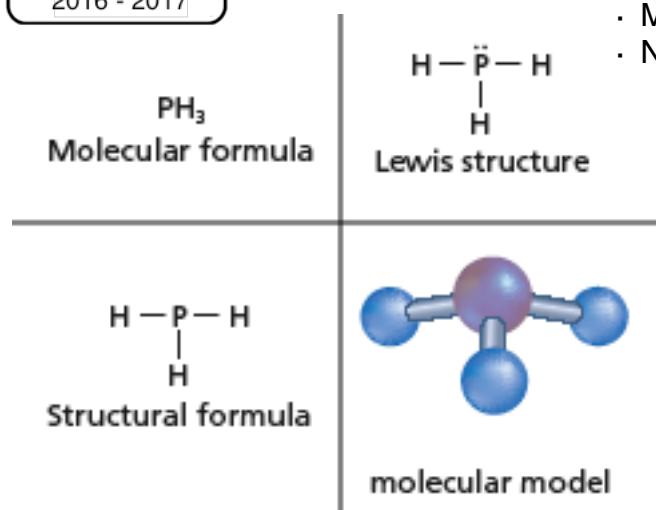


# Unit 4: Covalent Bonding

## Text References:

- Introduction to Chemical Bonding (6.1)
- Covalent Bonding (6.2)
- Molecular Geometry (6.5)
- Naming Molecular Compounds (7.1, pages 215-219)

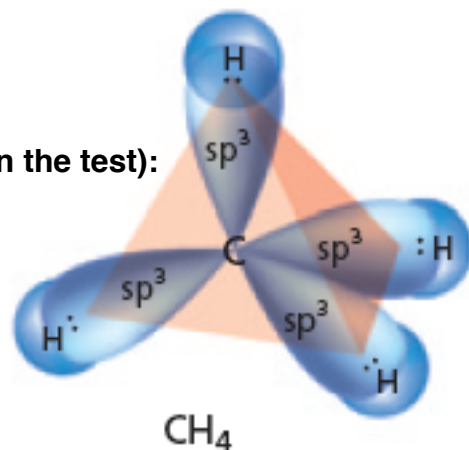


### Focus Question:

How does the bonding between nonmetals explain the chemical and physical properties of covalent compounds?

## Unit Objectives (what you need to know and be able to do on the test):

1. Differentiate ionic and covalent bonding.
2. Classify bonding type according to electronegativity differences.
3. Define molecule and molecular formula.
4. Using prefixes, name a binary molecular compound from its formula.
5. Write the formula of a binary molecular compound given its name.
6. Name a binary acid or oxyacid given its formula.
7. Write the formula of a binary acid or oxyacid given its name.
8. List the basic steps used in writing Lewis structures.
9. Determine a correct Lewis structures for molecules containing single bonds, multiple bonds, or both.
10. Explain why scientists use resonance structures to represent some molecules.
11. Use the concept of formal charge to determine the most likely Lewis structure.
12. Predict the shapes of molecules or polyatomic ions using VSEPR theory.
13. Explain how the shapes of molecules are accounted for by hybridization theory.
14. Explain what determines the polarity of molecules.



## Vocabulary:

<ul style="list-style-type: none"> <li>• acids</li> <li>• binary compound</li> <li>• bond energy</li> <li>• chemical bond</li> <li>• covalent bonding</li> <li>• dipole</li> <li>• formal charge</li> </ul>	<ul style="list-style-type: none"> <li>• hybridization</li> <li>• Lewis structure</li> <li>• molecular compound</li> <li>• molecular formula</li> <li>• molecule</li> <li>• multiple bonds</li> </ul>	<ul style="list-style-type: none"> <li>• nonpolar covalent bond</li> <li>• polar covalent bond</li> <li>• resonance</li> <li>• single bond</li> <li>• structural formula</li> <li>• VSEPR theory</li> </ul>
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