

Sample Electronic Proofreading and Copyediting

The following pages show a file that was edited electronically using the track changes feature of Microsoft Word. The file is an introduction to a lab report for a college level chemistry class.

When proofreading I focused on spelling, punctuation, and capitalization. When copyediting I looked for run-on sentences, wordiness, non-parallel construction, awkward statements, and anything else that made the work difficult to read and understand. Some heavier editing resulted in a suggestion to move an introductory paragraph to a higher position in the section.

Since this was an academic work, I did not change the technical content of the file. However I did include comments to the author so she could consider clarifying some items.

A manual edit of the same document is also available.

Introduction:

Chromatography is a technique used to separate a mixture that has two or more different components. Chromatography can be used to analyze fat contents of food, and analyze purity and the components of drugs and medications, and measuring impurities in raw materials that are used in manufacturing, and much more. It is useful because it can be performed on a small scale and can be easily manipulated to get a very fine separation of components.

Different types of chromatography are used depending on the phases of the components to be separated. All types of chromatography have a stationary phase and a mobile (eluent) phase and they separate a mixture into components based on each component's ability to adhere to the stationary phase. Solid-liquid chromatography, including column, and thin layer chromatography (TLC), and gas-liquid (GC) chromatography, (GC) is are commonly used types of chromatographies.

Chromatography makes use of a Stationary Phase and a Mobile Phase to separate components of a mixture. Separation amount depends on how well each component adheres to the Stationary phase. Therefore;

Polarity is a very important concept in chromatography as well because the how much the difference in polarities are different of between the stationary phase and the components of the mixture determine the amount of attraction between among them. If a polar stationary phase is used then a polar component of the mixture will adhere more strongly to it than a less polar component would. This adhesion will cause a separation of the components. The partition coefficient, aka K_p is: the ratio of the concentration of the component that remains in the stationary phase to the concentration of the component that remains in the mobile phase. If $K_p > 1$ the component has an affinity for the stationary phase, So it probably meaning it has a polarity similar to the stationary phase. If $K_p < 1$ the component has an affinity for the mobile phase, so a different polarity than stationary. The partition coefficient depends on many factors, like polarity, or solubility, or presence of Hydrogen bonding, and boiling point, and others more also.

A detector is needed at the end of the chromatography to measure when and where the components come off the column. In gas chromatography, a detector is used to record a change when the eluent exits the column. In column chromatography and TLC, detection is possible by viewing you can see the different bands of color moving down the column or up the TLC plate.

~~Solid liquid chromatography, including column and thin layer chromatography (TLC), and gas liquid chromatography (GC) are commonly used types of chromatographies. Different types are used depending on the phases of the components to be separated. All types chromatography have a stationary and mobile phase and they separate a mixture into components based on ability to adhere to the stationary phase.~~

In gas chromatography, a liquid sample is injected into a heated port and immediately vaporized. The sample then travels through the column in with a gas mobile phase or remains in the stationary phase which is a liquid dissolved in on a solid packing. Helium is typically pretty much always used as a carrier gas and you choose the liquid to used in the stationary phase is gets chosen based on the polarity of the compound that needs to be separated. Common stationary phases are: carbowax and it's (polar), SE-30 and it's (non-polar), and SE-52 which it's (non-polar). Gas chromatography should only be used is useful to separate and analyze compounds that can be vaporized without destroying them or changing their structure.

Column chromatography requires packing a column to be packed with the stationary phase, and running a mobile phase (eluent) that will be run through the column to separate the sample. Common stationary phases used in column chromatography are, silica gel (polar) and alumina. The eluent is chosen based on polarity and the eluent can be switched during the process. Changing polarities of the eluent will switch which component of the sample is separated out. A more polar eluent will work best for a more polar component. The eluent must be more polar to separate a more polar component because the component needs to be "pulled" off of the polar stationary phase. As different eluents are passed through the column, each fraction of the sample that is separated out is collected and can be checked further. Then we check the components farther with thin layer chromatography.

Comment [QTC1]: AU: Suggest moving this section up to second paragraph position because it contains introductory information on different types of chromatography.

Comment [QTC2]: AU: Is the correct name "gas" or "gas-liquid" as used in earlier section? Use the same term in all places for consistency.

Comment [QTC3]: AU: Does the new wording keep your original meaning?

Comment [QTC4]: AU: Is alumina polar or non-polar? You indicate the polarity of all other stationary phases, so you may want to include polarity for this one too.

Comment [QTC5]: AU: Is "fraction" the same as "component"? Consider using the same term in all places for consistency.

Thin layer chromatography (TLC) is used to determine if a compound is pure, ~~or~~ to determine how many components are in a mixture, ~~or to~~. ~~Also it can~~ compare two compounds. The most common stationary phase for TLC is silica gel (polar), which is adhered to a plate. The mobile phase ~~aka~~ (solvent) ~~typically~~ ~~that usually gets~~ used with silica is a mixture of ethyl acetate in hexanes. The sample to be analyzed is “spotted” onto the TLC plate and the bottom edge of the plate is placed in the solvent. As the solvent climbs up the plate, it separates the sample between the moving liquid and the stationary silica. When the process is complete, the retention factor, ~~R_f~~ R_f , can be used for analysis. R_f ~~is the ratio of the~~ ~~means~~ distance traveled ~~by the~~ ~~of~~ substance ~~to the~~ distance traveled by ~~the~~ solvent front. If two compounds have the same R_f in the same TLC conditions then they are identical.

Comment [QTC6]: AU: Is “solvent” the same as “eluent”? Consider using the same term in all places for consistency.