

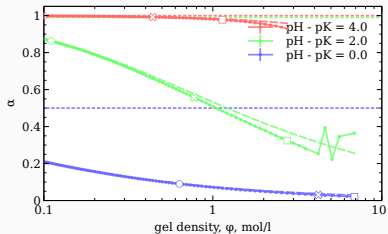
Monovalent salt. “No electrostatics” vs “Mean field theory”.

$$\frac{\alpha}{1-\alpha} 10^{\text{pK}-\text{pH}} = \sqrt{1 + \left(\frac{\alpha c_p}{2c_s} \right)^2} - \frac{\alpha c_p}{2c_s}$$

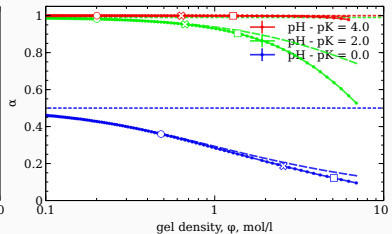
Together with electroneutrality condition it translates to

$$-\frac{\alpha^3 c_p}{c_s} + \alpha^2 \left(\frac{c_p}{c_s} + \Theta - \frac{1}{\Theta} \right) + \frac{2\alpha}{\Theta} - \frac{1}{\Theta} = 0$$

where $\Theta = 10^{\text{pK}-\text{pH}}$.



(c) low salinity, $c_s = 0.007$ mol/l



(d) high salinity, $c_s = 0.209$ mol/l