

Exploration of Nonmetal Activity

Purpose: To explore the activity of halogens.

PRE LAB QUESTIONS.

1. List the first four halogens. F, Cl, Br, I
2. Which of the four has the largest radius? I
3. Do halogens have a high, or a low electronegativity? high
4. What is the difference between a halogen and a halide?

A halide is a halogen that has gained an electron—a negative ion

Materials: Solutions of Cl_2 , Br_2 , and I_2 , hexane (**don't get any of the previous solutions on your skin and avoid excessive inhalation**), .1M solutions of NaF, NaI, NaBr, NaCl, test tubes, test tube rack.

Procedure: Some halide ions can be replaced by elemental halogens. Determine what halogens can replace what halides.

With each test use appx. 25 drops of hexane along with about 25 drops of the other solutions you are mixing. If a halide ion is displaced and changed into a halogen, the halogen will be dissolved in the hexane. **The color of the hexane layer tells you what halogen is dissolved. EACH TUBE WILL CONTAIN THREE REAGENTS**

THE CYCLOHEXANE IS ONLY A SOLVENT AND IS NOT INVOLVED IN ANY REACTION.

Data: Record appropriate data in the table that follows

	Chlorine (green)	Bromine (orange)	Iodine (purple)
NaF	green	Orange	Purple
NaCl	XXXX	Orange	Purple
NaBr	Orange	XXXX	Purple
NaI	Purple	Purple	XXXX

Conclusion.

1. Identify which pairs of chemicals reacted with each other. There are **THREE PAIRS**
2. Identify the pairs of chemicals that did not react. There are 6 pairs.
3. LIST the **THREE** pairs of chemicals that **REACTED** again. **For each pair, CIRCLE the element that was replaced and put a BOX around the element that replaced it.**
4. Were the atoms with the BOXES (the "replacers") **BIGGER** or **SMALLER** than the atom that they replaced?
5. When the atoms in the BOXES were alone, their charge was **ZERO**. When they made the replacement, their charge became **NEGATIVE**. Did they lose electrons, or did they gain electrons?
6. Do small atoms or big atoms gain electrons more easily?
7. **WHAT IS THE MOST ACTIVE HALOGEN?**
8. **THE MOST ACTIVE HALOGEN IS MOST ACTIVE BECAUSE IT IS THE _____.**
(smallest or biggest)