

Donnan prediction

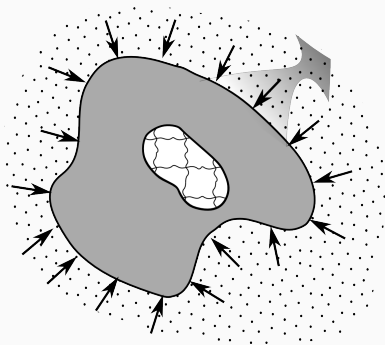


Figure 1: The compression of hydrogel affects the ionic composition of supernatant

- Donnan equilibrium $c_s^2 = c_{Na}^{in} \cdot c_{Cl}^{in}$
- Electroneutrality αN of self charges
 αN of neutralizing counterions
 c_{Cl}^{in} of free ion pairs
- By compression to the dry state one can exclude brine of concentration

$$N_{excl}/V = \begin{cases} c_s^{in} < c_s, \\ c_s^{in} + \alpha N/V_{gel} > c_s, \end{cases}$$