

<b>Name of Machine</b>	<b>Gas Chromatography-Mass Spectrometry (GC-MS)</b>
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<b>Make</b>	Agilent	<b>Model</b>	7890 B (GC system) and Agilent 5977A (MSD)
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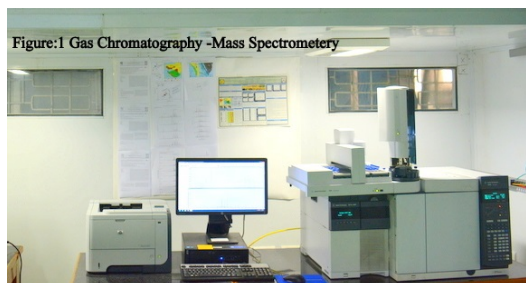
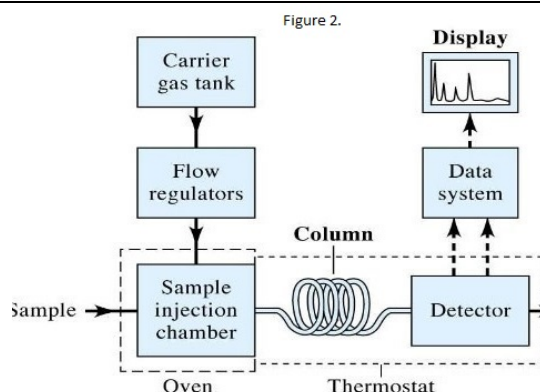


Figure:1 Gas Chromatography -Mass Spectrometry



### Specification

#### Mass Selective Detector

- |                          |  |
|--------------------------|--|
| • EI source              | Standard Inert or high sensitivity Extractor |
| • CI source              | PCI, NCI, and EI acquisition                 |
| • Ion source temperature | 150–350 °C                                   |
| • Quadrupole temperature | 106–200 °C                                   |
| • Mass filter            | Monolithic hyperbolic quadrupole             |
| • Mass range             | 1.6–1,050 u                                  |
| • Mass axis stability    | Better than 0.10 u/48 h                      |
| • Detector               | Triple-Axis Detector with long life EM       |

#### Gas Chromatograph

- |                          |   |
|--------------------------|---|
| • Oven temperature       | Ambient +4 – 450 °C<br>Ambient +5 – 350 °C                                |
| • Oven ramps/plateaus    | 7890B Supports 20 oven ramps with 21 plateaus. Negativeramps are allowed. |
| • Retention-time locking | RTL-ready   |

### Working principle:

The Gas Chromatography/Mass Spectrometry (GC/MS) instrument separates chemical mixtures (the GC component) and identifies the components at a molecular level (the MS component). It is one of the most accurate tools for analyzing environmental samples. The GC works on the principle that a mixture will separate into individual substances when heated. The sample is injected into the GC inlet where it is vaporized and swept into a chromatographic column by the carrier gas (helium). The sample flows through the column and the compounds comprising the mixture of interest are separated by virtue of their relative interaction with the coating of the column (stationary phase) and the carrier gas (mobile phase). The latter part of the column passes through a heated transfer line and ends at the entrance to ion source where compounds eluting from the column are converted to ions. A beam of electrons ionize the sample molecules resulting in the formation of molecular ion and smaller ions with characteristic relative abundances that provide a 'fingerprint' for that molecular structure. The mass analyzer separates the ions and is then detected.

(Fig. 1 and Fig, 2)

### Application

GC-MS is an instrument that combines the features of gas-chromatography and mass spectrometry to identify different organic compounds presents in the organic matter, which includes Alkanes, Fatty acids, Alkenones, Sterols etc. GC-MS is becoming the tool of choice for tracking organic compounds derived from variety of plants as well as in their fossil counterpart, which may enable us to understand evolution through time and may also help in palaeoclimate reconstruction.

