

Supporting Information

## Minimal Requirements for One-Dimensional Aggregation in Simple Coarse-Grained Models of Charged Porphyrinoid Units

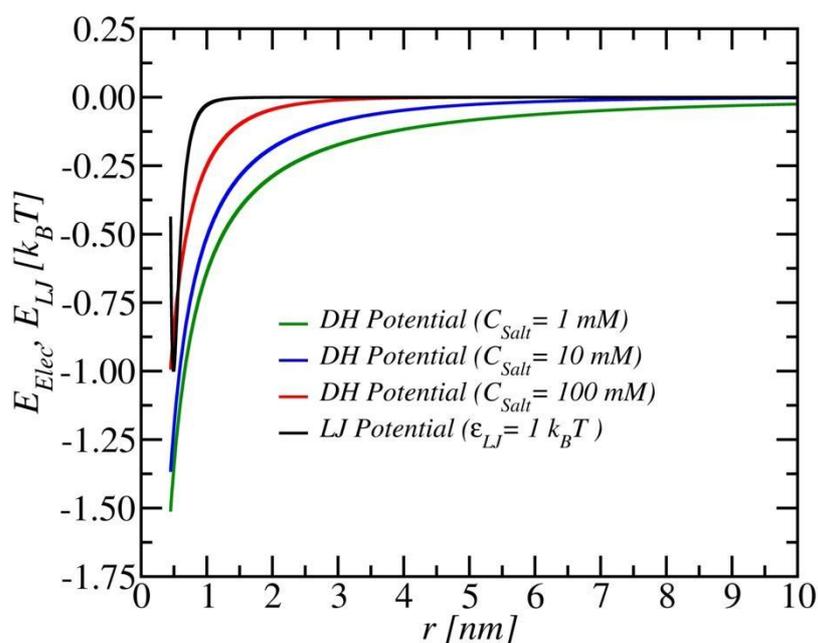
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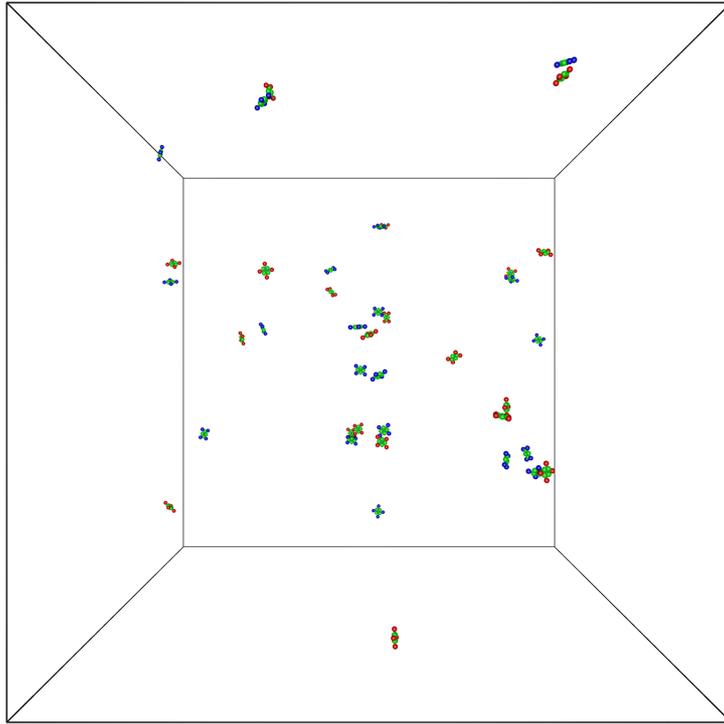
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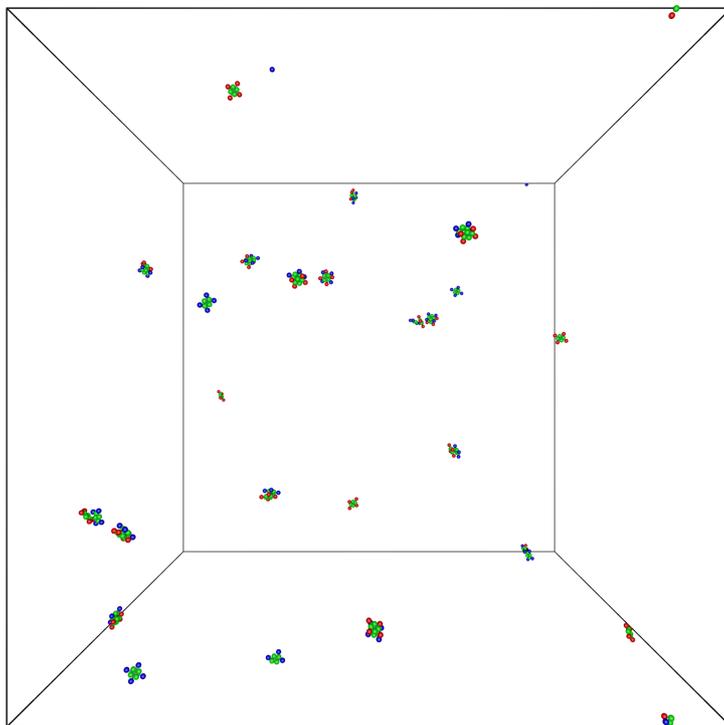
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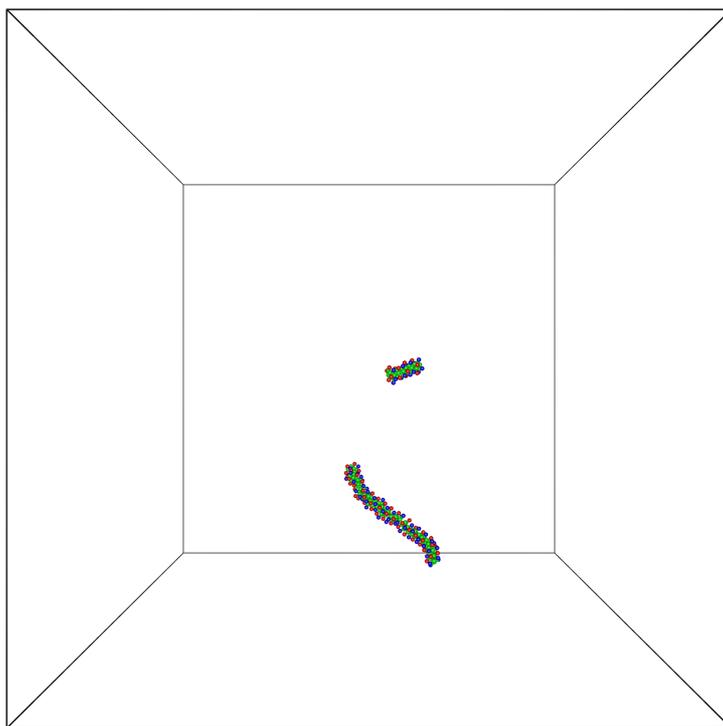
**Figure S1.** Screened Coulomb potential (Debye-Hückel form) between two-unit charges at different salt concentrations (1, 10, and 100 mM), with Lennard-Jones  $\pi$ - $\pi$  interaction strength fixed at  $\epsilon_{LJ} = 1 k_B T$ .



