

INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE

2A & 2B, Raja S.C. Mullick Road, Jadavpur, Kolkata-700032

NIT No.:IACS-G/SCSJG/2024-25/47

Date:03.02.2025

Sealed tender in two bids system (technical bid and price bid) is invited from bonafide, resourceful and eligible manufacturer/exclusive distributor/vendors for **Flow Chemistry System with Photochemical Reactors**

Part-I (Technical Bid) of the tender should contain technical specifications in detail as well as commercial terms and conditions. Part-II (Price Bid) should clearly indicate group-wise price, if needed, as mentioned in the technical bid. The Technical Bid and Price Bid are to be submitted in separately sealed envelopes, distinctly marked accordingly and both to be put inside another envelop, that should be sealed and superscribed with tender notice no. and due date. The bidders may submit bids duly signed in their own letterheads.

Completed tender bids should reach the office of **School of Chemical Sciences, Indian Association for the Cultivation of Science (IACS), 2A & 2B Raja S. C. Mullick Road, Jadavpur, Kolkata-700032** on or before the scheduled date and time specified below:

Tender Notice No.	NIT No. : IACS-G/SCSJG/2024-25/47 Date: Date:03.02.2025
Last date and time of submitting tender	24 th February, 2025 at 12.00 P.M.
Date, time and venue of Pre-bid meeting to discuss technical specification*	14 th February, 2025 at 3.00 P.M. Room No M142, IACS
Date, time and venue of opening technical bid of the tender	24 th February, 2025 at 3.00 P.M. Room No M142, IACS
Date, time and venue of opening the price bid of the tender	Date and time will be intimated to the technically qualified bidders at their e-mail address
Contact	Email: ocjg@iacs.res.in Tel. +91-33-2473 4971 (Extn. 1426)

*If you wish to participate in the online Pre-bid meeting, please write a mail to the email account (ocjg@iacs.res.in) on behalf of your company so that the required link can be sent prior to the online meeting.

The technical bids will be opened first to judge/evaluate the technical specifications of the said instrument and thereafter the price bids of only technically qualified bidders will be opened.

Technical Bid Evaluation: The Technical Bids will be evaluated in the presence of the authorized representatives of intending bidders who will be able to clarify technical aspects of their bids, if any, required by the Technical Evaluation Team.

Opening of price-bid: The Price Bids of the bidders qualifying the technical bid will only be opened, the date of which will be intimated to the short-listed bidders at their email addresses. The rest of the bids will be rejected.

Please note that IACS will not provide any accommodation or reimburse any expenses to any of the bidders for attending opening of technical bid/price bid.

1. TECHNICAL BID

The technical bid should contain technical specifications and should be kept in a separate sealed envelope duly super scribed as 'TECHNICAL BID' on the outer cover of the envelop as already detailed above. It should be clearly mentioned on the envelope as "Technical Specification for a Flow Chemistry System with Photochemical Reactors".

Technical Specifications of a Flow Chemistry System with Photochemical Reactors

Basic Requirements:

- A. Tubular/Coil reactor along with Reactor housing and sensor for heating and cooling
- B. Photoreactor with LED and/or UV light and/or medium pressure Hg lamp
- C. Reactor Holder for various reactors
- D. Pump module containing 2 pumps for independent flow of reagents and solvents
- E. Software capable of data logging and monitoring of flow, temperature, pressure etc and expandable for the data logging of 8 pumps and 8 reactors

Detailed specifications:

A. Homogeneous Loops/Reactor housing

Reactor Housing/Manifold: The reactor housing should be capable of fitting coils up to 20 ml.

Reactor volumes: 2 or 5 or 10 mL in PFA acid resistant and pressure minimum 15 bar or higher and temperature up to 150 °C

B. Multi-wavelength photochemical reactor Module assembly:

Should have cooling facility and heating facility for temperature control of $\pm 1^\circ\text{C}$

Should be capable of carrying out continuous flow reactions, using different light sources such as medium pressure mercury lamp with Filters and feature to reduce light intensity up to 50% of 150 watts, lamp to be included,

a) **Low pressure mercury lamps,**

b) **LEDs**

Should include LED panels (lamps) of different wavelengths such as 365 nm, 395 nm, 400 nm, 420 nm, 450 nm having radiant power from 6 w and higher

Should include power supply unit.

