

Supporting information for

**Determining the Aggregation Kinetics of Nanoparticles by Single Nanoparticle
Counting**

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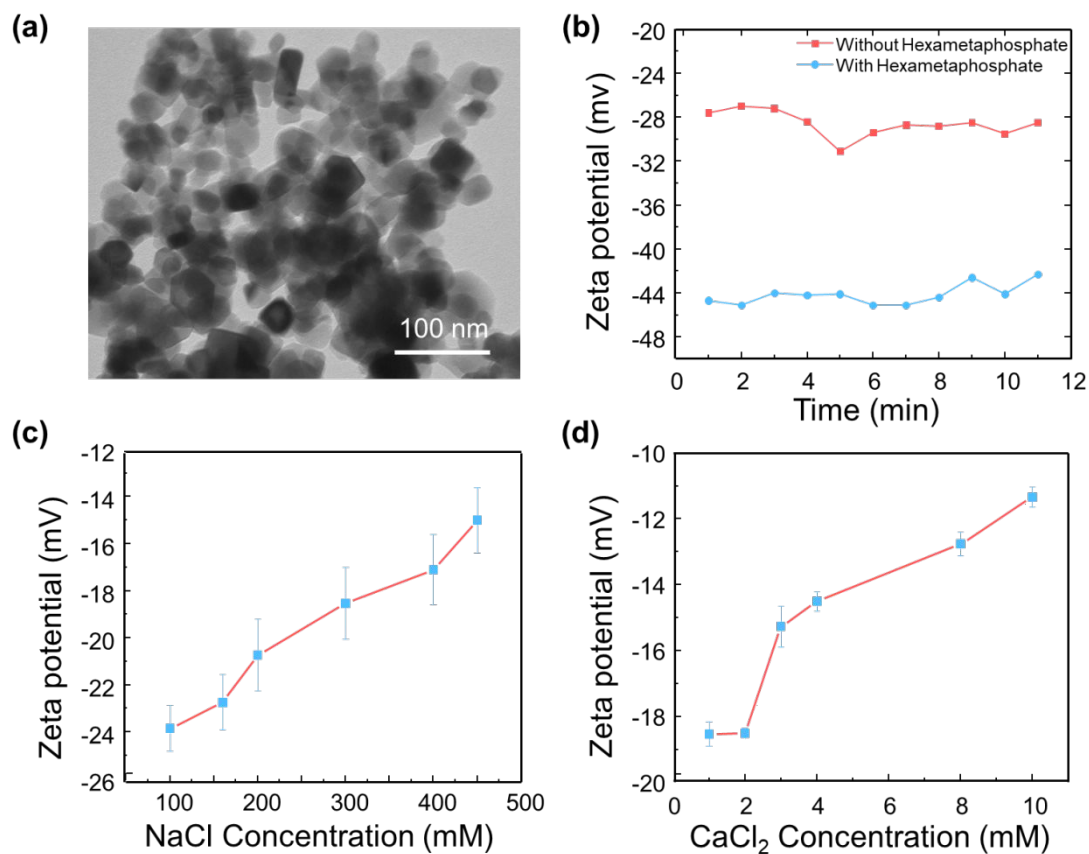


Figure S1. (a) TEM micrograph of the TiO₂ NPs. (b) Zeta potential of TiO₂ NPs with and without hexametaphosphate in water. Zeta potentials of TiO₂ NPs as a function of (c) NaCl and (d) CaCl₂ concentrations. Each point was the average of triplicate measurements and the error bars represent standard deviations.

