Answer on Question #79545 - Chemistry - Physical Chemistry

Question:

Proffer an explanation for the often use of the concept of average bond energies by thermochemist.

Solution:

For a system consisting of infinitely distant resting particles, the binding energy is assumed to be equal to zero, that is, when a bound state is formed, energy is released. The binding energy is equal to the minimum work that must be spent in order to decompose the system into its constituent particles. It characterizes the stability of the system: the higher the binding energy, the more stable the system.

For valence electrons (electrons of external electron shells) of neutral atoms in the ground state, the binding energy coincides with the ionization energy, for negative ions - with affinity to the electron.

The energy of the chemical bond of a diatomic molecule corresponds to the energy of its thermal dissociation, which is of the order of hundreds of kJ / mol.

The binding energy of the hadrons of an atomic nucleus is determined mainly by a strong interaction.