

Lab-Interpreting the Periodic Table Through Reactions

Purpose

To explore the reactivity of different elements on the Periodic Table when combined with different chemical compounds.

Materials List

24-well microplate

Weighing dish containing two 1 cm strips of magnesium ribbon (use scissors to cut)

Weighing dish containing two 2 cm² of aluminum foil

Weighing dish containing two small pieces of calcium

Weighing dish containing two small pieces of copper shot

Pipet

Thermometer

Beaker of water

Bottle of HCl

Forceps

Goggles

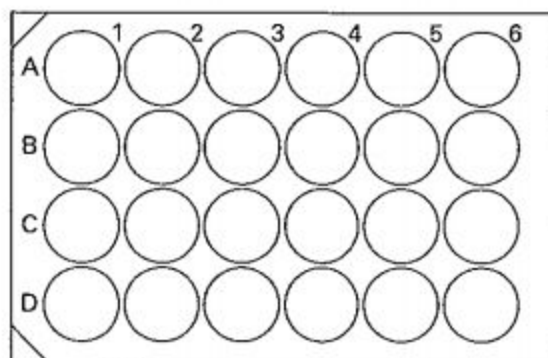
Procedure

Obtain the listed materials from the materials station.

When all materials have been gathered follow the instructions below.

RECORD ALL observations in Table 1. If NO REACTION occurs in a particular well write **NR** in the appropriate part of the data table.

1. Place the microplate on the table. Use the diagram to the right to identify each well.
2. Use the pipet to add 20 drops of water to wells A1, A2, A3, and A4 respectively.
3. Use the forceps to drop one piece of calcium into well A1. RECORD your observations in Table 1.
4. Use the forceps to drop one piece of magnesium ribbon into well A2. RECORD your observations in Table 1.
5. Use the forceps to drop one piece of copper shot into well A3. RECORD your observations in Table 1.
6. Roll a piece of aluminum foil into a loose ball and drop it into well A4. Record your observations in Table 1.
7. Continue observing the wells for 1 or 2 more minutes (use timer app on iPad). RECORD any additional information in Table 1. Note the rate of any additional reactions.



8. Use the bottle of HCl to add 20 drops of 1M HCl to wells D1, D2, D3 and D4 respectively. Use a thermometer to measure the initial temperature of each well. RECORD this data in Table 1.
9. Use the forceps to add one piece of calcium to well D1. RECORD your observations in Table 1.
10. Use the forceps to add one piece of magnesium ribbon to well D2. RECORD your observations in Table 1.
11. Use the forceps to drop one piece of copper shot into well D3. RECORD your observations in Table 1.
12. Roll the remaining piece of aluminum foil into a loose ball and drop it into well D4. RECORD your observations in Table 1.
13. Use a thermometer to measure the final temperature of each solution. RECORD this data in Table 1.
14. Continue observing the wells for one or two more minutes. RECORD any additional information in Table 1. Note the rate of any additional reactions.
15. When each observation is complete and recorded in the table, dispose of the well contents as instructed by your teacher. Clean the microplate thoroughly.

Table 1. Data Collection for Reactions

Element	Reaction with Water	Reaction with Acid	Initial Temperature of HCl Well	Final Temperature of HCl Well
Calcium			Well C1:	Well C1:
Magnesium			Well C2:	Well C2:
Copper			Well C3:	Well C3:
Aluminum			Well C4:	Well C4:

Analysis Questions

2. List the elements information below:

Chemical/Compound Name(s) Chemical/Compound Formula

2. Identify which are cations and which are anions. Please list below.

Cations:

Anions:

3. Which reacted with water? Please list in order from least to greatest reaction.

4. Which reacted with hydrochloric acid? Please list in order from least to greatest reaction.