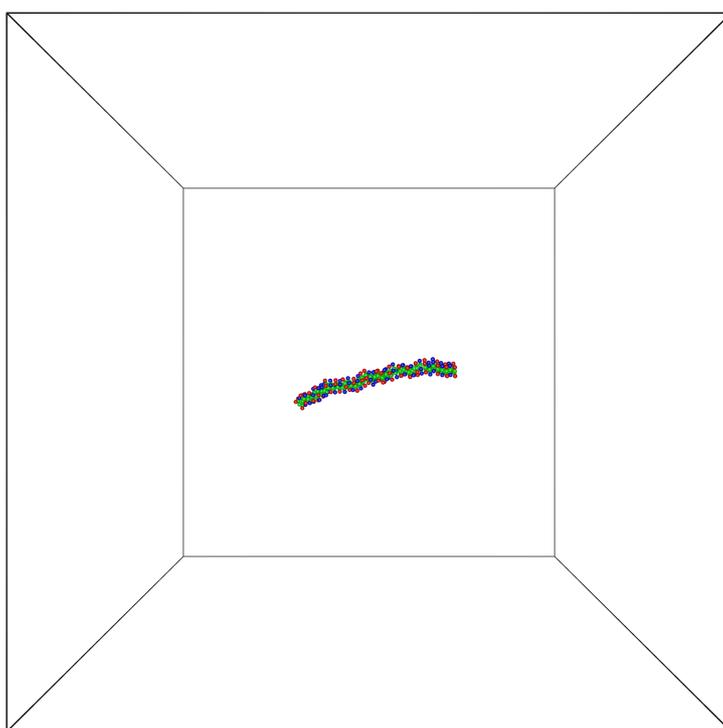
**Figure S2.** Snapshots from Monte Carlo simulations of a system contain 20 CP and 20 AP particles under  $\rho_{CP} = \rho_{AP} = 0.25 \text{ mM}$  and  $1 \text{ mM}$  salt concentration.  $\epsilon_{LJ}$  value:  $0 k_B T$ .



