$\Delta H^\circ_{Reazione} = \sum_p \nu_p \Delta H^\circ_F(P) - \sum_p \nu_p \Delta H^\circ_F(R)$; $U = Q - W$; $H = Q + PV$; $G = H - TS$; $\Delta H < 0 \Rightarrow ESOTERMICA$; $\Delta H < 0 \Rightarrow ENDOTERMICA$; $\Delta H^\circ_{elementi} = 0$; $STD = 298K,\ 1M,\ 1bar,\ puri$; $\Delta G < 0 \Rightarrow spontanea$; $\Delta G > 0 \Rightarrow non\ spontanea$;

$$\Delta G^\circ_R = -RTlog(K_{eq});$$

$\Delta G_R = \Delta G^\circ_R + RTlog(Q)$; $k_p = k_c(RT)^{\Delta\nu}$ dove $\Delta\nu$ è (c+d)-(a+b); $k_c = \frac{[C]^c[D]^d}{[A]^a[B]^b}$; $k_c = \frac{{P_C}^c {P_D}^d}{{P_A}^a {P_B}^b}$

$$\frac{dln\,k}{dT} = \frac{\Delta H^\circ_R}{RT^2}$$

$$s = \sqrt{k_{ps}(1 + \frac{[H_3O^+]}{k_a})}$$

$$s = \sqrt{k_{ps}(1 + \frac{[H_3O^+]}{k_{a2}} + \frac{[H_3O^+]^2}{k_{a2}k_{a1}})}$$

Soluzione tampone: $pH = pK_a + log(\frac{[A^-]}{[HA]})$