



Electronegativity

Answer the questions below then check your answers.

1. Define the term electronegativity.
2. What are the 2 main factors that affect the electronegativity of an atom?
3. What happens to the size of atoms as you cross a period in the periodic table?
Explain your answer.
4. What happens to the size of atoms as you go down a group in the periodic table? Explain your answer.
5. What are the trends in the electronegativity values for the elements in the periodic table?
6. What is electron shielding? Give an example how this affects electronegativity.
7. Why is fluorine more electronegative than chlorine?
8. Why are no electronegativity values listed for the noble gases?

Answers

1. Define the term electronegativity.

The power of an atom in a covalent bond to attract electron density towards itself.

2. What are the 2 main factors that affect the electronegativity of an atom?

- Size of the nuclear charge
- Size of the atom.

3. What happens to the size of atoms as you cross a period in the periodic table? Explain your answer.

Additional electrons as we cross the period are added to the same energy level or principal energy level. At the same time the nuclear charge is increasing, which means the electrons are drawn in closer to the nucleus.

4. What happens to the size of atoms as you go down a group in the periodic table? Explain your answer.

It increases. As we go down a period a new principle energy level is added. This increases the radius of the atom.

5. What are the trends in the electronegativity values for the elements in the periodic table?

As you cross a period electronegativity increases.

As you descend a group electronegativity decreases.

6. What is electron shielding? Give an example how this affects electronegativity.

This is where the inner electrons screen or partly block out the nuclear charge from any electrons in higher energy levels. Shielding can reduce the ability of an atom to attract electrons in a covalent bond and so affect its electronegativity value.

7. Why is fluorine more electronegative than chlorine?

Fluorine atoms are smaller than chlorine atoms. The outer np^5 electrons in fluorine and chlorine both experience the same effective nuclear charge, since they are both in the same group in the periodic table. So fluorine being smaller will be more able to attract electron density in a covalent bond towards itself.

8. Why are no electronegativity values listed for the noble gases?

Noble gases have no tendency to gain electrons or form covalent bonds.