

Gas Chromatography

A Technique for the Analysis of
Chemical Mixtures

Theory and Terms

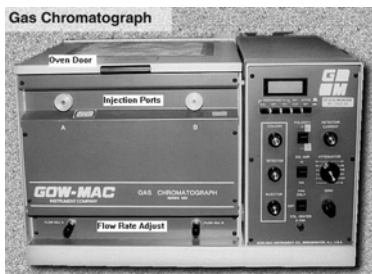


Gas Chromatography.htm

A GC Like Ours



All GC's Have Certain Controls



GC Controls

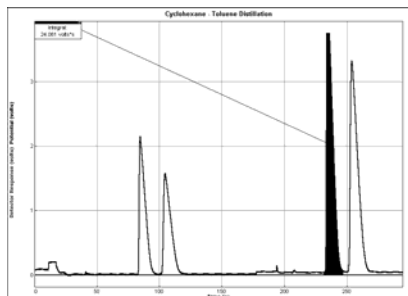
- Injection Ports
- Gas Flow Control
- Temperature Control
- Bridge Current
- Attenuation
- Zero



Many GC's Must Be Connected to a Recording Device That Records the Detector Output

- A chart recorder just plots voltage vs time on a paper chart
- A computer program like Logger Pro captures data, plots it, and allows for analysis at a later time
- An integrator captures data, plots it, and determines the areas under the peaks

What a Gas Chromatogram Looks Like



Important Things to Determine From a GC Analysis

- How many different components are in the injected sample
- The retention time for each component
- The area under the peaks for each component (not for any solvent used)
- The relative areas for each component which are equivalent to the % of each component in the injected sample

How Do We Determine the Identity of a Given Peak?

- Inject a pure sample of each compound you might have in the mixture
- Measure the retention time for each compound
- Inject the sample to be analyzed and assume that peaks with specific retention times correspond to specific standards whose retention times are known

Is there Any Way to Determine the Order That Components Should Arrive at the Detector?

- All samples are vaporized in the injector
- Increased retention times correspond to increased adsorption to the column packing
- Compounds with higher BP's should interact more and come out after compounds with lower BP's but this is not always the case
- Unless you are told the order, use standards!

Some Other Things to Know

- We normally inject between 1 and 5 μ L
- Be very careful when injecting a sample
 - The injection port is VERY HOT
 - The syringe is very delicate and easy to bend
 - In injection process should take < 2-3 sec
- Be sure to let the computer know when the sample has been injected. Press the START button on the integrator or click the Start button in Logger Pro

Obtaining a Chromatogram for Your Lab Report

- The integrator will print out the chromatogram as well as the retention times and areas
- For Logger Pro, save the data on a floppy disk (Drive A) and take it to the study room for printout and analysis. Open the file using Logger Pro or Graphical Analysis

Each Student Must Have a
Chromatogram That They Have
Personally Analyzed.

Copies Are NOT Acceptable

End Gas Chromatography
