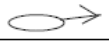
Sample Manual Proofreading and Copyediting

The following pages show a manual mark-up of the 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 some queries to the author (noted by “AU: ” in the margin) so she could consider clarifying some items.

Typical marks used:

Symbol	Meaning
	Delete
	Close up
	Delete and Close up
	Insert
#	Space
	Transpose
/ or lc	Lower case
	Capitalize
	Capitalize first letter and lower case remainder
stet	Let stand
¶	New paragraph
no ¶	Remove paragraph break
	Move to a new position

An electronic edit of the same document is also available.

Introduction:

Chromatography is a technique used to seperate 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.

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 Sstationary phase. Therefore; polarity is a very important concept in chromatography as well because the how much the polarities are different of the stationary phase and components determine the amount of attraction 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. This will cause a separation of the components. The partition coefficient aka K_p : the ratio of 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 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 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 elutent exits the column. In column and TLC, 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.

AU: "GAS" OR "GAS-LIQUID"? USE SAME TERM FOR CONSISTENCY

In gas chromatography, a liquid sample is injected into a heated port and immediately vaporized. The sample then travels through the column with a gas mobile phase or remains in the stationary phase which is a liquid dissolved on a solid packing. Helium is pretty much always used as a carrier gas and you choose the liquid to use in the stationary phase gets chosen based on the polarity of the compound that needs 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 is useful to separate and analyze compounds that can be vaporized without destroying them or changing their structure.

AU: SAME MEANING?

Column chromatography requires a column to be packed with the stationary phase, and a mobile phase (elutent) 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 elutent is chosen based on polarity and the elutent can be switched during the process. Changing polarities of the elutent will switch which component of the sample is separated out. A more polar elutent will work best for a more polar component. The elutent 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 elutents are passed through the column, each fraction of the sample that is separated out is collected. Then we check the components farther with thin layer chromatography.

AU: IS ALUMINA POLAR OR NON-POLAR?

AU: IS "FRACTION" SAME AS "COMPONENT"? USE SAME TERM 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. 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 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 or R_f can be used for analysis. R_f means distance traveled of substance/distance traveled by solvent front. If two compounds have the same R_f in the same TLC conditions then they are identical.

AU: IS "SOLVENT" SAME AS "ELUTENT"? USE SAME TERM FOR CONSISTENCY