# CSIR – INDIAN INSTITUTE OF PETROLEUM
## (COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH)
### HARIDWAR ROAD, MOHKAMPUR, DEHRADUN INDIA – 248005

**EXPRESSION OF INTEREST**
**for**
**FINDING / SEARCHING DOMESTIC MANUFACTURERS OR SUPPLIERS FOR SCIENTIFIC / R&D ITEMS**

**IIP REF: IIP**/EOI/2020/MII/

**HARD COPY of your proposal to be submitted to:**


**Controller of Stores & Purchase**
**CSIR - INDIAN INSTITUTE OF PETROLEUM**
**(COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH)**
**HARIDWAR ROAD, MOHKAMPUR, DEHRADUN INDIA – 248005**
**E-Mail: cosp@iip.res.in, rawats@iip.res.in**
**Website:** http://www.iip.res.in


**LAST DATE FOR SUBMITTING WRITTEN PROPOSAL: Dec 1 , 2020, 3.00 P.M**

**ENQUIRIES SEEKING NAMES OF INDNETORS / END USERS SHALL NOT BE ENTERTAINED. ALL INSTRUCTIONS ARE AVAILABLE IN THIS DOCUMENT ONLY. PLEASE READ IT THOROUGHLY.**

CSIR-Indian Institute of Petroleum (IIP), Dehradun, an ISO 9001 Institute, is one of the leading constituent laboratories under Council of Scientific & Industrial Research (CSIR) engaged in R&D work in petroleum refining, natural gas and petro-chemicals and contributing towards creation of state of the art technology & products intends to procure various scientific instruments/ items as per the detailed specifications provided in this document. Normally most of these items with the kind of specifications and parameters required for users in IIP for their research purposes are available through international manufacturers / suppliers. In pursuance of recent policies / guideline /orders issued by various Ministries of the Govt. of India to encourage domestic manufacturing and preference to domestic suppliers under various programs like 'Make in India', 'Atma Nirbhar Bharat' etc. interested firms capable of offering the listed items are requested to respond to this notice.

Firms are requested to refer to the ***Order Nos. P-45021/2/2017-PP (BE-II) dt. 15.06.2017 as amended vide order of even number 28.05.2018, 29.05.2019, 04.06.2020, and 16.09.2020*** issued by Public Procurement Section of DPIIT, Min. of Commerce & Industry, Government of India in their own interest to know about the provisions related to domestic suppliers for participation in open tenders. Firms may also refer to various other policies / programs of the Govt. related to promoting domestic manufacturing and/or supply.

Following is the list of items with their detailed specifications that are required by users in CSIR-IIP to meet their research requirements. WE STRONGLY ENCOURAGE INDIAN MANUFACTURERS / SUPPLIERS OF SAME / SIMILAR ITMES TO GO THROUGH THE TECHNICAL PARAMETERS AND WRITE TO US EXPRESSING THEIR INTEREST TO MANUFACTURE / SUPPLY THE SAME. WHEREVER IT IS FELT THAT ANY / SOME PARAMETERS ARE RESTRICTIVE OR SUPERFLOUS IN NATURE, DOMESTIC MANUFACTURERS CAN BRING THE SAME TO OUR NOTICE.

DOMESTIC MANUFACTURERS / SUPPLIERS, INDIAN SUBSIDIARIES OR AGENTS OF FOREIGN MANUFACTURERS / SUPPLIERS ARE REQUESTED TO GO THROUG THE PROVISION OF ORDERS ISSUED BY DPIIT, MIN. OF COMMERCE & INDUSTRY OR ANY OTHER ORDER / CIRCULAR ISSUED BY OTHER MINISITRIES TO EXPRESS THEIR INTEREST TO SUPPLY THE ITEMS REQUIRED BY CSIR-IIP IN COMPLIANCE OF THE PROVISIONS OF THE THOSE ORDER(S)/CIRCULARS.

AFTER EVALUATING RESPONSE TO THIS EOI NOTICE, CSIR-IIP WILL DECIDE ABOUT FLOATING GLOBAL TENDER ENQUIRY (GTE) AFTER SEEKING APPROVAL OF THE COMPETENT AUTHORITY ONLY FOR SUCH ITEMS FOR WHICH NO DOMESTIC MANUFACTURER OR SUPPLIER HAS EXPRESSED INTEREST TO SUPPLY THE ITMES WITH THE REQUIRED SPECIFICATIONS IN PURSUANCE OF THE SAID GOVT. CIRCULARS / ORDERS / NOTIFICATIONS.