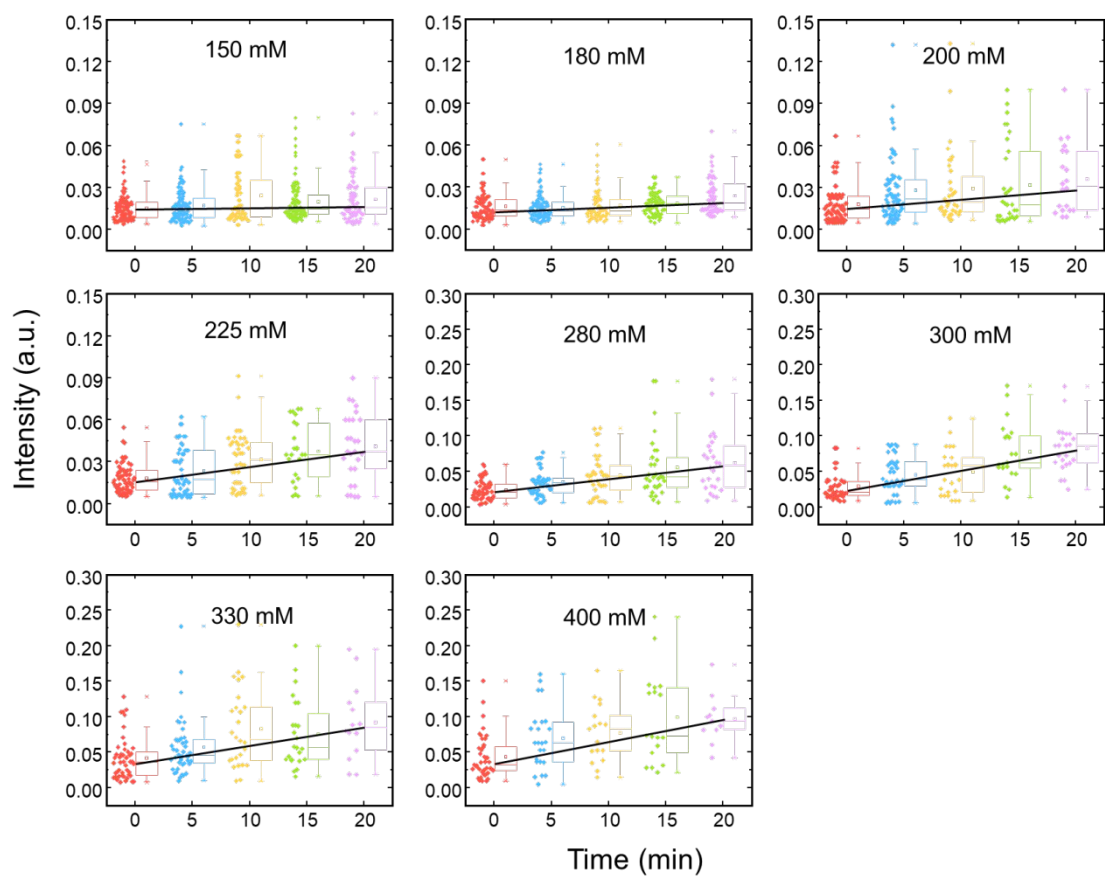


Figure S2. Plasmonic intensity of TiO_2 nanoparticles changes as a function of time with varied NaCl concentrations. The black lines represent the fitting line of the median values of the plasmonic intensities of the particles at different times.

