**CHEMISTRY 2022-23 November 3, 2022**

**Today’s Agenda (Day 49)**

1. HOUSEKEEPING ITEMS

**🡪** BRING: 3 x 9” aluminum pie plates; paraffin wax; sugar

1. Homework Check:

🡪 Chapter 8 Vocabulary

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1. Class Activity:

🡪 DAY 3: Chapter 8 PPT Review

1. **Section 8.1 – The Covalent Bond**
2. **Section 8.2 – Naming Molecules**
3. Section 8.3 – Molecular Structures
4. Section 8.4 – Molecular Shapes
5. Section 8.5 – Electronegativity and Polarity

🡪 FRIDAY: Chemlab 7 – Synthesize an Ionic Compound

🡪MONDAY: Mini-Lab 8 – Compare Melting Points

HOMEWORK:

* READ: Chapter 8 – Covalent Bonding
* COMPLETE: Chapter 9 Vocabulary
* STUDY: Chapter 8 Test

Chapter 9 – Chemical Reactions

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| aqueous solution | chemical equation | chemical reaction | Coefficient | combustion reaction | complete ionic equation | decomposition reaction |
| double-replacement reaction | net ionic equation | Precipitate | Product | Reactant | single-replacement reaction | Solute |
| Solvent | spectator ion | synthesis reaction |  |  |  |  |

REMINDERS:

* TEST: **Ch 8** 🡪 **Nov. 8**
* Chapter 9 Vocabulary – Nov. 9

**CHEMISTRY 2022-23 CHEMLAB**

**CHAPTER 7 – Synthesize an Ionic Compound**

**Background**: You will form two compounds and test them to determine some of their properties. Based on your tests, you will decide whether the products are ionic compounds.

**Question**: Can the physical properties of a compound indicate that they have ionic bonds?

**Materials**

magnesium ribbon (25 cm) crucible ring stand and ring

clay triangle Bunsen burner stirring rod

crucible tongs centigram balance 100-mL beaker

distilled water conductivity tester

**Safety Precautions** 

WARNING: Do not look directly at the burning magnesium; the intensity of the light can damage your eyes. Avoid handling heated materials until they have cooled.

**Procedure**

1. Read and complete the lab safety form.

2. Record all measurements in your data table.

3. Position the ring on the ring stand about 7 cm above the top of the Bunsen burner. Place the clay triangle on the ring.

4. Measure the mass of the clean, dry crucible.

5. Roll 25 cm of magnesium ribbon into a loose ball. Place it in the crucible. Measure the mass of the magnesium and crucible together.

6. Place the crucible on the triangle and heat it with a hot flame (flame tip should be near the crucible).

7. Turn off the burner as soon as the magnesium ignites and begins to burn with a bright white light. Allow it to cool and measure the mass of the magnesium product and the crucible.

8. Place the dry, solid product in the beaker.

9. Add 10 mL of distilled water to the beaker and stir. Check the mixture with a conductivity tester.

10. Cleanup and Disposal Dispose of the product as directed by your teacher. Wash out the crucible with water. Return all lab equipment to its proper place.

**Analyze and Conclude**

1. Analyze Data Calculate the mass of the ribbon and the product. Record these masses in your table.

2. Classify the forms of energy released. What can you conclude about the stability of products?

3. Infer Does the magnesium react with the air?

4. Predict the ionic formulas for the two binary products formed and write their names.

5. Analyze and Conclude The product of the magnesium-oxygen reaction is white, whereas the product of the magnesium-nitrogen reaction is yellow. Which compound makes up most of the product?

6. Analyze and Conclude Did the magnesium compounds conduct a current when in solution? Do these results verify that the compounds are ionic?

7. Error Analysis If the results show that the magnesium lost mass instead of gaining mass, cite possible sources of the error.

**CHEMISTRY 2022-23 MINI LAB**

**CHAPTER 8 MINI LAB – Compare Melting Points**

**How can you determine the relationship between bond type and melting point?** The properties of a compound depend on whether the bonds in the compound are ionic or covalent.

**Procedure** 

1. Read and complete the lab safety form.

2. Create a data table for the experiment.

3. Using a permanent marker, draw three lines on the inside bottom of a disposable, 9-inch aluminum pie pan to create three, equal wedges. Label the wedges, A, B, and C.

4. Set the pie pan on a hot plate. WARNING: Hot plate and metal pie pan will burn skin—handle with care.

 5. Obtain samples of the following from your teacher and deposit them onto the labeled wedges as follows: sugar crystals (C 12H 22O 11), A; salt crystals (NaCl) B; paraffin (C 23H 48), C.

6. Predict the order in which the compounds will melt.

7. Turn the temperature knob on the hot plate to the highest setting. You will heat the compounds for 5 min. Assign someone to time the heating of the compounds.

8. Observe the compounds during the 5-min period. Record which compounds melt and the order in which they melt.

9. After 5 min, turn off the hot plate and remove the pie pan using a hot mitt or tongs.

10. Allow the pie pan to cool and then place it in the proper waste container.

**Analysis**

1. State Which solid melted first? Which solid did not melt?

2. Apply Based on your observations and data, describe the melting point of each solid as low, medium, high, or very high.

3. Infer Which compounds are bonded with ionic bonds? Which are bonded with covalent bonds?

4. Summarize how the type of bonding affects the melting points of compounds.

**CHEMISTRY 2022-23 PRACTICE PROBLEMS**

**CHAPTER 8 – Covalent Bonds**

**Practice Problems 8.1 –** Lewis Structure of a Molecule



**Practice Problems 8.2 –** Naming Binary Molecular Compounds







**Practice Problems 8.3 –** Lewis Structure for a Covalent Compound with Single Bonds



**Practice Problems 8.4 -** Lewis Structure for a Covalent Compound with Multiple Bonds



**Practice Problems 8.5 –** Lewis Structure for a Polyatomic Ion



**Practice Problems 8.5 –** Lewis Resonance Structures



**Practice Problems 8.6 –** Lewis Structure: Exception to the Octet Rule



**Practice Problems 8.7 –** Find the Shape of a Molecule

