Debye-Hückel

① $\ln \gamma_i = \dfrac{-A z_i^2 I^{1/2}}{1 + B R_o I^{1/2}}$ $\quad I < 0.1\,M$

low ionic strength

② $\ln \gamma_i = -A z^2 I^{1/2}$ $\quad I < 0.005\,M$

$A = 1.17\ mol^{-1/2} L^{1/2}$

$B = 0.329\ \text{Å}^{-1} mol^{-1/2} L^{1/2}$

Note: Value of A different for $\log \gamma_i$

Davies

③ $\ln \gamma_i = -A z_i^2 \left[\dfrac{I^{1/2}}{1 + I^{1/2}}\right] - bI$

$b = 0.3$ $\quad I < 0.5\,M$

Debye-Hückel Extended Term

④ $\ln \gamma_i = \dfrac{-A z^2 I^{1/2}}{1 + B R_o I^{1/2}} + \dot{B} I$ $\quad I \lesssim 0.5\,M$

$I = \bar{I}$ true ionic strength

$\dot{B}$ is a function of T and dominant electrolyte