## CRITICAL DATE SHEET

| क्रमांक **Sl. No.** | प्रक्रम**Stage** | दिनांकऔरसमय**Date & Time** |
|---|---|---|
| 1. | प्रकाशनकादिनांकऔरसमय<br>Publish Date & Time | 06.11.2020 1600hrs IST |
| 2. | दस्तावेजविक्रय / डाउनलोडकाप्रारंभदिनांकऔरसमय<br>~~Sale/~~document Download Start Date & Time | 06.11.2020 1600hrs IST |
| 3. | संदेह / सवालपूछनेकीअंतिमदिनांकऔरसमय<br>Last Date & time for receipt of queries | 13.11.2020 1500hrs IST |
| 4. | बोलीपूर्वसम्मेलन, यदिहोतो<br>Pre-bid Conference, if any | NOT APPLICABLE |
| 5. | बोलीजमाकरनेकीप्रारंभिकदिनांकऔरसमय<br>Bid Submission Start Date & time | 06.11.2020 1600hrs IST |
| 6. | बोलीजमाकरनेकीअंतिमदिनांकऔरसमय<br>Bid Submission End Date & Time | 01.12.2020 1500hrs IST |
| 7. | बोलीखोलेजानेकीदिनांकऔरसमय<br>Bid Opening Date & Time | 02.12.2020 1500 HRS IST |

# EXPRESSION OF INTEREST

| 1 | **Item Name** | **Refinery gas analyser and Gas chromatograph (RGA, and GC)** |
|---|---|---|
| | Use of Item: Analysis of gaseous product from integrated hydropyrolysis and pyrolysis process in continuous mode. The gas consists of Hydrocarbons C1-C5, CO, CO2, N2, H2, CH4, H2S and oxygenates. | |
| | Whether BIS standards are available for the items proposed under procurement. If not, the efforts made to operationalize such standards. | Yes, IS 15130/ ISO 6974 |

**Tentative Specifications**

**System-1:**

1. Customized Gas Chromatograph as per **ASTM D7833**/**ASTM D1946** with 1FID and 2TCD for specific applications: Pyrolysis gas products. ($H_2$, $N_2$, $O_2$, CO, $CO_2$, moisture, HC, $C_1$-C5, $C_6$+in single online/offline injection and demonstrate for the same.
   - $H_2$,CO, $N_2$, $O_2$, $CO_2$, HC <=100 PPM
   - H2S <= 500 PPM
   - Moisture to be removed prior to injection of sample in RGA for the analysis
2. Analysis time should be ≤ 10 minutes**Main unit** with multi ramp (more than 15) temperature programming and advanced electronic pneumatic control (EPC)/electronic flow control (EFC)/ Advanced Flow Controller (AFC) for carrier and detector gas supply and capable of providing round the clock productivity.
   a. Highly precise retention time repeatability (< 0.0008 min) and area repeatability (< 1%RSD), full EPC/EFC/AFC for all inlets and detectors
3. **Injectors:**
   a. split/split less capillary injection port with maximum temperature 400 $^oC$ with electronic pressure control for carrier gas and split flow, pressure range 0-150 psi(S/SL).
   b. GSV with minimum temperature 80$^oC$, and injection ports should be independently heated. Multi-port automatic heated gas sampling valve for on-line analysis with 0.2ml, 0.5ml and 1 ml loop using GC Transfer Line from a pyrolysis/micro reactor (ambient pressure)
4. Oven
   - Temperature range ambient+4$^oC$ to 450$^oC$.
   - Multi ramp (more than 15) temperature programming and plateaus with high accuracy,
   - Temperature ramp rate 100$^oC$ per minute or better
   - Temperature set-point resolution should be 0.1$^oC$.
   - Fastest cooling down rate for oven (less than 5 minutes for cooling from 400 to 50$^oC$).
   - Ambient rejection : < 0.01°C per 1°C
5. Detectors
   a. High sensitivity Flame Ionization Detector FID should be connected to capillary column. Auto-ignition, auto-detection and re-ignition features.
      - Maximum temperature of FID should be 450˚C or better.
      - Detectivity should be 1.4 pg Carbon/sec or less than.
      - Linear dynamic range should be $10^7$ or better
      - Flame-out detection/auto re-ignition
   b. Micro Thermal Conductivity Detector (µ-TCD)/ Thermal Conductivity Detector (TCD).
      - Maximum temperature of TCD should be 400˚C or better.
      - Detectivity should be 400 pg tridecane /mL or 300 pg butane or 20000 mV x ml/mg Decane
      - Linear dynamic range should be 105 or better
      - Filament protection: standard,
      - Data Acquisition rate 500 Hz or better for both detectors (TCD&FID)

