

Atoms and Electron Orbitals

Electron Configuration

- Electrons occupy specific energy levels
- Quantum numbers define orbital characteristics
- Aufbau principle: fill lowest energy first
- Pauli exclusion principle

Valence Electrons

- Outermost shell electrons
- Determine chemical reactivity
- Participate in bond formation
- Critical for biological interactions

Orbital Shapes



s

Spherical



p

Dumbbell



d

Complex



f

Very Complex

Biological Elements (CHNOPS)

**C • H • N • O •
P • S**