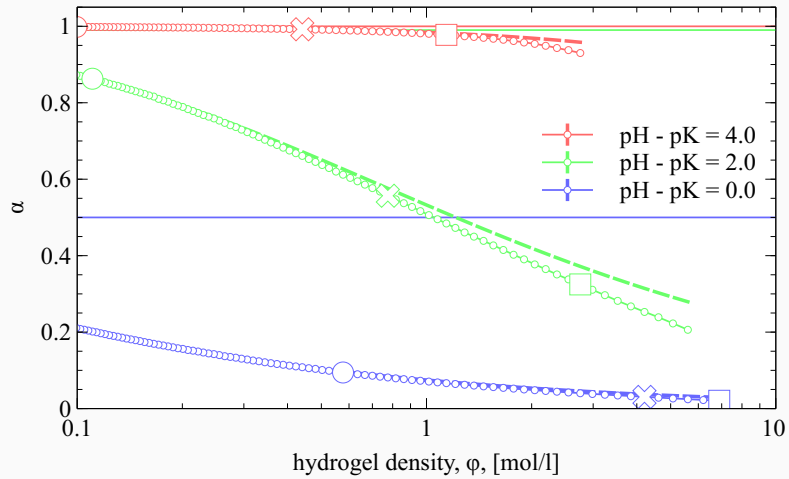
Monovalent salt. “No electrostatics” vs “Mean field theory”.

$$\frac{\alpha}{1-\alpha}10^{\mathrm{p}K-\mathrm{pH}} = \sqrt{1+\left(\frac{\alpha c_\mathrm{p}}{2c_\mathrm{s}}\right)^2} - \frac{\alpha c_\mathrm{p}}{2c_\mathrm{s}}$$

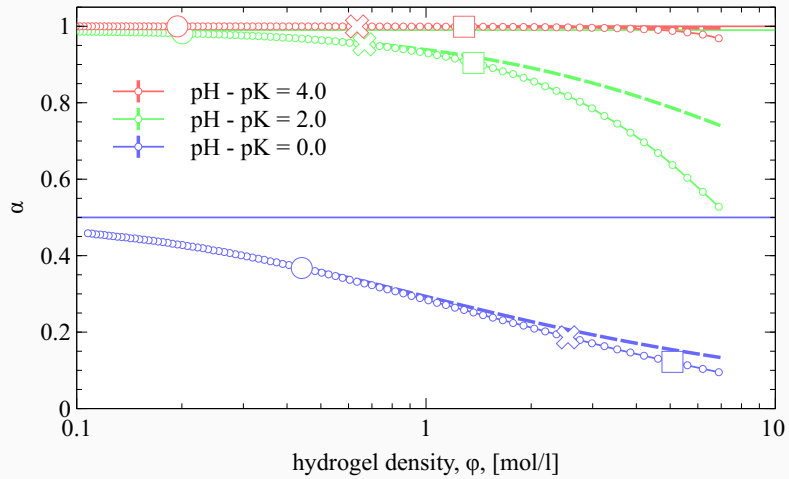
Together with electroneutrality condition it translates to

$$-\frac{\alpha^3 c_\mathrm{p}}{c_\mathrm{s}} + \alpha^2\left(\frac{c_\mathrm{p}}{c_\mathrm{s}} + \Theta - \frac{1}{\Theta}\right) + \frac{2\alpha}{\Theta} - \frac{1}{\Theta} = 0$$

where $\Theta = 10^{\mathrm{p}K-\mathrm{pH}}$.



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



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