**System-2:**

6. Online/ offline Gas Chromatograph for detection of oxygenates in pyrolysis gas samples (alcohols, ethers, aldehydes, ketones, Etc.). The GC must comply with **ASTM D4815** for liquid samples.
7. **Main unit** with multi ramp (more than 15) temperature programming and advanced electronic pneumatic control (EPC)/electronic flow control (EFC) for carrier and detector gas supply and capable of providing round the clock productivity.
   a. Highly precise retention time repeatability (< 0.008%) and area repeatability (< 1%RSD), full EPC/EFC/AFC for all inlets and detectors
8. **Injectors:**

a. Split/split less capillary injection port with maximum temperature 400 $^{o}$C with electronic pressure control for carrier gas and split flow, pressure range 0-150 psi(S/SL).

b. GSV with minimum temperature 80$^{o}$C, and injection ports should be independently heated. Multi-port automatic heated gas sampling valve for on-line analysis with 0.2ml, 0.5ml and 1 ml loop using GC Transfer Line from a pyrolysis/micro reactor (ambient pressure)

9. Oven
   - Temperature range ambient+4$^{o}$C to 450$^{o}$C.
   - Multi ramp (more than 15) temperature programming and plateaus with high accuracy,
   - Temperature ramp rate 0.1 to 100$^{o}$C per minute or better
   - Temperature set-point resolution should be 1$^{o}$C.
   - Fastest cooling down rate for oven (less than 5 minutes for cooling from 400 to 50$^{o}$C).
   - Ambient rejection : < 0.01°C per 1°C
10. Detectors:
    a. High sensitivity Flame Ionization Detector FID should be connected to capillary column. Auto-ignition, auto-detection and re-ignition features.
       - Maximum temperature of FID should be 450˚C or better
       - Detectivity should be 1.4 pg Carbon/sec or less than.
       - Linear dynamic range should be $10^{7}$ or better
       - Flame-out detection/auto re-ignition

**System-1 & 2: (Individual)**

1. Control Through GC keyboard and PC software independently. Full EPC (Electronic Pneumatics Control)/ electronic flow control (EFC)/ Advanced Flow Controller (AFC) for inlets and detectors.
2. Alarm facility for heater, sensor and gas flow faults.
3. Data system: Work station with Core i7 computer with provision for dual channels for the simultaneous collection of data. Software should be Windows 8/10 (64 bit with DVD) based and should be capable of report generation through multi-tasking window (complete environment control through software) and data processing with provision for offline data processing. Software should be capable of doing all operations required for running the instrument (complete instrument control through software/PC)
4. The Chromatography software should be a client server based Chromatography data system supporting LIMS (Laboratory Information Management System) integration.
5. The software should be able to acquire data from all the detectors and should have a single point control of all gas chromatographic parameters. The software should have the facility for interactive graphics, tool bar facility for online editing, recalculation, batch data processing, overlay, peak integration, S/N (signal to noise) ratio, programmable integration control, baseline compensation, options for continuous averaging of calibration data, weighted regression etc. All standard chromatographic parameters for qualitative and quantitative analysis should be available. Back-up for all software should be provided.
6. Desk top computer system Core i7(with Turbo Boost), 3.4 GHz, 8.0 GB RAM, 1000 GB hard disk, 16X DVD, CD, Combo drive, USB multimedia keyboard, optical USB mouse, 21/22 inch Full HD IPS LED monitor with latest Windows 8/10 ( 64 bit) Ultimate and CD back-up from standard supplier like IBM/HP etc. USB port and other standard features.
7. For nitrogen, helium (carrier gas lines) for removing moisture, hydrocarbons, oxygen and other gases in series. For detector gas supplies i.e. for hydrogen and air lines, traps for removing moisture and hydrocarbons.
8. Suitable analytical Columns should be provided as per the specified application.
9. Gas tight syringe for gas samples for 100 µL 10 no. each; Liquid syringe for liquid samples for 10 µL 10 no. each.
10. Complete Installation accessory kit, complete with SS 316 tubing, spanners, metal tube cutter, screwdriver, wrench, snoop leak detector, fuses, ferrules, nuts, fuses, septa, jet tool heaters, one set of spare columns as per our application and sensors etc. required at our site.
11. Consumables and Accessories
    a) OEM have to confirm spares availability for 10 years from the date of supply
    b) Spare kit including essential part for two year operation during warranty
12. Electrical: 230 VAC + 10 %; Frequency 50/60 Hz.
13. RGA standard and oxygenates standard for calibration with calibration certificate must be provided.

