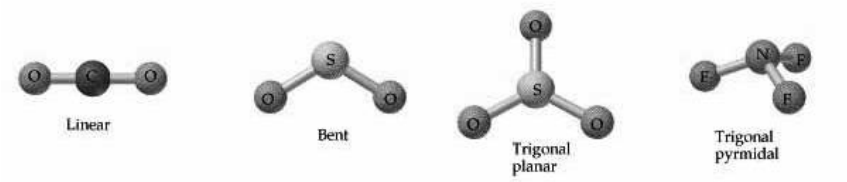
Announcements – 9/15/00

- Exam #1 - Wed. 9/20 - room TBA
  - -covers matl thru today (Ch 1&2)
  - -email/contact me ASAP if you have a conflict with exam time
- Extra Review/Problem Session
  - -Sunday, B112 Angell - **what time?**
- History: *Claude Emile Jean-Baptiste Litre*
- Demo and Quiz today!

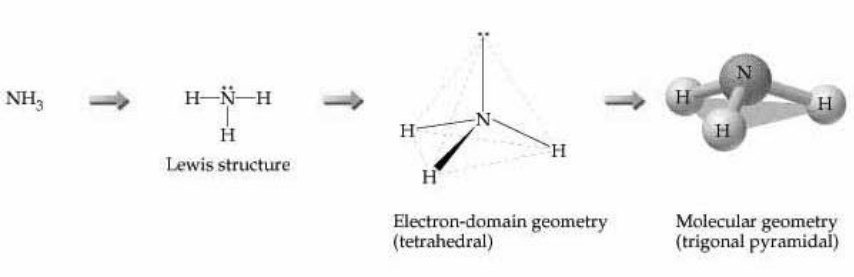
1

VSEPR Structures



2

An Example: NH_3



3

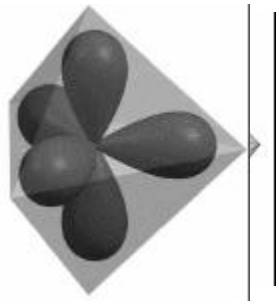
Exceptions to the Octet Rule

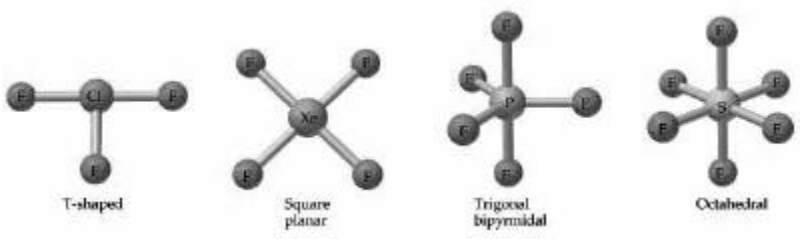
- Sometimes it's not filled
  -incomplete octet (BeF_2, BF_3)
- Sometimes it's OVER filled
  -"expanded" octet (SF_4, PCl_5, SF_6)
- Sometimes it *can't* be filled
  -odd # of electrons (NO)

4

Expanded Octets

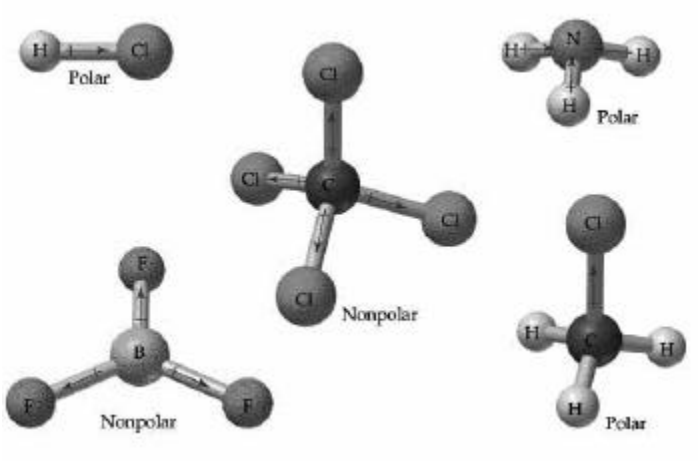
- The Trigonal Bipyramid:





5

Back to Dipoles



6

Writing and Balancing Chemical Equations: An Example

- *One type of rocket fuel reacts hydrazine and dinitrogen tetroxide and produces nitrogen gas and water*

1. hydrazine + dinitrogen tetroxide → nitrogen + water
2. $N_2H_4 + N_2O_4 \rightarrow N_2 + H_2O$ **Formulas**
3. $\mathbf{2}N_2H_4 + N_2O_4 \rightarrow \mathbf{3}N_2 + \mathbf{4}H_2O$ **Balanced**
4. $\mathbf{2}N_2H_4\ (l) + N_2O_4\ (l) \rightarrow \mathbf{3}N_2\ (g) + \mathbf{4}H_2O\ (l)$ **Done!**

7

Another Example

- *A solution of sodium chloride was added to a solution of silver nitrate, forming a precipitate of silver chloride*

1. sodium choride + silver nitrate → silver chloride + sodium nitrate
2. $NaCl + AgNO_3 \rightarrow AgCl + NaNO_3$ **Formulas**
3. $NaCl + AgNO_3 \rightarrow AgCl + NaNO_3$ **Balanced**
4. $NaCl\ (aq) + AgNO_3\ (aq) \rightarrow AgCl\ (s) + NaNO_3\ (aq)$

$$Na^+\ (aq) + Cl^-\ (aq) + Ag^+\ (aq) + NO_3^-\ (aq) \rightarrow AgCl\ (s) + Na^+\ (aq) + NO_3^-\ (aq)$$

$Ag^+\ (aq) + Cl^-\ (aq) \rightarrow AgCl\ (s)$ **Net Ionic Equation**

8

Demo!

- How can we tell an ***ionic*** compound from a ***molecular*** compound?

Measure conductivity (in sol'n)!

9