BETESEB ACADEMY

CHEMISTRY LAB REPORT

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Submitted to:

Submission date: Wed, Feb 21

EXPERIMENT 1

Title:

Determining the melting point of Naphtalein

Objective:

To determine the melting point of Naphthalin

Theory:

Chemical bond is the attractive force that holds two or more atoms together to form a molecule or crystal. This force may be: Intermolecular or intramolecular. Intra molecular forces are forces that exist within molecules and describe their chemical properties. There are 3 types of these forces, these are:

- Ionic
- Covalent
- Metallic

A covalent bond is a chemical bond that involves the sharing of electrons to form electron pairs between atoms. These electron pairs are known as shared pairs or bonding pairs. The stable balance of attractive and repulsive forces between atoms, when they share electrons, is known as covalent bonding. The prefix co- means jointly, associated in action, partnered to a lesser degree, etc.; thus a "co-valent bond", in essence, means that the atoms share "valence", such as is discussed in valence bond theory. In organic chemistry, covalent bonding is much more common than ionic bonding. Covalent bonding also includes many kinds of interactions, including σ-bonding, π-bonding, metal-to-metal bonding, agostic interactions, bent bonds, three-center two-electron bonds and three-center four-electron bonds. For example, in the molecule H_2, the hydrogen atoms share the two electrons via covalent bonding. Covalency is greatest between atoms of similar electronegativities. Thus, covalent bonding does not necessarily require that the two atoms be of the same elements, only that they be of comparable electronegativity. Covalent bonding that entails the sharing of electrons over more than two atoms is said to be delocalized. Compounds held together by covalent bonds are known as covalent compounds. A covalent compound can have either polar (if there is difference in electronegativity) or non-polar (if there is no difference in electronegativity) bond, it can also be a polar or non-polar molecule depending on its dipole moment. Properties of covalent bonds include:

- Covalent bonding does not result in the formation of new electrons. The bond only pairs them.
- They are very powerful chemical bonds that exist between atoms.
- A covalent bond normally contains an energy of about ~80 kilocalories per mole (kcal/mol).
- Covalent bonds rarely break spontaneously after it is formed.

- Covalent bonds are directional, where the atoms that are bonded showcase specific orientations relative to one another.
- Most compounds having covalent bonds exhibit relatively low melting points and boiling points.
- Compounds with covalent bonds usually have lower enthalpies of vaporization and fusion.
- Compounds formed by covalent bonding don't conduct electricity due to the lack of free electrons.
- Covalent compounds are not soluble in water.

Naphthalin is one example of covalent molecule. It is made from crude oil or coal tar. It is also produced when things burn, so naphthalene is found in cigarette smoke, car exhaust, and smoke from forest fires. It is used as an insecticide and pest repellent. By determining the melting point of naphthalene, we can also gain insight on its fellow covalent compounds. We are going to test this by using glycerin and heating it with naphthalene. We use glycerin because it is non-violent. After the naphthalene completely melts, we can measure the temperature.

Materials:

Chemicals	Apparatus
Naphthalin powder	Thermometer
Glycerin	Beaker
	Withstand and clamp
	Magnetic stirrer

Procedure:

- 50ml glycerin was added to a beaker and the beaker was put in the magnetic stirrer to be heated.
- 1tbsp naphthalene was added to glycerin being heated.
- The beaker was stirred until the naphthalene was completely melted.
- Thermometer was added to measure at what temperature the naphtalene melted.

Observation:

After waiting for some time, the naphthalin melted completely at 81°C.

Result/discussion:

After this experiment we saw that naphtalene has a melting point of around 81°C. This result is an approximation because our lab was not a suitable place for conducting this experiment as rate of reaction depends on many factors. This melting point shows us that covalent compounds like naphtalene have a relatively low melting and boiling points compared with

ionic and metallic compounds which have above 300°C but below 1000°C and above 340°C respectively.

Conclusion:

Chemical bond is the attractive force that holds two or more atoms together to form a molecule or crystal. This force may be: Intermolecular or intramolecular. There are 3 types of intramolecular forces, these are: Ionic, Covalent, and Metallic. A covalent bond is a chemical bond that involves the sharing of electrons to form electron pairs between atoms. For example, in the molecule H_2, the hydrogen atoms share the two electrons via covalent bonding. Compounds held together by covalent bonds are known as covalent compounds. A covalent compound can have either polar (if there is difference in electronegativity) or non-polar (if there is no difference in electronegativity) bond, it can also be a polar or non-polar molecule depending on its dipole moment. Covalent compounds have different properties, but we're focused on one: having relatively low melting and boiling point. We conducted this research to determine the melting point of naphthalene, which is a covalent compound. During this experiment, we used glycerin to melt the naphthalene. We use glycerin because it is non-violent. After the naphthalene completely melted, we measured the temperature to be 81°C. with this, we concluded that covalent compounds like naphtalene have relatively low melting and boiling points compared with ionic and metallic compounds, which have very high points.