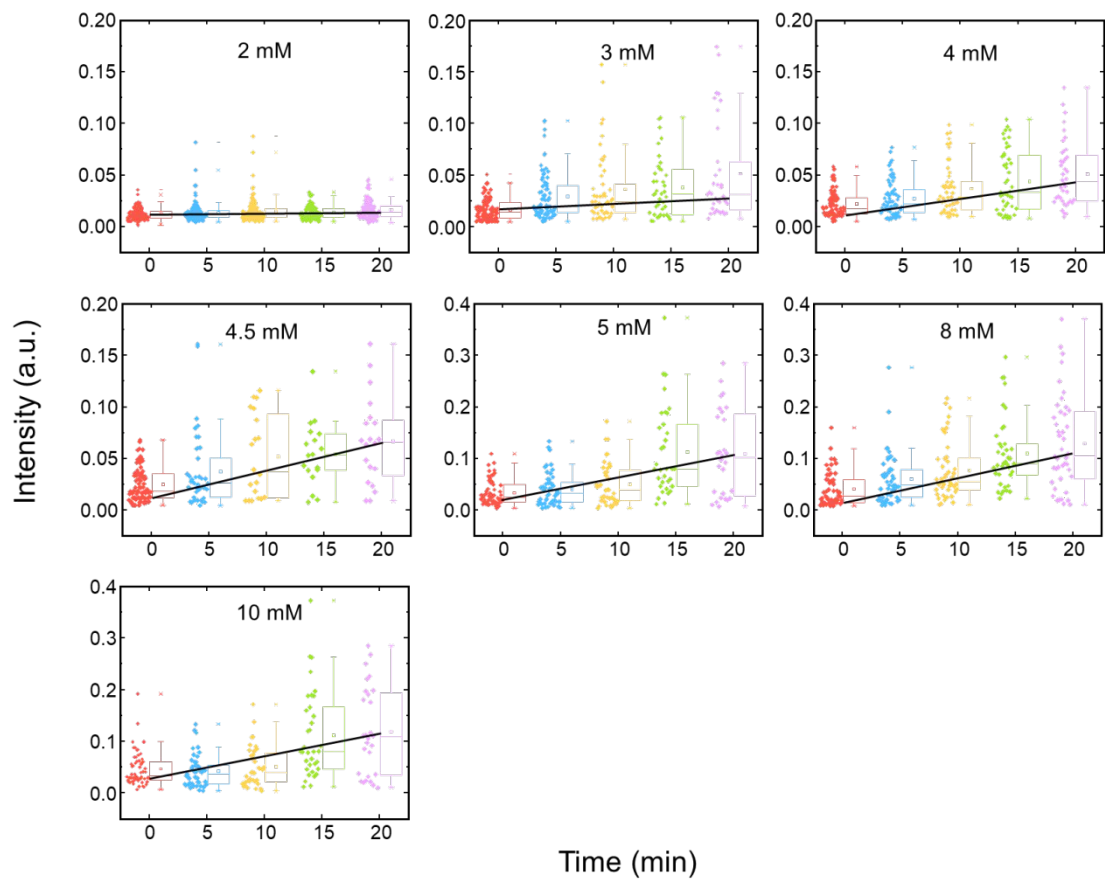


Figure S3. Plasmonic intensity of TiO_2 nanoparticles changes as a function of time with varied CaCl_2 concentrations. The black lines represent the fitting line of the median values of the plasmonic intensities of the particles at different times.

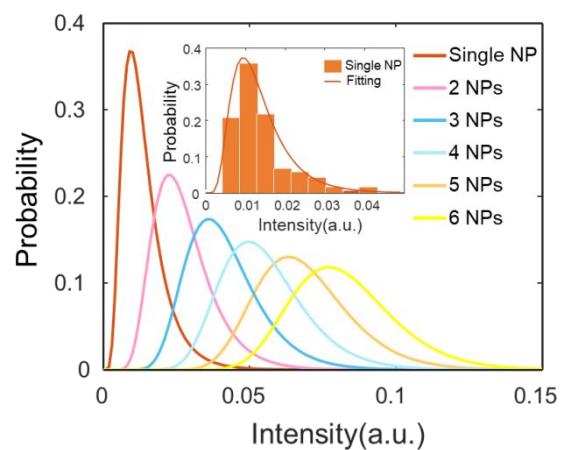


Figure S4. The calibration curve for deconvolving the plasmonic intensity distribution of the aggregates. The standard intensity distribution of the aggregates ($N = 1$ to 6) was used to estimate the number of nanoparticles in the aggregates. The inset is the plasmonic intensity distribution and lognormal fitting of the single nanoparticles.

