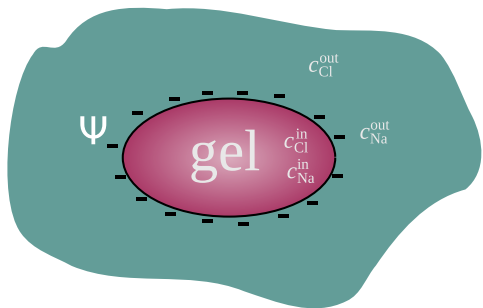# Mean field analythical model. Donnan potential.

Figure 2: Electrostatic potentioal of the particle surface is a driving force of ion partitioning

- Donnan electrostatic potential, ψ

$$e^{\psi} = \xi = \frac{c_{H^+}^{out}}{c_{H^+}^{in}} = \frac{c_{Na^+}^{out}}{c_{Na^+}^{in}} = \frac{c_{Cl^-}^{in}}{c_{Cl^-}^{out}} = \frac{c_{OH^-}^{in}}{c_{OH^-}^{out}}$$

- Local electroneutrality condition

$$\alpha c_p + c_{Cl^-}^{in} + c_{OH^-}^{in} = c_{Na^+}^{in} + c_{H^+}^{in}$$

$$\xi(c_p, c_s) = \sqrt{1 + \left(\frac{\alpha c_p}{2c_s}\right)^2} \pm \frac{\alpha c_p}{2c_s}$$