

Electron shell of heavy atoms

Two basic rules:

1. a system of particles is stable if its **total energy is minimal** (if this is not the case, the system tries to reach a state with the lowest possible energy),
2. in each quantum state (determined by 4 parameters), **only one electron** may exist in one system (electron shell)(see Quantum numbers).

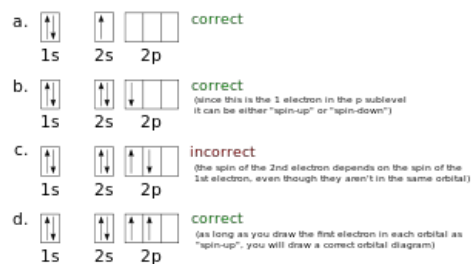
The number of electrons in subshell is $2(2l+1)$. Atomic shells are occupied as follows: 1s, 2s, 2p, 3s, 3p, 4s, 3d, 4p, 5s, 4d, 5p, 6s, ... (the 3d state has higher energy than the 4s due to the higher value of l , so it gets occupied later).

The Pauli exclusion principle and **Hund's rule** apply here (= as long as possible, electrons in an atom remain unpaired, i.e. have parallel spins. Such electrons are more separated from each other due to the same magnetic quantum number => this state has lower energy).

Links

Source

- KUBATOVA, Senta. *Biofot* [online]. [cit. 2011-01-31]. <<https://uloz.to/!CM6zAi6z/biofot-doc>>.



Hund's rule