Should include housing with temperature control feature of -5°C to +80 °C with sensor and accommodate Reactor volume up to 10 mL and PFA material of construction.

C. Reactor holder to accommodate up to 4 different reactors for sequential reactions

Should be able to work Homogeneous loops and Heterogeneous reactor beds with temperature sensors:

Should be able to sense and control temperature range of -70 °C to +250 °C

Should be able to handle various types of reactors such as column reactors, coil reactors, photoreactors, electrochemical reactors, cooled reactors for sub-zero temperatures up to -70 °C

Temperature control +/- 1 degree C in the entire applicable temperature range

D. Pump Module

Piston type high precision fully acid resistant pump modules (1 no.): **each** with 2 Pumps

: (a) 0.05 to 10 mL/min or higher flow rate and **42 bar** max. reaction pr. across all flow rates: 2 pumps per module

Each pump-module with Individual waste containers, Full tubing kit including back pressure regulators; acid resistant T mixer and reagent bottles, Mixing Unit Liquid-Liquid,

Salient Features (requirements):

- **High Precision:** Guaranteed flow-rates using automatic pump monitoring.
- **Safety shut down** in case of leakage or blockage of reactors
- **Strong acid** pumping capability
- **Switch toggle** to interchange pumping of solvent or reagent
- **High Productivity:** Unlimited number of reactions can be queued up for un-attended execution. The heating and cooling should be rapid
- **Inert Reagent delivery kit** to feed reagents under N₂ atmosphere

E. Software:

Control and Software: Should be able to perform all routine set-up tasks and calculations. Should include modelling and prediction of axial dispersion. This is to ensure selection of steady state product and for peak matching.

Should be able to control external fraction collector and autosamplers and detectors.

8 pumps and 8 reactors control capability on upgradation

Datalogging should be available and compatibility with PAT tools such as UV, Flow IR and Raman spectra

Capable of connecting to common platform such as MatLab and LabView

Software API should have OPC-UA server built in to enable connectivity to high level and low-level command sets

F. General:

Temperature: The system should be suitable to be used at cooling conditions -60 °C or lower and up to +250 °C temperature

Display: It should have digital display and computer controlled either touch screen or other suitable mode.

Electricity: Should be suitable for Indian electric system (220 ~ 240 V, 50Hz, 1Φ).

OPTIONAL ITEMS

A. Equipment Frame: For compact installation of 4 pumps and/or Fraction collector,

B. Large diameter tubular reactor for rapid mixing (*for Bi-phasic Liquids*)

- 20 ml of higher internal volume

- Acid resistant

- Temperature range ambient to 150 °C or higher

- Pressure limit 10 bar or higher at 150 °C or higher

ELIGIBILITY CRITERIA:

Past performance

The bidder or its OEM (Original Equipment Manufacturer) should have supplied same or similar category products for 50% of bid quantity, in at least one of the last three financial years before the bid opening date to any Central/State Govt. organization/PSU/Autonomous body. Copies of relevant contracts to be submitted along with Bid in support of quantity supplied in the relevant financial year. Users lists of similar equipment supplied in India should be provided (Enclose full list of the users in India). Vendor should have at least one (1) user available in the eastern zone of India.

Minimum Average Annual Financial Turnover:

The minimum average annual financial turnover of the bidder during the last three years ending 31st March of the previous financial year should be Rs. 43 Lakh. Documentary evidence in the form of certified audited Balance Sheets of relevant periods on a certificate from the Chartered Accountant/Cost Accountant indicating the turnover details for the relevant periods shall be submitted with the bid.

Warranty: 1 year from the date of installation and successful commissioning.

Technical compliance chart should be provided in the following format,

Sr. No	Tender specification	Your offered instrument specification	Extent of compliance

Proof of Performance documents must be provided with the Compliance sheet. The vendors must submit/upload all the Technical Data Sheets as per their claim in original & authenticated. The specification sheets should also be available in the public portal.

Tender will not be accepted if the technical compliance chart is not provided following the above format.

