

GLC ANALYSIS

- I. Sample Injection and Obtaining a GLC Trace
 - A. To prepare 1.0 μL syringe for injection
 1. Rinse syringe with sample to be injected into GLC
 - a. Place tip of syringe needle below surface of sample
 - b. Pull syringe plunger up to 0.3 μL level (never > 0.3 μL !) then push down
 - c. Do not remove tip of syringe needle from sample
 - d. Repeat up and down strokes 5 to 10 times
 - e. Stop rinsing on an upstroke
 - f. Slowly push down to 0.1 μL level
 2. Remove syringe from solution
 - a. Optional - pull syringe plunger up to 0.2 μL level
 - (1) May help prevent the sample from evaporating before injection into GC
 - (2) Places 0.1 μL air between sample and tip of syringe needle
 - B. Inject sample into INJECTOR 2
 1. INJECTOR 2 located on top of GLC
 - a. INJECTOR 2 (rear injector) uses packed columns
 - b. INJECTOR 1 (front injector) uses capillary columns
 2. Insert needle completely into injector
 3. Quickly inject sample and press green RUN button
 4. Remove syringe immediately from INJECTOR 2
 5. Return syringe carefully to foam holder
 - C. The READY indicator on monitor should go out
 - D. A GLC trace should begin to be produced on the computer monitor screen
 - E. When completed
 1. GLC trace will be automatically stopped
 2. Printer will automatically print GLC trace and report
- II. Trace Annotations
 - A. GLC trace must be annotated with the following information
 1. Student name
 2. Sample name
 3. Experiment name
 4. Class id (lab meeting time)
 5. Date of spectral submission
- III. Measurements and Calculations
 - A. Measurements
 1. Using ruler and pen
 - a. Peak height
 - (1) Draw a horizontal line through baseline below all peaks
 - (2) Draw a vertical line from baseline to top of peak
 - (a) This is the peak height
 - (3) Measure distance of peak height to 0.1 mm
 - (4) Write value beside vertical line
 - b. Peak width at half-height
 - (1) Locate point one-half distance from baseline to top of peak
 - (a) This is the peak half-height
 - (2) Draw a horizontal line from left to right side of peak through peak half-height point
 - (a) This is the peak width at half-height
 - (3) Measure distance of peak width at half-height to 0.1 mm

- (4) Write value beside horizontal line
 - c. Repeat this process for all individual peaks
- B. Calculations
 - 1. Area calculation(s)
 - a. Multiply peak height by peak width at half-height
 - (1) Numeric answer will be in mm^2 (square millimeters)
 - b. Write out numeric equation and answer
 - c. Repeat for all individual peaks (A_i)
 - 2. Percent calculation(s)
 - a. Add all peak areas to determine total area (A_T)
 - b. Percent calculation = $(A_i / A_T) * 100\%$
 - c. Write out numeric equations and answers for both A_T and %
 - d. Repeat for all individual peaks ($\%_i$)