For and on behalf of CSIR

Sd/-

Controller of Stores & Purchase

# IMPORTANT INSTRUCTIONS

- INTERESTED FIRMS NEED TO SUBMIT PROPOSALS IN HARD COPY FORMAT LATEST BY Dec.1, 2020. WE MAY NOT BE ABLE TO CONSIDER PROPOSALS RECEIVED AFTER THIS DATE. THIS WILL NOT HOWEVER PREVENT YOU FROM PARTICIPATING IN THE OPEN TENDERING PROCESS, IF DONE SUBSEQEUENTLY THROUGH GeM OR CPPP PORTAL.
- PLEASE NOTE THAT CSIR-IIP'S ITEM SPECIFICATIONS / PARAMETERS ARE BASED ON USERS RESEARCH REQUIREMENTS AND FUNCTIONAL NEEDS AND MAY INVITE THE FIRMS FOR PRE INDENT MEETING / PRESENTATION /DSICUSSIONS. INTIMATION RE. THAT SHALL BE SENT SEPARATELY BY EMAIL ONLY AND ALSO HOSTED ON CSIR - IIP WEBSITE. THERE IS NO NEED TO FOLLOW UP TELEPHONICALLY AND/OR THROUGH EMAIL.
- WRITE ON THE MAIN ENVELOPE 'EXPRESSION **OF INTEREST'** FOR **'ITEM NAME'** WITH '**REF. NO.**' AS GIVEN IN THIS BID DOCUMENT. THE ENVELOPE MUST BE ADDRESSED TO THE **CONTROLLER OF STORES & PURCHASE**AND SENT TO THE ADDRESS PROVIDED ON THE TITLE PAGE OF THIS DOCUMENT.
- SEND ONLY TECHNICAL LITERATURE / BROCHURE. THERE IS NO NEED TO ENCLOSE RECOMMENDATION LETTERS OR ANY OTHER DETAILS NOT CONCERNED WITH THE TECHNICAL ASPECT OF THE ITEM AT THIS STAGE.**PLEASE NOTE THAT NO FORMAL OPENING WILL TAKE PLACE AT A SPECIFIED DATE OR TIME FOR THE OFFERS RECEIVED AS THIS BEING PROSPECTING ACTIVITY IS JUST AN INFORMATION GATHERING / SEEKING EXERCISE AND NOT A TENDERING PROCESS.**
- THIS EXERCISE IS BEING CARRIED OUT TO GET DETAILED IDEA ABOUT THE TYPE OF SPECIFICATIONS, TECHNICAL PARAMETERS INDIAN MANUFACTURERS ARE WILLING AND ABLE TO MANNUFACTURE AND / OR SUPPLY(IN PURSUANCE OF VARIOUS GOVERNMENT POLICIES / GUIDELINES / INSTRUCTIONS) FOR THE TYPE OF EQUIPMENT DESIRED TO BE PROCURED BY CSIR – IIP SO THAT CSIR – IIP CAN AVOID GOING FOR GLOBAL TENDERING AND ENCOURAGE DOMESTIC MANUFACTURING AND COMPETITION.
- BEING A PUBLIC FUNDED ORGANIZATION CSIR-IIP IS ENTITLED TO CONCESSIONAL GST @5% AND CONCESSIONAL CUSTOMS DUTY PAYABLE UNDER…
- OPTIONALLY FIRMS MAY ALSO ENCLOSE 'BUDGETARY OFFER' TO ENABLE US TO GET BROAD IDEA ABOUT THE PRICING. **PLEASE NOTE THAT THIS IS NOT A TENDER OR BIDDING PROCESS AND THE PRICES SENT BY YOU SHALL NOT BE USED TO MAKE PURCHASE DECISIONAT ALL.** WE WILL FRAME ITEM SPECIFICATIONS& DETAILED BID DOCUMENTAFTER WHICH TENDERING PROCESS SHALL BEGIN. YOU MAY GET OPPORTUNITY TO PARTICIPATE IN OUR TENDERING PROCESS WHERE BID PRICES ARE ALSO REQUIRED TO BE QUOTED. **DISCLOSING BUDGETARY PRICES AT THIS STAGE IS PURELY OPTIONAL & FIRMS MAY SKIP THIS IF THEY FEAR LOSING COMPETITIVE ADVANTAGE AT THE TENDERING STAGE LATER.**
- WARRANTY, EXTENDED WARRANTY AND AMC OFFERINGS AVAILABLE (PERIOD OF COVERAGE AND ESTIMATE) SHOULD BE PROVIDED FOR ALL ITEMS.

**For and on behalf of CSIR**
**Sd/-**

**CONTROLLER OF STORES &PURCHASE**