### User Instruction

- Presently, geological samples will only be considered for the analysis.
- The powdered sample amount should be approximately 30 gm (finer than 100 mesh) and should be properly labeled and packed without any contamination.
- Solid samples will be charged extra for crushing and grinding.
- Details (eg. Location, depth etc.) of the samples should be provided in the application.
- If available, TOC values should be provided.
- 15 samples will be considered in a single slot.
- Please make available the analysis related publications to expedite the sample preparation related protocols.
- Explosive, poisonous and any hazardous sample giving rise to toxic gases/fumes cannot be undertaken for analysis.
- Data generated will be provided on CD (Compact Disc) or DVD (Digital Versatile Disc).

### Contact Person

**In-Charge**

Dr. Anupam Sharma (0522-2742974);  
anupam\_sharma@bsip.res.in

**Staff:**

Dr. R.P. Mathews (0522-2742930);  
[runciepaulmathews@gmail.com](mailto:runciepaulmathews@gmail.com)

### charges

S. No.	Instrument/ Analysis	Govt. Organization (University/Research Institutes)	Student charges	Private sector/ Industry	Remarks (if any) (Rates quoted = Rs. )
1.	GC-MS Lab	2500.00	1875	5000.00	

### Guideline

1. The analytical data/spectra provided cannot be used as certificates in legal disputes.
2. Service charges (including GST) will be payable in advance (Draft/RTGS/NEFT) in favour of "The Director, BSIP, Lucknow". Payable at Lucknow
3. Separate samples should be sent for different analysis. Samples will not be analysed until payment is received.
4. In case of prepared samples, the user must specify the procedure that how the sample was prepared (complete methodology).

5. In all correspondence related to analysis, our reference number must be mentioned.
6. Individual Scientists and Research fellows should send their application and samples through their project head. Discount in analysis charges for research fellows of universities/institutes will be decided by the Director in consultation with respective lab.
7. Interpretation of data/spectra will NOT be done.
8. It is mandatory for user to acknowledge the facility in their research work and communicate the same to the respective laboratory and the Director, BSIP, Lucknow for onward communication to DST, New Delhi.
9. For Lab visit, it is mandatory to take prior appointment from Director, BSIP before your visit. The application should be send through department/Senior official of institution/Company. No deviation will be allowed for the timings.

To be filled in by the user while submitting the form

Job No as ASE CF

Date of submission:

(Sample Information Form)

REQUISITION FORM

**BIRBAL SAHNI INSTITUTE OF PALAEOSCIECES, LUCKNOW**

53, University Road, Lucknow, Ph. 0522-2740008, 2740399

(ASE Central Facility)

Website: [www.bsip.res.in](http://www.bsip.res.in), E mail: [gcms.bsip@gmail.com](mailto:gcms.bsip@gmail.com)

Geochemistry Lab

**(Information to be filled in by the user)**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Email and Mobile No.: \_\_\_\_\_

Category (In-house/sponsored/Govt. organization/private): \_\_\_\_\_

Number of samples: \_\_\_\_\_

Sl. No.	Sample ID	Type/Nature of Sample	Quantity	Year of collection	Lat./Long.	Remarks, if any
1						
2						
3						
4						
5						

To be filled in by the user while submitting the form

Job No as ASE CF

Date of submission:

SAMPLE REQUISITION FORM

**BIRBAL SAHNI INSTITUTE OF PALAEOSCIECES, LUCKNOW**

53, University Road, Lucknow, Ph. 0522-2740008, 2740399

(ASE Central Facility)

Website: [www.bsip.res.in](http://www.bsip.res.in), E mail: [gcms.bsip@gmail.com](mailto:gcms.bsip@gmail.com)

Geochemistry Lab

**(Information to be filled in by the user)**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Email and Mobile No.: \_\_\_\_\_

Category (Inhouse/inhouse sponsored/Govt. organization/private): \_\_\_\_\_

Number of samples: \_\_\_\_\_

Nature of samples (with details): \_\_\_\_\_

Scientific Objective of this study: \_\_\_\_\_

\_\_\_\_\_

Additional information, if any: \_\_\_\_\_

\_\_\_\_\_

Location (Lat & Long): \_\_\_\_\_

Exposed Section/Trench/Core/Others: \_\_\_\_\_

**(For office use only)**

Lab Reference No.:

R.P.C.C./ Registrar : Kindly raise the bill for the above

Total Charges:

Taxes:

Grand Total: