

**Electronic Supplementary Information for “Controlling Stability of Pickering Emulsion  
by pH-Responsive Nanoparticles”**

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**Supplementary Figures**

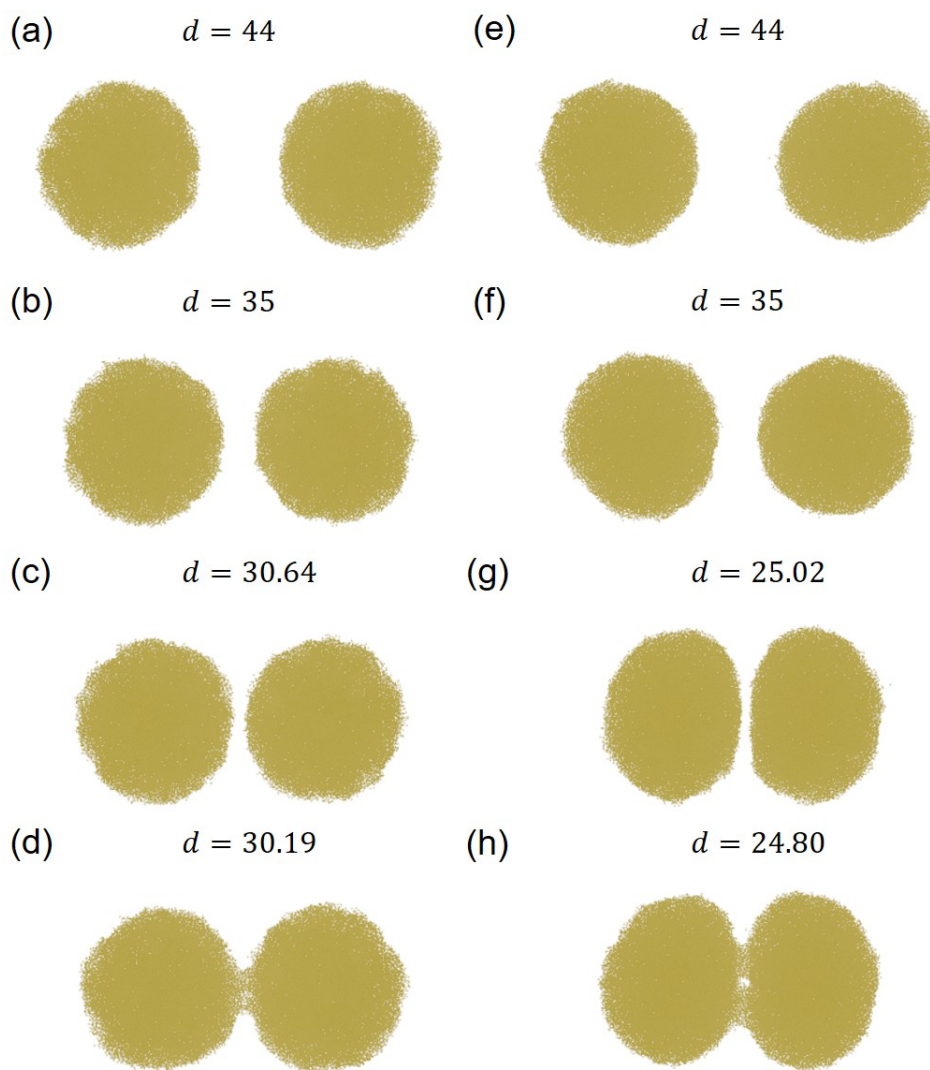


Figure S1. Simulation snapshots of the water–oil interfaces during droplet collision. The PGNPs are not displayed for clarity. (a-h) correspond to the same instants in Fig. 1.

