बीरबल साहनी पुराविज्ञान संस्थान, लखनऊ
BIRBAL SAHNI INSTITUTE OF PALAEOSCIENCES, LUCKNOW

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बी सा पु सं /III/भंडार एवं क्रय/ C-210

Date: 31.05.2022

संयोजक वेबसाइट समिति,
बी सा पु सं, लखनऊ

Subject: Labview Sample extraction System (Specification attached)

Dear Sirs,

This Institute intend to procurements of items/materials as mentioned above subject. Sealed quotations are invited so as to reach this office on 20.06.2022 before 5:00 P.M. duly superscribed by **"Labview Sample extraction System".**

While submitting quotation please note that:

1) The material may either of indigenous manufacturer or of foreign make, available from ready stock. Any offer to supply on forward Delivery Basis under suppliers own quota license will also be considered.
2) The price quoted should be F.O.R. Destination.
3) Your rates should include packing, insurance and forwarding charges.
4) The rates of Sales Tax should be clearly indicated wherever chargeable. The tendered should also indicate Central/Sales Tax Registration Number and date in this quotation.
5) Specific mention should be made whether the offer is for supplies available ex-stock. In case the officer is on Forward Delivery basis, firm delivery period must be indicated.
6) The cover should be sealed and superscribed "Quotation for **"Labview Sample extraction System"** must be written on envelope. The quotations not complying the procedure will be rejected.
7) Payments will be made by crossed cheque/online through Indian Overseas Bank, Lucknow only after receipt and acceptance of supply and installation/ if required satisfactory.
8) The acceptance of the quotation will rest with the Director who does not bind himself to accept the lowest quotation and reserves the right to himself to reject or partially accept any or all the quotation received without assigning any reasons.
9) The quotations are liable to be cancelled if any of the above mentioned conditions are not complied with.
10) The quantity may be increase or decrease at the time of purchase.

In addition to above following information should be furnished in all aspects with your offer:

1) Brief history of organization/ firm along with organization chart, mentioning the Name, Designation & Tel. Nos. of the contact persons in your company/firm holding all key positions.
2) Income tax certificate for the last three financial years.
3) Work Orders, Client list, with copies contract of your top 5 client during last 3 years.
4) Banker's name and firm's annual audited report/balance sheet for last 3 years.
5) Firm/company's Registration Details.
6) Registration no. And date. (kindly attach a photocopy of registration certificate).
7) Registration Details with taxation authories:
   a) Permanent Income Tax A/C No. (PAN)
   b) GST Registration Number

31/05/2022

(Sandeep Kumar Shivhare)
Registrar

The tender requires developing a fully functioning automated system for the preparation and inlet of carbonates and gases for clumped isotope analysis. The extraction line, shall be an automated system for extraction and purification of CO_2 from carbonates or related samples for clumped-isotope thermometry

The system shall have these components

1. Reaction of sample in H_3PO_4 under a vacuum environment, and simultaneous cryogenic removal of H_2O and CO_2.
    a. Should include and be compatible with the 50 pos.carousel.240Vautosampler
2. Passage of the CO_2 through a cold GC column (Porapak Q, -20C)
3. Removal of GC carrier gas (He), final in-vacuo cryogenic purification, and introduction to the mass spectrometer.

The system shall be fully automatic and compatible with the isotope ratio mass spectrometer Thermo MAT 253+.The software program to run the automated line. Should function with air operated stainless steel valves. The temperature of the cryo traps shall be controlled by moving the dewars filled with liquid nitrogen and ethanol liquid nitrogen slush. These movements shall be controlled by XY movement lifter mechanism