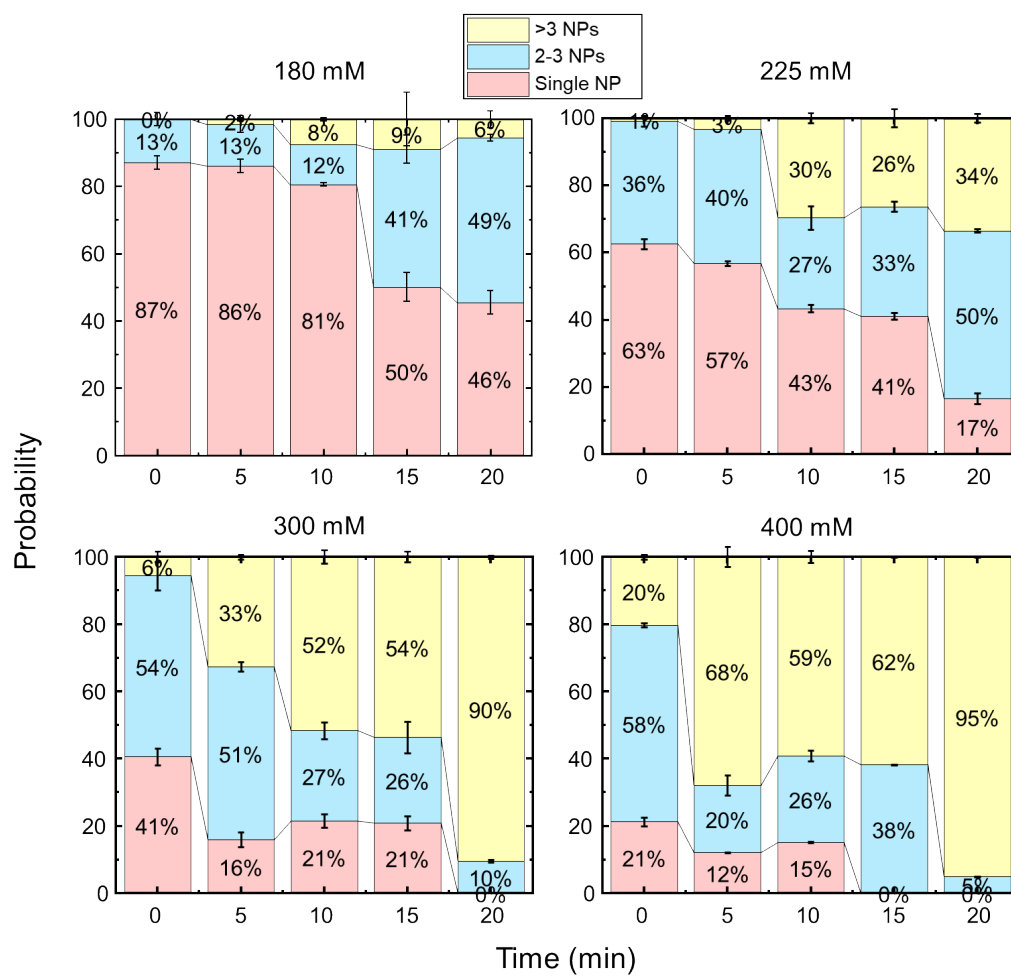


Figure S5. The probabilities of the number of TiO₂ nanoparticles in the aggregates in NaCl solutions with varied concentrations.

