

# Chapter 4

## Covalent Compounds

### Covalent Bonding

Nonpolar  
Polar

Lewis Structure

Common Bonding Patterns  $\Rightarrow$  Hand Out

### Drawing Lewis Structures

#### Different Approaches

#### Bonding Patterns

#### Steps

- e<sup>-</sup> count
- Central atom
- Mult. bonds
- Count Octets
- ✓ e<sup>-</sup> count

Exceptions to Octet Rule

#### Resonance

### Nomenclature of Covalent Compounds

Binary Covalent  
Acids

VSEPR

Molecular Shape (Geometry)

Electronic

Molecular

Bond angles

~~AXN~~ AEX

Electronegativity & Bond Polarity

Polarity of Molecules

Homework

25, 27, (28), 29, 31, (34), 35, 37, (38), 39, 41,

43, (44), 45, 47, 49, (52), 55, 57, 61, (64),

65, 69, 71, (72), 73, 75, 77, 83, 86, (90), (94)

Activity 10 Lewis Structures

Lewis Structure and Shape Assignment p. 163

# Chapter 5

## Chemical Reactions

### Chemical Equations

Reactants

Products

Arrows

Conditions

Coefficients

### Balancing

### The Mole

Avogadro's Number

Stoichiometric Calculations

Mass  $\rightarrow$  Mole

Molar Mass

Molar ratios

Molar Calculations w/ chemical equations

Mole bridge

Percent Yield

Theoretical yield

---

## Oxidation/Reduction Redox

Oil  
Zig

Half Rxn

# Homework

39, 43, 45, (46), 47, (48), 53, 55, 57, 59, 61,  
63, 64, 71, 73, 75, 79, (80), 83, 85, (86), 89,  
91, 93, (96), (102), 107

Activity 12 - Balancing Chemical Equations

Activity 14 - Mole Worksheet

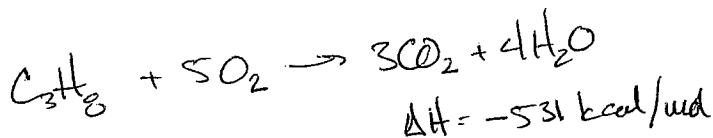
Activity 7 - Chemical Changes

Activity 8 - Chemical Names and Formulas

# Chapter 6

## Energy Changes, Reaction Rates, and Equilibrium

Energy units 4.184 kJ / 1 kcal      cal      Cal



### Energy changes in reactions

Bond dissociation energy  $2H_2 \rightarrow H_2$   $\Delta H = -104 \text{ kcal/mole}$   
 Higher Bond dissociation = stronger Bond

Enthalpy  $\Delta H$       exothermic  $\Delta H = -$       endothermic  $\Delta H = +$

Endo/Exothermic

### Energy Diagrams

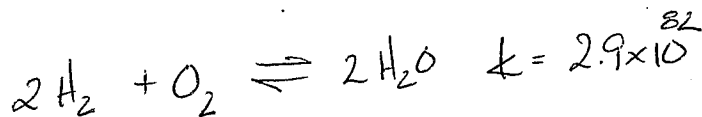
Reactants

Products

$E_a$

$\neq$

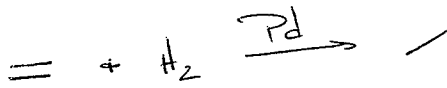
$\Delta H$



### Reaction Rates

[I], temp

Catalyst



### Equilibrium

Equilibrium Constant  $K = \frac{\sum [C]^c \sum [D]^d}{\sum [A]^a \sum [B]^b}$        $K > 1 \Rightarrow$   
 $K < 1 \Leftarrow$

Le Châtelier's

[I], Pressure



# Homework

27, (28), 29, 31, 33, 35, 41, (42), ~~43~~, 45, 47, 51,  
53, 55, (58), 61, 63, 65, 69, 71, (74), 77, (80),  
83, (86), 89, (94), 99