

# Synthesis Lab

Name \_\_\_\_\_

## Making a Compound

Date \_\_\_\_\_ Class \_\_\_\_\_

Materials: iron filings, test tube, sulfur powder, ring stand & clamp, beaker with water, magnet, burner, **goggles**

Today you will test the properties of two elements, sulfur and iron. Then you will combine these two into a new compound, iron sulfide.

1. Move all backpacks, coats, and extra materials to the storage areas.
2. Put one level teaspoon of sulfur onto a paper and test it.
3. Put one level teaspoon of the iron into the test tube and test it.

	Sulfur	Iron	Iron sulfide
Color			
Magnetic			
Brittle			
Soluble in water			
Odor			

4. Stir both chemicals on the paper to mix them. Do they react? \_\_\_\_\_
5. Mount the test tube for heating according to your teacher's instructions.
6. Light your burner and heat the two elements.
7. After the smoke stops, allow the test tube to cool, and ask your teacher to remove the compound.
8. What is the chemical symbol for sulfur? \_\_\_\_\_
9. What is the chemical symbol for iron? \_\_\_\_\_
10. What is the chemical symbol for iron sulfide? \_\_\_\_\_
11. What can you tell about iron sulfide based on the suffix? \_\_\_\_\_
12. What properties does iron sulfide have in common with sulfur?  
\_\_\_\_\_
13. What properties does iron sulfide have in common with iron?  
\_\_\_\_\_
14. In what ways is it different from either of the original elements?  
\_\_\_\_\_

## Answer Key

	Sulfur	Iron	Iron sulfide
Color	Pale yellow	Gray	Gray
Magnetic	No	Yes	Slightly
Brittle	Yes	No	Yes
Soluble in water	No	No	No
Odor	Foul	None	Foul

4. Stir both chemicals on the paper to mix them. Do they react? No

8. What is the chemical symbol for sulfur? S

9. What is the chemical symbol for iron? Fe

10. What is the chemical symbol for iron sulfide? FeS

11. What can you tell about iron sulfide based on the suffix? It is a salt:  
a mixture of a metal and a non-metal

12. What properties does iron sulfide have in common with sulfur?

It is brittle, has a foul odor and is not soluble in water.

13. What properties does iron sulfide have in common with iron?

It is magnetic and dark gray.

14. In what ways is it different from either of the original elements?

Unlike sulfur and iron, iron sulfide has air pockets in it. These are the result of the formation of the sulfur dioxide gas.