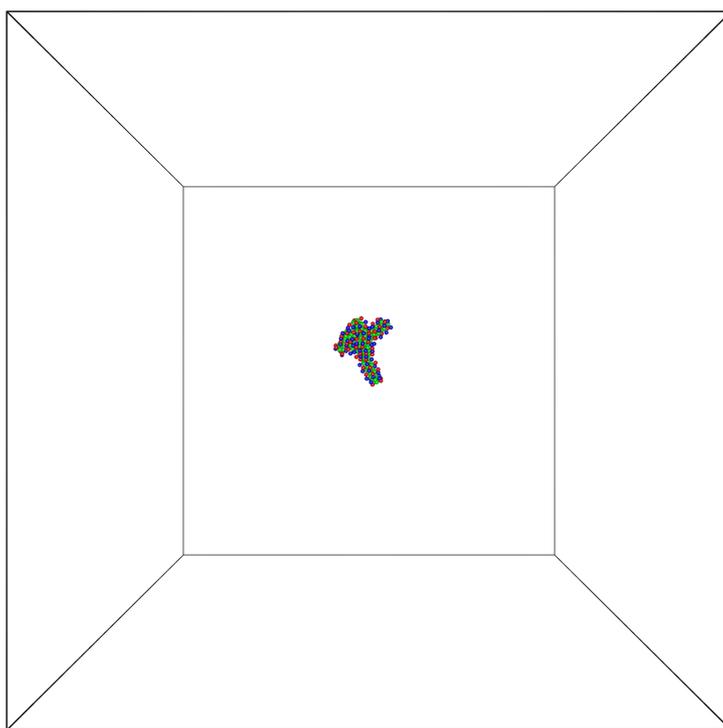
**Figure S3.** Snapshots from Monte Carlo simulations of a system contain 20 CP and 20 AP particles under  $\rho_{CP} = \rho_{AP} = 0.25 \text{ mM}$  and  $1 \text{ mM}$  salt concentration.  $\epsilon_{LJ}$  value:  $1 k_B T$ .



**Figure S4.** Snapshots from Monte Carlo simulations of a system contain 20 CP and 20 AP particles under  $\rho_{CP} = \rho_{AP} = 0.25 \text{ mM}$  and  $1 \text{ mM}$  salt concentration.  $\epsilon_{LJ}$  value:  $2 k_B T$ .



**Figure S5.** Snapshots from Monte Carlo simulations of a system contain 20 CP and 20 AP particles under  $\rho_{CP} = \rho_{AP} = 0.25 \text{ mM}$  and  $1 \text{ mM}$  salt concentration.  $\epsilon_{LJ}$  value:  $3 k_B T$ .



**Figure S6.** Snapshots from Monte Carlo simulations of a system contain 20 CP and 20 AP particles under  $\rho_{CP} = \rho_{AP} = 0.25 \text{ mM}$  and  $1 \text{ mM}$  salt concentration.  $\epsilon_{LJ}$  value:  $4 k_B T$ .