2.2.1 Examples for activities

With $m_+ = \nu_+ m_B$, and $m_- = \nu_- m_B$ we get from Eq. (2.13)

$$a_B = \left(\gamma_\pm \left(\frac{m_\pm}{m^0}\right)\right)^\nu = \gamma_\pm^\nu \frac{(\nu_+ m_B)^{\nu+} (\nu_- m_B)^{\nu-}}{(m^0)^\nu} \quad . \tag{2.14}$$

- NaCl:

$$a_{\mathrm{NaCl}} = a_{\mathrm{Na+}} a_{\mathrm{Cl-}} = \gamma_\pm^2 \frac{(m_{\mathrm{NaCl}})^2}{(m^0)^2} \quad . \tag{2.15}$$

- $Fe(ClO_4)_3$:

$$\begin{aligned} a_{\mathrm{Fe(ClO_4)_3}} &= a_{\mathrm{Fe3+}} \left(a_{\mathrm{ClO4-}}\right)^3 \\ &= \gamma_\pm^4 \frac{m_{\mathrm{Fe(ClO_4)_3}} (3\, m_{\mathrm{Fe(ClO_4)_3}})^3}{(m^0)^4} = \gamma_\pm^4 \frac{27 (m_{\mathrm{Fe(ClO_4)_3}})^4}{(m^0)^4} \quad ; \end{aligned} \tag{2.16}$$

  here $m_{\mathrm{Fe3+}} = m_{\mathrm{Fe(ClO_4)_3}}$ and $m_{\mathrm{ClO4-}} = 3\, m_{\mathrm{Fe(ClO_4)_3}}$ has been used.

Thus the key-point is always how to calculate (or measure) $\gamma_\pm$.