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CHEM 237 – 549

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Simple Distillation and Gas Chromatography Lab Report

Results:

The chemicals assigned to my lab station were hexane and octane. The experiment called for the simple distillation of a 50:50 solution of the two chemicals, where the boiling point range of each fraction of solution was determined. Next, a gas chromatography treatment performed to each sample. The results of each experiment were then compiled into the table below.

Area Percentages of Distilled Fractions			
	Fraction 1	Fraction 2	Fraction 3
Hexane	100.0 %	21.74 %	3.35 %
Octane	0.00 %	78.26 %	96.65 %

Fraction	Boiling Point Range
1	24.2 – 32.0 °C
2	32.0 – 52.4 °C
3	52.4 – 73.6 °C

The same results were collected from the neighboring group regarding the Heptane/Hexane trials. The results were compiled into the data tables below.

Area Percentages of Distilled Fractions			
	Fraction 1	Fraction 2	Fraction 3
Heptane	70.07 %	52.00 %	14.06 %
Octane	29.93 %	47.00 %	85.94 %

Fraction	Boiling Point Range
1	27.2-74.4 °C
2	74.4-78.0 °C
3	78.0-68.0 °C

Discussion:

The data obtained suggests that in each respective experiment, only hexane and heptane distilled during the first collection, followed by octane once the

temperature increased. This seems logical because hexane and heptane are both smaller and have a lower boiling point than octane. Each time the samples were observed using gas chromatography, the area of hexane/heptane decreased and the area of octane increased. These results proved to us that the distillation methods were successful way to purify volatile compounds and that gas chromatography is a successful way of determining the proportions of chemicals in a solution. Errors that could have deterred data for either group include smudges or scratches on the chromatography vials, impurities left in solution, or lab accidents that inhibited the experiment from running until conclusion. These errors could be avoided by inspecting equipment prior to use, carefully following procedures and confirming each step with the lab TA, and following safety rules to prevent accidents from occurring.