Carbonate reaction and gas purification

The setup to be constructed should be automated for carbonate acid digestion and gas purification system used for sample preparation. It should consists of a Zero Blank Autosampler, a common acid bath, several cryotraps and a gas chromatograph with cryogenic water traps upstream of the vaccum source. The vaccum source shall pump one, the part of the extraction line in front of the GC, including the autosampler and the common acid bath, second, shall provide the high vacuum for the two cryotraps in front of and behind the GC. The analysis shall be as follows, per replicate, ~10 mg of calcite shall be loaded into silver capsules. These are then placed into the autosampler, located on top of the common acid bath. Once loading is completed, the autosampler and the common acid bath are turbo-pumped for at least 5 h. Slight rotation of the autosampler forces a sample-bearing silver capsule to drop down into the phosphoric acid (>105 wt%). Carbonate samples are routinely reacted for 30 min, and the evolving CO_2 is continuously removed at −196 °C in trap 2. Trap 1 is kept at −80 °C to remove water. During the reaction, the pressure is continuously monitored at trap 2. After the reaction is complete, traps 2, 3 and 4 are set to −80 °C, while trap 5 is cooled to −196 °C. Helium enters trap 2 at a flow rate of 15 ml/min and purges the CO2 through trap 3, the GC column (kept at −15 °C) and trap 4, before it is frozen out again in trap 5. After 45 min, the GC column is purged with He in the reverse flow, heated to 150 °C and kept at this temperature until the next sample is being prepared. Helium is pumped away from trap 5. Afterwards, trap 5 is warmed up to −80 °C and trap 6 cooled down to −196°C. The yield of CO2 is determined in the volume of trap 5 and the CO2 then frozen out in trap 6. Once freezing is complete, trap 6 is isolated from trap 5, warmed up to −80°C and the pure CO2 introduced into the sample bellow of the mass spectrometer through expansion.

2/7/05/2022

Registrar
Birbal Sahni Institute Palaeosciences
Lucknow

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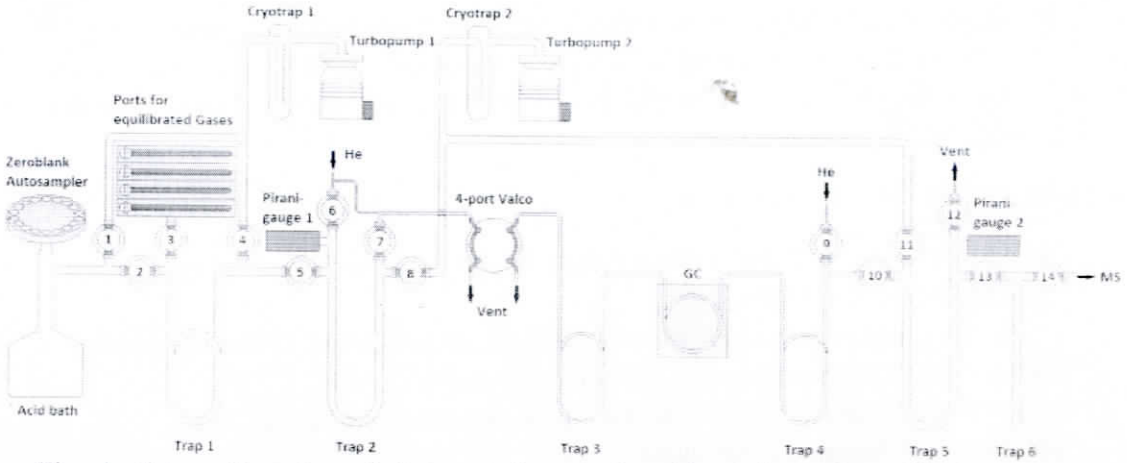

Fig. 1. Schematic setup of Automated extraction Line.(after : Jens Fiebig, David Bajnai, Niklas Löffler, Katharina Methner, Emilija Krsnik, Andreas Mulch, Sven Hofmann, Combined high-precision Δ48 and Δ47 analysis of carbonates, Chemical Geology, Volume 522, 2019, Pages 186-191, ISSN 0009-2541, https://doi.org/10.1016/j.chemgeo.2019.05.019.)