Reaction: Rust

Catalyst: A substance that increases the rate of a chemical reaction without itself undergoing any permanent chemical change.

Purpose: What reaction will take place when a nail is put into bleach? Does a substance change its physical properties when if goes through a chemical reaction?

Hypothesis:_____

_____

_____

Materials:

Day 1

1 clean test tube	water
1 nail	beaker
small piece of sand paper	magnet
5 mL bleach	goggles

Day 2

evaporating dish	magnet
alcohol burner and stand	goggles

Procedure:

Day 1

1. Clean the nail with sand paper, check nail with a magnet. Write observations.
2. Label test tube with your initials.
3. Add the bleach to the test tube.
4. Add water to cover the nail in test tube.
5. Put test tube in designated test tube rack. Allow the test tube to sit overnight in the rack.
6. Did you make your observations?

Day 2

1. **DO NOT SHAKE THE TEST TUBE.** Carefully pour as much liquid out of the test tube without losing the solid.
2. Pour solid into an evaporating dish. Gently heat the liquid until it's dry. Be careful that it doesn't spatter (move alcohol burner away to slow down the boiling.)
3. When the solid is dry, remove the heat and let the dish cool.
4. After it is cool, scrape the red solid onto a piece of paper and run the magnet underneath the paper to test the magnetic property of the new iron compound.

Observations:

	Day 1	Day 2 (before heating)	Day 2 (after heating)
iron nail			
bleach			
water			

Conclusions:

1. Is rusting a chemical or physical property? Explain your answer.

2. What is the chemical name for rust?

3. What reactant besides iron is needed to form rust?

4. Balance the chemical equation for this lab.

   $Fe + O_2 \rightarrow Fe_2O_3$

5. What kind of reaction was this? (synthesis, decomposition, single displacement, or double displacement) Justify your answer.

6. What causes iron to rust?