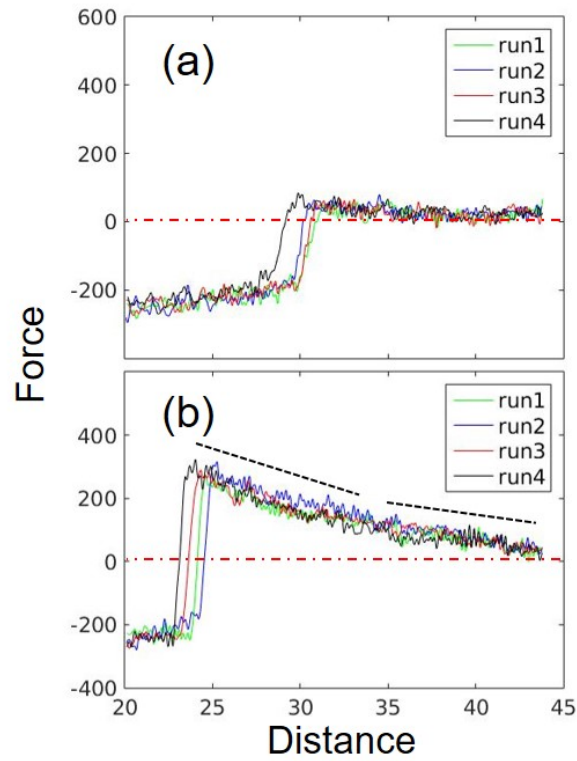


Figure S2. Force–distance curves obtained during the coalescence of two o/w emulsions with (a)  $\alpha = 0\%$  and (b)  $\alpha = 50\%$  in four independent runs. The number of particles covering the droplet is 25. The forces and distances are averaged every 1000 steps. The dashed and dotted lines are guides for the eye.

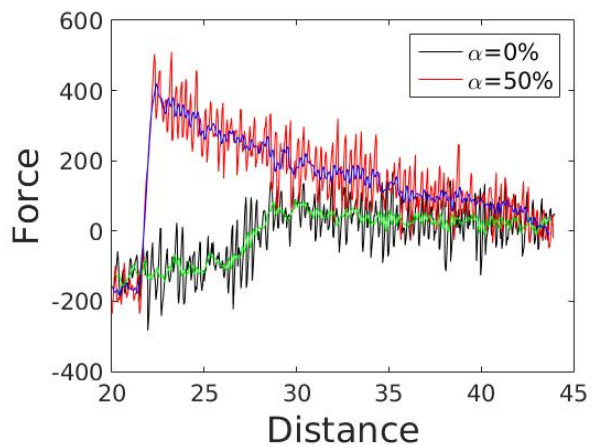


Figure S3. Force–distance curves obtained during the forced coalescence of two o/w emulsion droplets at different degrees of ionization of PGNPs. The number of PGNPs used to cover the droplet is 35. Red and black lines present the instantaneous forces, while blue and green curves are obtained by averaging the forces and distances every 1000 step.

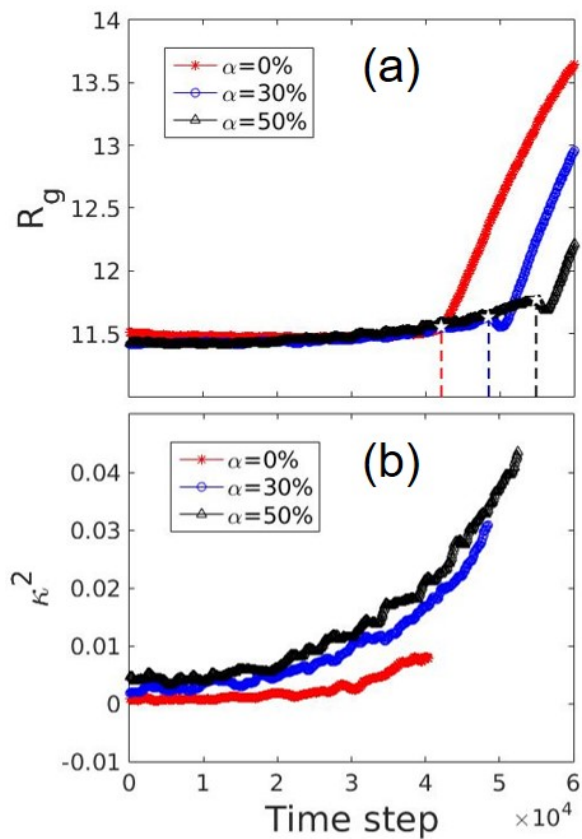


Figure S4. Time evolution of (a) radius of gyration, (b) relative shape anisotropy of oil droplets during the coalescence process. The dashed lines in (a) mark out the corresponding coalescence time for the systems having different degree of ionization. The number of PGNPs that covers the droplet is 35.

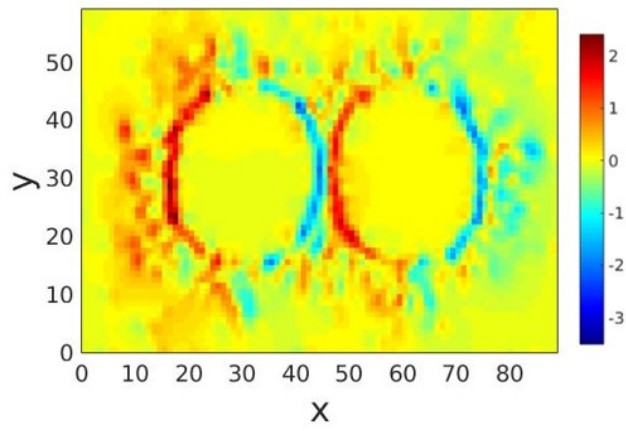


Figure S5. Representative electric field ( $x$ - component) distributions in the plane of collision (the mid  $x$ - $y$  plane along the  $z$  direction) without dielectric discontinuity.

