

LESSON
108

DEMOS

Metal Magic Oxidation

Name _____

Date _____ Period _____

Purpose

To investigate reactions of metal with oxygen.

Part 1: Iron Lung

1. What did you observe in this demonstration?

2. How can you explain what happened to the balloon?

3. What happened to the steel wool? What is your evidence?

Part 2: Flaming Steel

1. What did you observe when the steel wool was held in the Bunsen burner flame?

2. What did you observe when the glowing steel wool came in contact with the oxygen-rich environment?

3. What do you think was going on?

4. What product do you think was being made?

Part 3: Magnesium No-Peekie

1. What happened when the magnesium strip was held in the Bunsen burner flame?

2. What differences, if any, did you notice between the steel wool and the magnesium?

Analysis

1. Complete the table. Name two patterns you notice from the data in the table.

Compound/ element	Formula	Add O ₂	Product	Charge on cation	Charge on anion
magnesium	Mg	+ O ₂	MgO	+2	
magnesium chloride	MgCl ₂	+ O ₂	no reaction		
copper	Cu	+ O ₂	CuO		
iron	Fe	+ O ₂	Fe ₂ O ₃		
titanium fluoride	TiF ₄	+ O ₂	no reaction		
titanium	Ti	+ O ₂	TiO ₂		

2. Write balanced chemical equations for the reactions you observed in the demos.

3. Draw shell models for magnesium and oxygen to show what happens to the electrons when magnesium and oxygen combine to form MgO.

4. **Making Sense** How does the charge on a metal change when it combines with oxygen?

5. **If You Finish Early** When carbon-containing molecules combust, a flame is visible. When metals combust, there is a glow but no flame. Try to explain this observation.