Date: 9/26/12

To: Dr. Foust

From: Katie Kelly

Subject: What Happens When Compounds are Added to Water? Lab Report

Attached: Calculations for Question 1

Purpose:

The purpose of this experiment is do see what happens to different chemical compounds when dissolved into water and to find out why certain compounds conduct electricity better than others.

Summary:

When adding two grams of calcium chloride (CaCl2), dextrose (C6H12O6), isopropyl alcohol (C3H8O), sodium chloride (NaCl) and sucrose (C12H22O11) to 20 mL of distilled water, calcium chloride had the highest pulse rate (46 pulses per 30 seconds). When .10 grams of sodium chloride (NaCl), sodium iodide (NaI) and calcium chloride (CaCl2) to 100 mL of distilled water, sodium chloride conducted electricity the best with 42 pulses per 30 seconds.

Procedure:

See page 7 in Lab notebook (What Happens When Chemical Compounds Are Added to Water?).

Results:

Part 1

|  |  |  |  |
| --- | --- | --- | --- |
| Compound | Observations | Pulse Number | Chemical Formula |
| Distilled Water | NA | 7 | H2O |
| Calcium Chloride | Started off cloudy, dissolved into clear liquid, no remnants at bottom of container | 46 | CaCl2 |
| Dextrose | Started off cloudy, completely dissolved into water | 5 | C6H12O6 |
| Isopropyl Alcohol | Bubbled, Smells strong at first, completely dissolves into water | 5 | C3H8O |
| Sodium Chloride | Completely dissolved into water, no solute at bottom of container | 33 | NaCl |
| Sucrose | Did not completely dissolve into water | 7 | C12H22O11 |

Part 2

|  |  |  |
| --- | --- | --- |
| Compound | Observations | Pulse Number |
| Sodium Chloride (NaCl) | Mixed together quickly to form clear solution | 42 |
| Sodium Iodide (NaI) | Mixed together quickly to form clear solution | 39 |
| Calcium Cloride (CaCl2) | Bubbled, mixed together slowly, clear | 37 |

Conclusion:

When a metallic ion is in the compound that is dissolved in water, electricity is better conducted. The greater numbers of charged ions in a compound also increase the conductivity of the solution.

Questions:

1. The changes that occurred as the solutions were prepared were very minimal. The solutes dissolved into to water, making the water cloudy.
2. Certain solutions, such as calcium chloride, sodium chloride, and isopropyl alcohol had high pulse numbers (46, 33, 5, respectively) compared to Sucrose and dextrose (7,5).
3. You can determine if a solution will change the number of pulses by noted if there is a metallic element in the compound.
4. I think the new solutions will conduct electricity because they contain the same elements that conducted electricity in the previous test. I think they will yield similar values. The fact that there is less solute being dissolved does not mean that it will not conduct electricity.
5. All of these solutions had a high pulse number. They all contained metals in the solution that conduct electricity.
6. There are more moles of NaCl in the solution than moles of NaI and CaCl2. The more concentrated (or moles per amount of solvent) a solution is, the better conductor of electricity it will be.
7. The pulse rate of the tap water shows that it is a solution with metallic compounds dissolved in it. Distilled water needs to be used in this experiment because without it, the pulse numbers of each solution would be higher due to the extra amount of dissolved molecules from the salt water.
8. See calculation sheet.
9. Fe(NO3)3 will conduct more electricity than CaCl2 when equal amounts of moles are dissolved in the same volume of distilled water because Fe(NO3)3 has 4 ions while CaCl2 only has 3 ions.