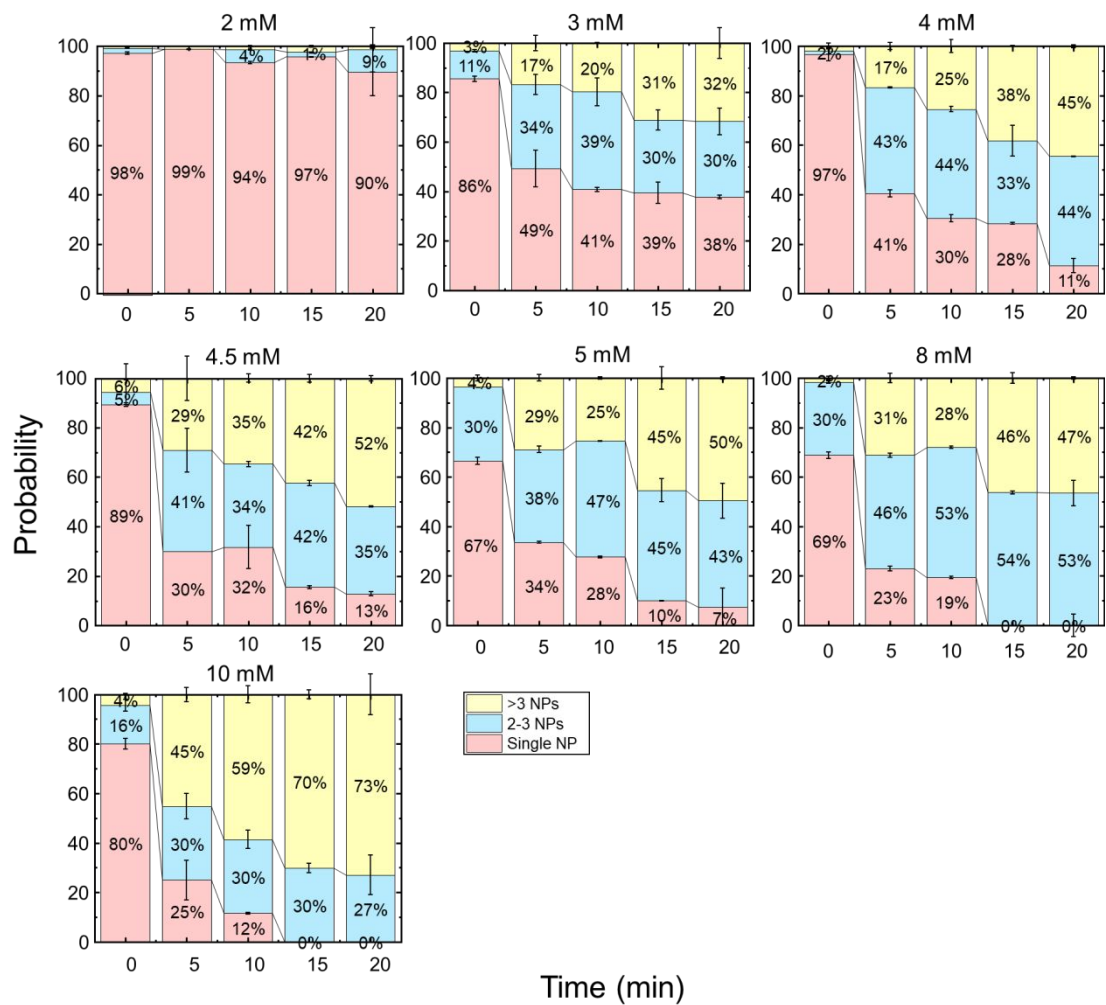


Figure S6. The probabilities of the number of TiO_2 nanoparticles in the aggregates in CaCl_2 solutions with varied concentrations.

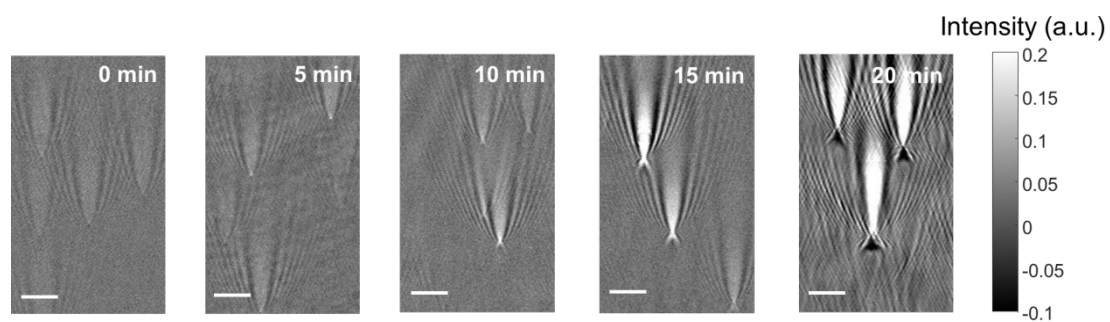


Figure S7. Typical plasmonic images of TiO₂ nanoparticles during aggregation in 300 mM NaCl solution at different times. Each TiO₂ nanoparticle appears as a parabolic-tailed pattern, whose center represents the location of the nanoparticle. Scale bar: 5 μm .