

## 10.2 Reactions of Gases

### Definitions

- Law of combining volumes
- Avogadro's Theory
- Molar volume

### Gay-Lussac

- Gay-Lussac came up with the law of combining volumes (never received recognition for this).
  - When measured at the same temperature and pressure, volumes of gaseous reactants and products of chemical reactions are always in simple ratios of whole numbers.
- E.g.: 1 part hydrogen plus 1 part chlorine gives 2 parts hydrogen chloride
- Avogadro noticed the whole number ratios and thought they acted just like the coefficients in a balanced reaction.
  - Equal volumes of gases at the same temperature and pressure contain equal numbers of molecules.

### Molar Volume of Gases

- SATP is 24.8 l/mol
- STP is 22.4 L/mol
- $n = v/V$  where  $n$ =number of moles,  $v$ =volume,  $V$ =molar volume

### Homework

- Practice 1-5, 7-12
- Section 1-6