Separation and Analysis of Pharmaceuticals using RP-HPLC
CHEM 4303
Analytical Separations

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Abstract

High-performance liquid chromatography is a separation technique blah blah blah ...

1 Introduction

Write your epic introduction here.

The main objectives of this experiment is to ...

2 Methods and Instrumentation

2.1 Chemicals

Toluene (HPLC grade chemical, LOT: 591103-A6, CAS: 108-88-3), naphthalene (Fisher Scientific, LOT: 895861, CAS: 91-20-3), and a mixture of PAH (PAH mix 1, LOT w00382; PAH mix 2, CD-1661; Ultra EPA 2138N-1, EOA 2139N-1, ACN) were used in this experiment.

The safety information for the aforementioned chemicals: (this might not be needed...)

Toluene flammable, potential acute and chronic health effects.

Naphthalene flammable, toxic and carcinogenic.

PAH mixture flammable, can cause death, health hazard, can cause damage to the aquatic environment.

2.2 Instrumentation

The analysis of the PAH mixture was performed on an Agilent 6890N Network GC System (by Agilent Technologies), equipped with an FID detector. Before each analysis, the apparatus was left on standby so that the flame was able to reach the desired temperature for that particular analysis. The separation was performed on an Agilent 122-5032 J&W DB-5 capillary column, $30\,\mathrm{m}$ length $\times$ $0.25\,\mathrm{mm}$ i.d. $\times$ $0.25\,\mu\mathrm{m}$ thickness, $7\,\mathrm{inch}$ cage. Its stationary phase was 5% Phenyl/95% methylpolysiloxane (DB-5). In addition, each analysis was conducted with the injection mode at splitless and the carrier gas in the GC-FID was He, with a flow rate of $1\,\frac{\mathrm{mL}}{\mathrm{min}}$. The injector port temperature was set to $260\,^{\circ}\mathrm{C}$ and for the analyses of toluene and naphthalene, the detector temperature was set to $280\,^{\circ}\mathrm{C}$, and it was increased to $300\,^{\circ}\mathrm{C}$ for the analyses of the PAH mixture.

2.3 Methods

3 Results and Discussion

3.1 Results

Write your results here...

3.2 Discussion

Write your discussion here...

In conclusion...

4 References

References

(1) Harris, D. C., *Quantitative chemical analysis*, 8th ed; W.H. Freeman and Co: New York, 2010.

5 Appendix

5.1 Calculations

Calculating the response factor

$$\frac{\textit{Area of Analyte Signal}}{\textit{Concentration of Analyte}} = F\left(\frac{\textit{Area of Standard Signal}}{\textit{Concentration of Standard}}\right)$$
$$\frac{A_X}{[X]} = F\left(\frac{A_S}{[S]}\right) \tag{1}$$

Equation 1 was taken from [1], where $[X]$ and $[S]$ represent the concentrations of analyte and of the standard.

5.2 Chromatograms

There are 50(?) pages of printouts that were collected during this experiment, 6 of which are GC-FID chromatograms.(?)