

Name _____ Partner Name _____

TA Name _____ Section Day _____ Time _____

Experiment 2.2 Worksheet – Gas Chromatography (GC) Analysis of Citrus Oils

Use as reference for notebook preparation – every student submits on Canvas individually after lab

Pre-Lab Requirements

1. **Dress for lab** – see safety rules – arrive a few minutes early
2. **Lab Notebook:** copy templates below into designated notebook
 - **Purpose, scheme, and reagent table**
 - **Procedure Diagrams** – must be complete before you can start the lab

A. Purpose and structures of terpenes:**B. Reagent Table**

Sample Name	Molecular Mass	Boiling point	Density	Hazards
alpha-pinene				
beta-pinene				
limonene				
gamma-terpinene				

C. Procedure – hand-drawn using procedure in lab PDF, class notes, & Slugs@home

- Instructions, sketches, & labels for **all equipment, chemical names with amounts, & transfers**
- Leave space to record additional notes and observations within the procedure diagrams

Step 4. Sample Preparation

- Representative diagram for any 1 sample: steps for drawing liquid & air into syringe

Step 5. Injection of Standards, Citrus Oil, & Data Collection

- Identity and volume of each standard
- Transfer from needle to GC (one representative sample)
- GC diagram: injection port, oven, chart recorder & rough sketch of chromatograms

Step 6. Sample Spiking with Data Collection

- Steps for sample spiking, including how it differs from regular sample preparation
- Identity of components in syringe for both sample spikes

E. Data**Standard (pure) GC Retention times**

Sample	Corrected t_R' (s)
α -Pinene standard	
β -Pinene std.	
Limonene std.	
γ -Terpinene std.	

GC Analysis of Citrus Oil

(add as many rows as needed)

Peak #	Peak ID	Corrected t_R' (s)	Integration (cm^2)	% Composition

Analysis of “spiked” chromatograms – pretreat syringe with any standard except limonene, then inject oil

Spiked with

Peak #	Corrected t_R' (s)	Peak ID

Spiked with

Peak #	Corrected t_R' (s)	Peak ID

What do each of these spiked chromatograms tell you about the composition of your oil?

F. Abstract Draft / Content

Use the writing worksheet on Canvas for step-by-step instructions!