## Supplement: Charge Separation and Isolation in Strong Water Droplet Impacts

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**Dispersion Process Video**

A video displaying the dispersion process after the IR-Laser excitation can be downloaded from the

following link: https://www.dropbox.com/s/26ifep8wb78ms6n/Wasser_18_2826A_r270.avi?dl=0

**Comparison of the Probability Charge Distribution calculated with the Poisson Model and the**

**Results from the Monte Carlo Simulations for Concentration between $10^{-4}$ and $10^{-1}$ mol/L.**

At a salt concentration of $10^{-4}$ mol/L the match between the Poisson model and the Monte Carlo

simulation results is complete. When the concentration increases the interionic interaction becomes

relevant reducing the highly charged states and the overall charge probability.
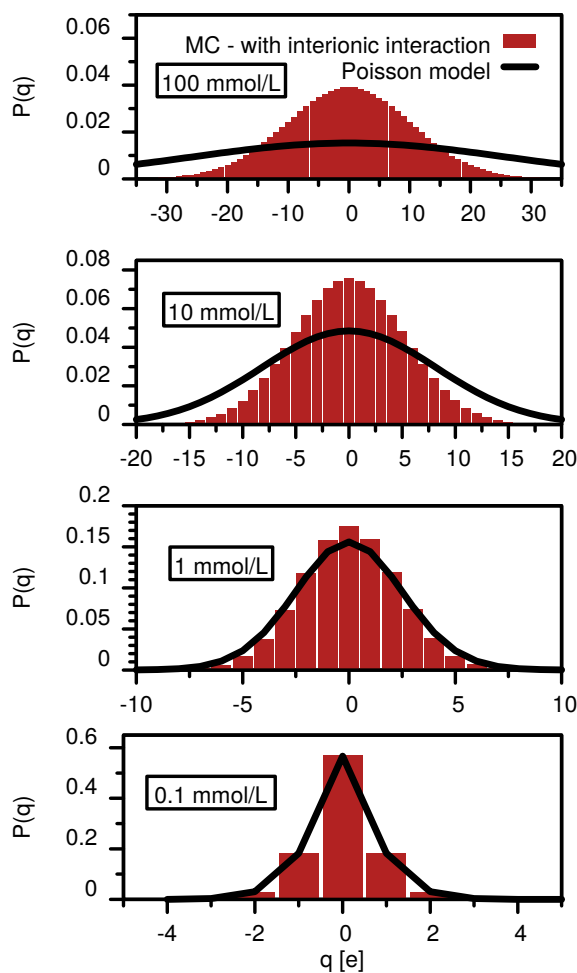
The following Table shows the Debye length based on the relative permittivity of water ($\varepsilon_r = 80.35$) and the total number of ions used in the MC simulations for each salt concentration.

| NaCl concentration [mmol/L] | Debye lenght [nm] | Number of ions |
|---|---|---|
| 100 | 1.36 | 1051 |
| 10 | 4.29 | 497 |
| 1 | 13.57 | 588 |
| 0.1 | 42.93 | 1257 |