Lab Report: The Tollens' Test on Aldehydes

Name

Institution

Date

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Chromatography

This important experiment is actually very instrumental in various procedures that may include separating samples of elements, or even purifying identified substances. The first experiment mainly comes in handy when separating elements in a bid to identify each one of them. The process in this experiment is called thin layer chromatography. The second experiment is quite critical in reducing impurities in chemicals. Column chromatography separates chemicals with the use of a column so that one goes down as the other rises. The polarity of elements can be determined using this experiment too. Generally speaking, chromatography is quite important in analyses since it offers information about elements. This can be critical in many careers, like those involved in crime scene investigations.

Molecular Models

Molecular models aid in the understanding of how chemicals react after being exposed to certain elements of nature. This offers information on the chemical and physical properties of the chemicals. This is a more hands-on approach to understanding chemicals through 3D imaging. It enhanced my learning of the theoretical part of chemistry.

Natural Products Isolation

These experiments go a long way to prove that time-consuming and expensive procedures meant to extract essential chemical elements for important use such as cancer treatment may not necessarily be a great option. Actually, the generation of these chemicals from synthetic sources is cheaper and less involved, since it offers a faster way of synthesizing big batches of chemicals when needed. Therefore, the advancements in technology will be a great thing moving forward.

Distillation – Simple and Fractional

This experiment, simple as it is, appears to have applications across several industries. From the petroleum industry to others, it is identified as having the ability to separate different liquids with varying boiling points. The knowledge obtained here is very critical in offering insights into how big industries that deal in chemicals operate.

Recrystallisation and Melting Point – Urea and Cinnamic Acid

During this experiment, I learnt that a little variation in temperatures is bound to give a confusing result. For instance, when finding the melting points of urea and cinnamic acid, both samples showed a similar BP of 134 degrees celsius. It is also important to note that each of these elements reduce in sample size when heated.

Protein Solubility and Denaturation

Proteins can be denatured and its structure destroyed. Such processes can destroy even the second structure of proteins. However, renaturation can happen if the denaturation process does not completely destroy the protein, its chemical composition, especially the enzyme component which will not display any activity.

Le Chatelier's Principle

Systems have a challenge in maintaining balance. Through observation alone, Le Chatelier's Principle is important in having the knowledge to know when a system experiences changes in temperatures, concentration or even pressure. During Lab Day 4, it was clearly displayed that by increasing heat, the vapor increases, meaning that the endothermic direction is favoured better. This alone shifts the equilibrium. With such reactions, there is the verdict that when you add more alcohol in processes such as esterification, the final product is increased in quantity.

Functional Group Characterization

The Tollens' test on aldehydes proves that only two compounds can transform into a mirror-like fluid. This is because the test mainly exploits the property of the aldehyde compounds to be oxidized. Ketones are never oxidized in this experiment. This experiment is very important for me since it created the need to collaborate better with fellow students in carrying out learning activities as a chemistry student. Over time, this will be a great way through which I can become a better team player at my workplace.