

Name: _____

Period: _____

Lab #18

Molecular Polarity

AIM: To determine the molecular polarity of selected molecules.

Vocabulary: Cite Source(s): _____

Electronegativity:

Covalent Bond:

Polar:

Non-Polar:

Symmetric:

Asymmetric:

Linear:

Tetrahedral:

PreLab: Apply your definitions of Polar and non-polar above to describe a polar vs. a non-polar covalent bond.

Give an example of each.

Polar Bond:

Non-polar Bond:

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Method:

1. Obtain a molecular models building set. Identify the different types of atoms based on the number of holes they have. Reference the chart below; indicating which colors can be used for different elements.
2. Fill in the second chart, which includes places to record Lewis dot structures of the molecules listed below, as well as their shape, a diagram of the model you will construct, and their molecular polarity. You should use the springs when constructing multiple covalent bonds.

Color	Atom	Color	Atom
Green (1 hole)	fluorine	Red (2 holes)	Oxygen/sulfur
Orange (1 hole)	chlorine	Blue (3 holes)	Nitrogen
Yellow (1 hole)	hydrogen	Black (4 holes)	carbon
Purple (1 hole)	bromine		

Analysis questions:

1. What property of an atom determines the nature of its bonds?
2. What factor determines the polarity of a bond?
3. How does the electron distribution in a polar bond vary from that in a non-polar bond? Include both polar and non-polar bonds in your answer.
4. What is the difference between polarity of a bond and polarity of a molecule?
5. Can a bond within a molecule be polar but the molecule itself be nonpolar? Explain.

List two examples of the above from your chart:

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Formula/ Name	3D Diagram	Lewis Dot Diagram	Bond Polarity Polar/NonPolar	Symmetric or Asymmetric?	Molecular Polarity / Non-Polar
H ₂					
O ₂					
N ₂					
HF					
Cl ₂					
H ₂ O					
CO ₂					
NH ₃					
CH ₄					
CH ₃ Cl					

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