Topic: Solution Chemistry

Molarity Lab

Making a Solution of Known Molarity and Checking Concentration by Evaporation.

1. Calculate the mass of NaCl needed to prepare 100.0 mL of 2.0 M NaCl solution:

2. Mass this amount of NaCl in a clean, dry plastic dish. Transfer to a 100.0 mL volumetric flask. Rinse the dish twice with small quantities of distilled water and add the rinsed material into the volumetric flask.

3. Add enough distilled water to have the flask about 3/4 full. Cap the flask and mix the solid until it completely dissolves. Carefully add up to the fill line, mixing as you go.

4. Mass a clean, dry evaporating dish and watch glass, together!

5. Carefully pour some of your 2.0 M NaCl solution into a clean beaker and then pipet exactly 10.0 mL of your solution into your evaporating dish. Then put on the watch glass cover.

6. Evaporate to complete dryness over a Bunsen burner flame. Heat slowly to limit the spattering. Make sure the watch glass cover is on top of the evaporating dish! Be sure to heat until it is completely dry, no drops inside the cover

7. Wait until it is cool then mass the dry dish and cover with the salt residue.

Data:

1. Mass of Evaporating Dish and Cover	g
2. Mass of Evaporating Dish, Cover and NaCl residue	g
3. Experimental Mass of NaCl Residue (10.0-mL of 2.0 M)	g

Analysis:

4. Calculate using Dimensional Analysis, with molarity as a conversion factor, the mass of solid NaCl you would expect to have in 10.0 ml of 2.0 M NaCl solution.

5. Compare your experimental results, #3, with your expected results, #4.

$$\%\ \boldsymbol{error} = \frac{|\boldsymbol{Experimental\ value - Theoretical\ Value}|}{\boldsymbol{Theoretical\ Value}}.$$

Conclusion:
Account for any difference between your results and the expected value. Be specific. Be able to explain exactly how you ended up too high or too low. Trace your reasoning through your analysis work.