

**General Chemistry I – CHEM 2101**  
**Fall 2008**

**Pauli Exclusion Principle**

In a given atom no two electrons can have the same four quantum numbers ( $n$ ,  $l$ ,  $m_l$ , and  $m_s$ ).

**Hund's Rule**

The most stable arrangement of electrons in subshells is the one with the greatest number of parallel spins.

**The Aufbau Principle** (The building-up principle)

As protons are added one by one to the nucleus to build up the elements, electrons are similarly added to the atomic orbitals.

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**Paramagnetic Substances:** These substances are attracted to a magnet. They have **unpaired or parallel spins**.

**Diamagnetic Substances:** These substances are slightly repelled by a magnet. They have **paired spins**.

Note: Remember that if the substance has an **odd number of electrons**, the substance **must be paramagnetic, BUT** if it has an **even number of electrons** the substance may **either be paramagnetic or diamagnetic**.

Atom	Ground State e <sup>-</sup> Configuration and Orbital Diagram	P/D	Noble Gas Core Configuration
${}_1\text{H}$			
${}_2\text{He}$			
${}_3\text{Li}$			
${}_4\text{Be}$			

Atom	Ground State $e^-$ Configuration and Orbital Diagram	P/D	Noble Gas Core Configuration
${}_5\text{B}$			
${}_6\text{C}$			
${}_7\text{N}$			
${}_8\text{O}$			
${}_9\text{F}$			
${}_{10}\text{Ne}$			
${}_{11}\text{Na}$			
${}_{15}\text{P}$			
${}_{24}\text{Cr}$			
${}_{29}\text{Cu}$			
${}_{56}\text{Ba}$			
${}_{57}\text{La}$			
${}_{58}\text{Ce}$			
${}_{64}\text{Gd}$			