

CHEMISTRY 1A (CHEM1101) - November 2005

2005-N-2

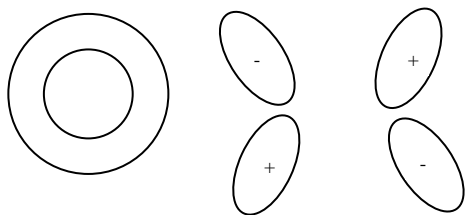
- 1_0n
 1_1p
 2γ
- No two electrons can have the same four quantum numbers in an atom.
The energy change when a mole of electrons is added to a mole of atoms/ions in the gas phase.
One half the distance between the nuclei of two adjacent metal atoms
A helium nucleus ${}^4_2He^{2+}$

2005-N-3

- $7.3 \times 10^6 \text{ m s}^{-1}$
 $1.0 \times 10^{-10} \text{ m}$
- 52

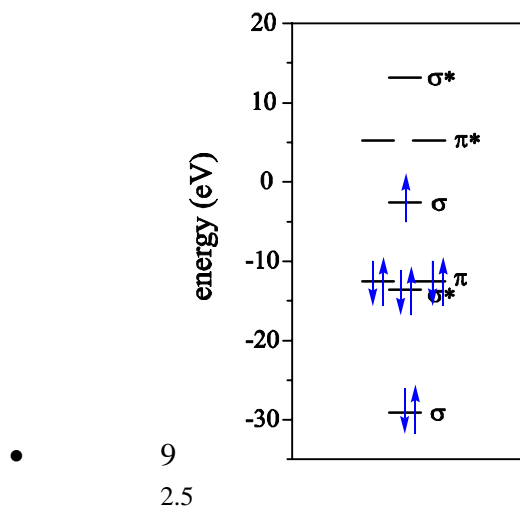
2005-N-4

•



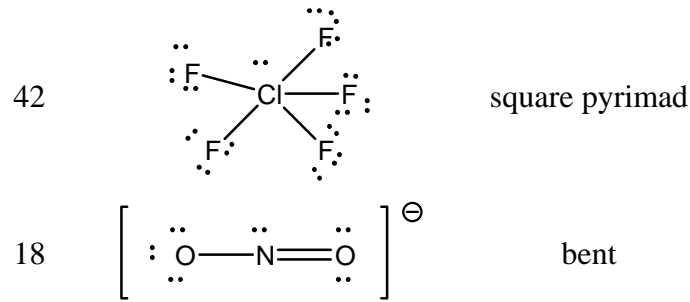
- The energy gap between the valence band and conduction band.
Electrostatic attraction between oppositely charged ions. Occurs when elements with an electronegativity difference >2 bond by transfer of electrons to form cations and anions.
Different structural forms of the same element (eg C: diamond and graphite).

2005-N-5



2005-N-6

•



- All
 $1.2 \times 10^{-6} \text{ m}$

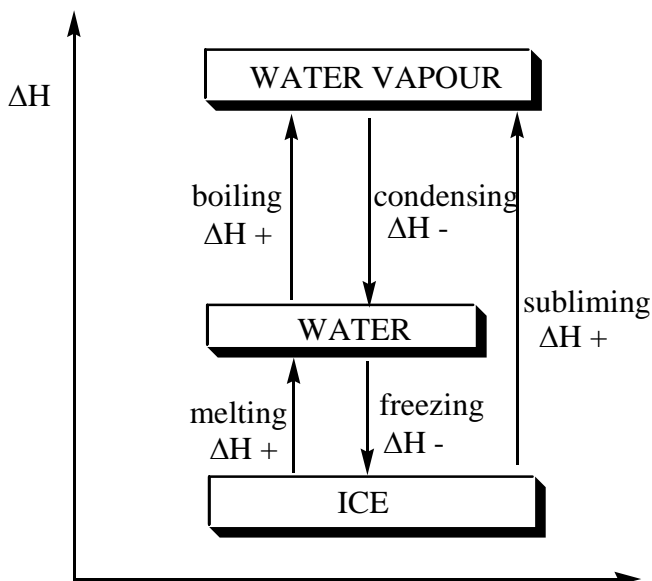
2005-N-7

- 120° 109.5°

It's due to the NH group, which has a stretching vibration at $\sim 3500 \text{ cm}^{-1}$.

2005-N-8

•



2005-N-9

- 8.98×10^{-4}

- 170 g

2005-N-10

- 0.211 M

2005-N-11

- See, for example, Silberberg and lecture notes for discussion

2005-N-12

- E.g. In both reactions carbon is oxidised (Oxidation Number for C: $-IV \rightarrow +IV$) and energy is released. In combustion energy is released as heat. Incomplete combustion may also occur if the oxygen supply is limited resulting in formation of CO as well as CO_2 . In a fuel cell the only oxidation product of methane is CO_2 and the energy produced is electrical.
- 85 g