift: $< 3 \times 10^{-7}$ RIU/hr
Minimum quantifiable mass: 100 ng of 100kDa molecular weight polystyrene in THF
Flow cell volume: 12 μL
Wavelength: 640 nm

Differential Viscometer

Operating Principle: 4-capillary Wheatstone bridge with self-balancing mechanism and user exchangeable capillaries
Differential pressure dynamic range: ± 2500 Pa
Differential pressure baseline: noise 0.3 Pa
Inlet pressure dynamic range: 100 kPa
Inlet pressure baseline noise: 0.01 kPa
Baseline drift: < 0.2 kPa
Minimum quantifiable mass: 1 μg of 100kDa molecular weight polystyrene in THF
Detector volume: 17 μL /capillary
“Delay volume” volume: 8 mL per column

Static Light Scattering Detector

Operating Principle: Two-angle detection - RALS/LALS
Operating angles: 90° & 7°
Dynamic range: 2500 mV
Baseline noise: < 0.1 mV
Baseline drift: < 0.2 mV/hr
Minimum quantifiable mass: 100 ng of 100kDa molecular weight polystyrene in THF

Molecular weight range: 200 - $>10^7$ g/mol

Flow cell volume: 18 μL

Laser: 50 mW

Laser wavelength: 640 nm

Software

- The system software must enable one to operate, acquire and collate the data from the three detectors
- Data analysis to provide accurate information of the solution properties of polymers, such as its intrinsic viscosity, molecular weights (M_n and M_w), hydrodynamic radii (R_h), radius of gyration (R_g) and Mark-Houwink constants.
- Standard plotting routines for effective data presentation.

ANNEXURE 1

Technical specifications, as required in the tender	Specifications of the instrument quoted for	Does the specification meet the requirement? Yes or No	Explanation for deviations, if any.	Other remarks or clarifications