

07 Chemical Reactions Lab (1823270)

Question

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Objective: To observe chemical reactions, learn to write balanced equations, and learn the five main reaction types.

Safety: Wear goggles during all experiments (sunglasses for one experiment). Waste disposal.

Equipment details: tongs vs. test tube holders vs. test tube clamps; large vs. small vs. tiny test tubes; folding paper towels to dry test tubes; horizontal vs. vertical vs. diagonal.

Wood splint gas tests: H₂: "pops"; O₂: "glows brighter"; CO₂: "goes out"

Measurements: All measurements are approximate. The volume of a small test tube is about 10mL. Estimate the amounts you need to save time.

Data: Record observations for each experiment in your notebook.

A. Materials: Lead(II) nitrate solution, KI solution, tiny test tube

1. Obtain about 5 drops of the lead(II) nitrate solution in a tiny test tube.
2. Add about 5 drops of the Potassium iodide solution to the test tube.
3. Observe any reaction. Pour the mixture down the sink and rinse.

B. Materials: Chlorine(aq), NaI solution, cyclohexane(used to help you see the reaction), small test tube, stopper

1. Add about 5 drops of chlorine water to about 3 mL of sodium iodide solution in a small test tube. Place a stopper in the tube and invert to mix. Observe. Add about 2 mL cyclohexane, stopper the test tube and mix. Observe.
2. Discard the test tube contents into waste container on the table.

C. Materials: 0.2 M Copper(II) chloride solution, Al metal, small test tube.

1. Place about 5 mL of 0.2 M Copper(II) chloride solution in a small test tube.
2. Add a 2 cm piece of aluminum wire to the test tube.
3. Place the tube in a rack for about 5 minutes. Observe the reaction. (ignore any gas produced: that is a separate reaction)
4. Discard the liquid into the sink and solid into the trash can.

D. Materials: butane (C₄H₁₀) lighter,

1. Take the lighter away from the table which contains the chemicals (especially the cyclohexane). Light the butane lighter. Observe. Use the lighter to do step E. Put the lighter back.

E. Materials: natural gas(methane: CH₄), Bunsen burner, model parts: 1 black carbon atom, 4 white hydrogen atoms, 4 red oxygen atoms, 4 short bonds, 4 long bonds

1. Download the app "Stop Motion Studio" (free) either on your iPad or phone. Clamp the phone or iPad on a ring stand with a test tube clamp to keep it steady. Create a

Stop Motion Video of this reaction using models. The video should show a balanced process. Adjust the speed of the movie so that process is slow enough to see. Save the movie to your photos.

2. Light the Bunsen burner. Observe. Keep the burner lit for parts F - K.

F. Materials: Wood splint, 1 tiny test tube, 1 large (20 x 150mm) test tube(should fit over the top of the tiny test tube), zinc, 3.0 M hydrochloric acid (HCl)

1. Place the tiny test tube in the rack and fill it about 2/3 full with 3.0 M HCl. Take the rack to your desk and place a piece of zinc into the test tube. (warning!!! The test tube will get hot!!)
2. Place an inverted large test tube over the tiny test tube so that they overlap by about 2 cm. Collect the gas for about 1 minute.
3. Have your lab partner test the gas by raising the large test tube and sticking the lighted splint up into the large test tube. Observe.
4. Rinse the small test tube and contents down the sink.

G. Materials: Wood splint, 1 small test tube, Na_2CO_3 chips, 1.0 M sulfuric acid- H_2SO_4

1. Add about 5 mL of 1.0M H_2SO_4 to a clean, dry small test tube and put it in a test tube rack. Place a small amount(pea sized) of sodium carbonate into the test tube.
2. Observe the reaction for 10 seconds.
3. Test the gas with a lighted splint by sticking the splint down into the neck of the tube with the reaction proceeding. Observe.
4. Pour the liquid from the test tube down the sink and rinse it with tap water.

H. Materials: Magnesium strip, burner, tongs.

1. Obtain a strip of magnesium metal about 4 cm long.
 2. Grasp the strip on one end with some tongs.
 3. Obtain goggles and UV blocking sunglasses and put them both on comfortably.
- Light the strip with the flame of a burner. Observe the reaction. Observe the product.

