Melting point lab oc

Environment, Nature

The bob]active of the Melting Point Lab was to learn the technique of melting point determination. Also, to discover the identity of an unknown compound from using the mixed melting point method. Introduction: The range of temperatures between the temperature at which the first crystal Just stats to melt and the temperature at which the last crystal disappears Is known as a melting point. There are two many reasons that melting points provided us. The first purpose is to regulate the purity off substance.

And the second purpose is to determine the identity off material. Melting points are frequently used to establish f the correct compound has been acquired. When performed correctly, the precision of any melting point should be +ICC when related to the literature values; allowing for variations In the PM due to experimental error. A mixed compound can also be supported. A mixed melting point is one were a compound is mixed with additional substance and the PM determined. If the samples melt at the same time, resulting that the samples are identical.

However, if the samples are not the same, the mixture will melt below the +30 C allowed error range and over a wider range (greater than 30 C). This Is the technique that Is used o determine the unknown compound in this laboratory While performing this lab, there are two principle sources of experimental error in determining melting points. Thermometer error is one, and this is a source of error one cannot control. As a result, this is not usually worried about. Human error is the other error than can happen.

Human error Is mostly mechanical error that is direct result of how one does things. An error specific to the Melting Point Lab Is the packing of the

capillary tube. If too much solid Is placed In the tube, It will take a very long time to melt, resulting in higher temperatures recorded. Leading one to " false range", as a result lead one to the incorrect conclusion about the melting point and purity. The second source of mechanical error that can be seen in this laboratory is rate heating. If too much heat Is applied, the mercury rises quickly, again giving a false range.

Set the Mel-Temp to heat up to a temperature below the melting points of both compounds and to heat up at what ever interval works best for the experiment (60 degrees C) and an interval of 10 degrees a minute was recommended) D. Once the Mel-Temp has reached the temperature you set place the tube containing the vanilla in the middle slot of the machine E. Record the temperature at the first sight of liquid and again when the compound is completely melted F. Repeat the same procedure for the aspirin and the 50: 50 mix Ill.

Procedure of Part Two A. Obtain an unknown substance (substance B) B. Pack a capillary tube with the unknown substance and place it in the Mel-Temp machine. Following the same procedure as you did with the vanilla, aspirin, and 50: 50 mix; recording the temperature at the first appearance of liquid and once the compound has completely melted C. Once the melting point has been found (114 degrees C), refer to the chart provided in the lab manual to see what the possibilities or the unknown compound are (Actinide or Fluorine) D.

Choose one of the possible compounds to repeat the experiment with the chosen compound and a 50: 50 mix of the known and unknown (Fluorine) E.

If the melting point of all three tubes is the same you chose the correct compound, if the melting point was significantly lower it was the other compound that was listed as an option Results and Conclusion: The substance we obtained was Unknown B. After packing a melting point tube with Unknown B, we determined the melting point by placing the capillary tube in the Mel-Temp. Unknown Bi's melting point was 114 C.

From the list of possible unknown compounds, we looked at the initial melting point, which was 114 C and choose to mix it with Fluorine, whose melting point was also 114 C. After performing a 50: 50 mixture of the unknown and known compounds, we were able to define that unknown B was Actinide. We were able to establish this because after mixing the unknown and the known, the melting point was lower, 98 C. Since the melting point was lower, we were able to conclude that two compounds were mixed; as a result unknown B was Actinide.