

QUADRANT II

POSSIBLE MISCONCEPTION/CLARIFICATION

Successive Electron Affinities

When an electron is added to a gaseous neutral atom it becomes negatively charged (anion) and energy is released. Since it has a spontaneous or positive tendency to gain an electron, conventionally, its electron affinity is said to be positive. The addition of the second electron to the anion is opposed by the Coulombic force of repulsion and energy has to be supplied for this addition, that is, it has a negative tendency to gain an electron and conventionally its electron affinity is said to be negative.

Thermodynamically, however, the *energy released* is given a *negative sign* and *energy absorbed* is given a *positive sign*. Accordingly, when a species has a *positive electron affinity* it will have a *negative value*; and if it has a *negative electron affinity*, it will have a *positive value*.

Hence, in the example cited for the second electron affinity in the module, the first electron affinity of oxygen is negative, while the second electron affinity of oxygen is positive.