I. Materials: Copper (II) Sulfate Pentahydrate, Bunsen burner, test tube

1. Obtain about 1 mL of Copper(II) Sulfate Pentahydrate powder in a dry small test tube.
2. Heat the crystals with the test tube in a horizontal position with a test tube holder for about a minute. Observe the entire test tube.
3. Discard the test tube contents in the trash.

J. Materials: 1.0 M Sodium hydrogen carbonate solution, 1.0 M Hydrochloric acid, small test tube

1. Add about 2 mL of 1.0 M sodium hydrogen carbonate to a small test tube.
2. Add about 2 mL of 1.0 M hydrochloric acid (HCl) to this test tube.
3. Observe. Test the gas with a burning wood splint. (stick the splint down into the neck of the test tube.) Discard the waste into the sink.

K. Materials: Solid potassium chlorate, test tube clamp, small test tube

1. Add about 2 mL of solid potassium chlorate to a small test tube.
2. Clamp the test tube on to a ring stand and tilt the tube to a slight diagonal from vertical. Heat the tube with the Bunsen burner until large bubbles appear.
3. Observe. Test the gas emitting from the tube with a burning wood splint.

1. Question Details

Lab Partners [1837468]

Enter the name(s) of your lab partner(s). (If you worked by yourself, enter "none").

2. Question Details

Chemical Reactions Lab 01 [1767364]

(Use the lowest possible coefficients. Do not include phases of matter in your answers.)

Write the balanced equation for reaction A.: lead(II) nitrate and potassium iodide

Reaction Type:

3. Question Details

Chemical Reactions Lab 02 [1767365]

(Use the lowest possible coefficients. Do not include phases of matter in your answers.)

Write the balanced equation for reaction B.: chlorine and sodium iodide

Reaction Type:

4. Question Details

Chemical Reactions Lab 03 [1767366]

(Use the lowest possible coefficients. Do not include phases of matter in your answers.)

Write the balanced equation for reaction C.: copper(II) chloride and aluminum

Reaction Type:

5. Question Details

Chemical Reactions Lab 04 [1767367]

Write the balanced equation for reaction D.: butane. (Use the lowest possible coefficients. Do not include phases of matter in your answers.)

Reaction Type:

6. Question Details

Chemical Reactions Lab 05 [1767368]

Write the balanced equation for reaction E.: methane. (Use the lowest possible coefficients. Do not include phases of matter in your answers.)

Reaction Type:

Download the app "Stop Motion Studio" (free) either on your iPad or phone. Clamp the phone or iPad on a ring stand with a test tube clamp to keep it steady. Create a Stop Motion Video of this reaction using models. The video should show a balanced process. Adjust the speed of the movie so that process is slow enough to see. Save the movie to your photos. Upload the Stop Motion video. no file selected It must be less than 10 MB in size.

7. Question Details

Chemical Reactions Lab 06 [1767369]

(Use the lowest possible coefficients. Do not include phases of matter in your answers.)

Write the balanced equation for reaction F.: hydrochloric acid and zinc

Reaction Type:

8. Question Details

Chemical Reactions Lab 07 [1767370]

(Use the lowest possible coefficients. Do not include phases of matter in your answers.)

Write the balanced equation for reaction G.: sodium carbonate and sulfuric acid

Reaction Type:

9. Question Details

Chemical Reactions Lab 08 [1767371]

(Use the lowest possible coefficients. Do not include phases of matter in your answers.)

Write the balanced equation for reaction H.

Reaction Type:

10. Question Details

Chemical Reactions Lab 09 [1767372]

(Use the lowest possible coefficients. Do not include phases of matter in your answers.)

Write the balanced equation for reaction I. Use a period for the hydrate dot. Put a space before and after the period.

Reaction Type:

11. Question Details

Chemical Reactions Lab 10 [1767373]

(Use the lowest possible coefficients. Do not include phases of matter in your answers.)

Write the balanced equation for reaction J.: sodium hydrogen carbonate and hydrochloric acid

Reaction Type:

12. Question Details

Chemical Reactions Lab 11 [2840161]

(Use the lowest possible coefficients. Do not include phases of matter in your answers.)

Write the balanced equation for reaction K.

Reaction Type:

Assignment Details

Name (AID): **07 Chemical Reactions Lab (1823270)**

Submissions Allowed: **5**

Category: **Homework**

Code:

Locked: **Yes**

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