2. PRICE BID

The financial bid indicating (item-wise, if required) price for the item(s) mentioned in the technical bid should be kept in a separate sealed envelope duly superscribed as 'PRICE BID' on the outer cover of the envelope as already detailed above. Price bids of only technically qualified bidders will be opened and the corresponding manufacturer/exclusive distributor/vendors will be intimated the date and time of the opening of price bid at their e-mail ids. Rest of the bidders will stand rejected.

PRICE: Price to be quoted in CIP Kolkata Airport preferably on INR (The Indian Rupee).

3. BID SECURITY: Declaration in terms of F.9/4/2020-PPD dated 12.11.2020

a. An Account payee Demand Draft/Pay Order for Rs. 1,80,000.00 (One lakh eighty thousand) drawn in favor of "Indian Association for the Cultivation of Science (State Bank of India, Jadavpur University Branch, A/C No. 11079699211, IFSC: SBIN0000093, MICR Code: 700002048)" is to be furnished by the bidders except those who are registered with the Central Purchase Organizations, National Small Industries Corporation or the concerned Ministry or Department. Bid Security money or Earnest Money Deposit (EMD) may also be deposited in Bank Guarantee or any other acceptable form.

b. The Demand Draft for the Bid-Security should have at least 90 (ninety) days validity period from the date of opening of the bids.

c. In case of non-award of the work the Bid Security money would be returned to the unsuccessful Bidders. The Bid Security will not carry any interest.

4. PERFORMANCE SECURITY:

An Account Payee Demand Draft or a Bank Guarantee on a Schedule Bank of 3% of the order value in the name of "Indian Association for the Cultivation of Science" is to be furnished by the successful bidder as Performance security. Performance security money should remain valid for a period of 60 days beyond the date of completion of all contractual obligations of the supplier including warranty obligations. Bid security money or EMD will be refunded to successful bidder on receipt of the Performance security money. No interest is payable on the Performance Security.

GENERAL INSTRUCTIONS

1. Validity of tender: Tender submitted should remain valid for at least six months from the date of opening the tender. Validity beyond six months from the date of opening of the tender shall be lapsed by mutual consent.

2. The tender should accompany a compliance chart.

3. Incomplete and conditional tenders as well as tenders received after the due date will be summarily rejected without assigning any reasons thereof.

4. At any time prior to the bid due date, IACS may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder during pre-bid meeting, modify the bidding documents. The amendment(s) will be notified on the institute website. Prospective bidders are advised to occasionally to visit the website (www.iacs.res.in/tender) for any amendment.

5. 100% payment after delivery and successful installation or 90% after delivery in case of LC.

6. Installation/Demonstration/Application training at site: Installation & user training at IACS, free of cost by the supplier. Installation must be done at user's site with no extra costs involved. A one-week (at least) general entry-level training-cum-workshop and advanced-level training-cum-workshop must be arranged at the user's site by the vendor on experimental and data analysis part, with no extra cost involved.
7. Service facility: In India, preferably Kolkata, supplier should mention their details of service setup and man powers who are responsible for after sales support. The system must be attended within 48 hrs of reporting.
8. The model number, make and a printed literature of the product should be submitted positively.
9. Proposed delivery schedule should be mentioned clearly. Delivery of the materials to the PI should be within 60 days from the date of purchase order.
- 9a. An amount at the rate of 0.5% per week or part thereof subject to a maximum of 10% of the cost be deducted from the Bill/Tax Invoice in the event of delayed supply.
10. Original Equipment Manufacturers / exclusive distributors / vendors should have history of supplying this type of instruments to this or other scientific organizations. Availability of a list in this regard would be preferred.
11. Authorized dealership certificate should be provided in case of Original Equipment Manufacturers is not quoting directly.
12. Guarantee certificate, users' manuals etc. are to be handed over to the user after successful commissioning of the system.
13. In the event of date being declared a closed holiday for purchaser's office, the due date for submission of bids and opening of the technical bids will be the following working day at the appointed time.
14. In case of any dispute, the decision of IACS authority shall be final and bidding on the bidders.
15. For any clarification regarding technical specifications, information etc., please send your queries to Professor Joyram Guin (ocjg@iacs.res.in).
16. The authority of IACS reserves the right to reject any or all of the tenders received without assigning any reason thereof.
17. The OEM/vender should have at least one user available in the eastern zone of India, preferably Kolkata

Registrar