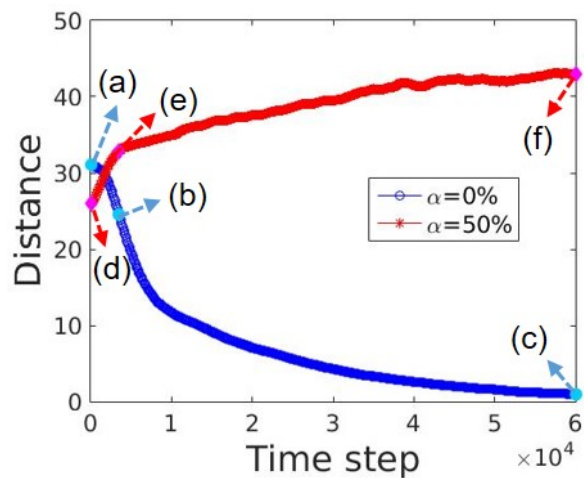


Figure S6. Time evolution of the droplet distance after the removal of the spring forces for two different degrees of ionization. The number of PGNPs covering the droplets is 25. The arrows with annotations (a)-(f) mark the positions corresponding to the respective snapshots in Fig. S7.

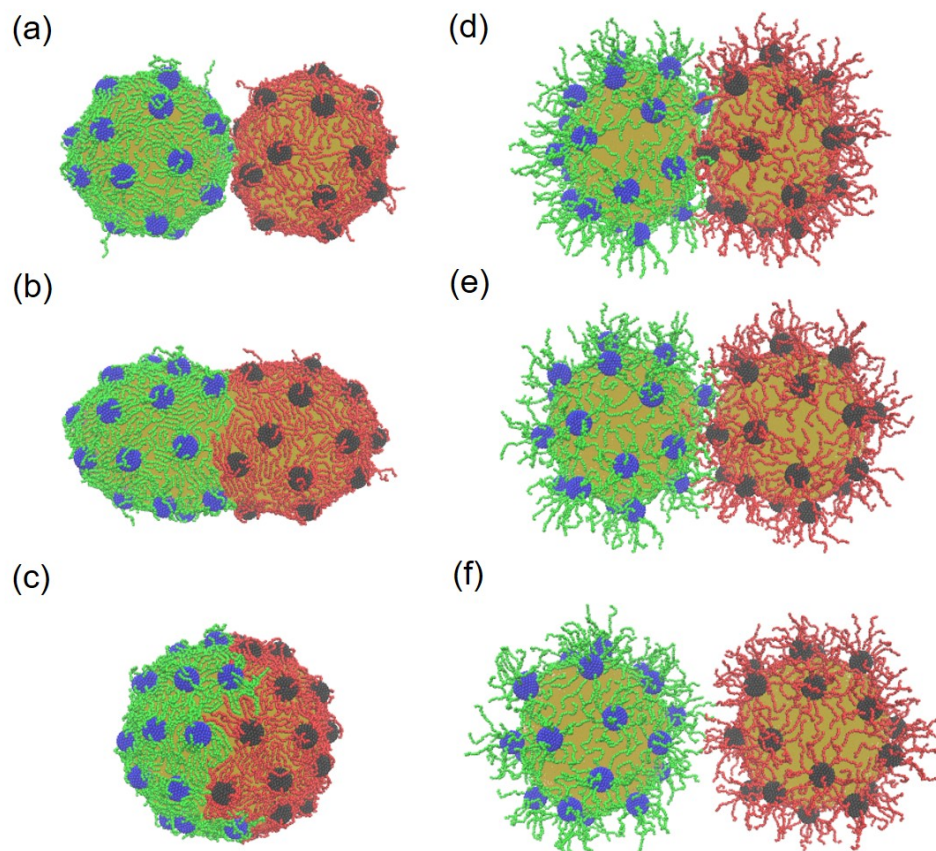


Figure S7. Sequence of simulation snapshots representing droplet collision processes after removing the spring force.  $\alpha = 0\%$  in the first column and  $\alpha = 50\%$  in the second column.

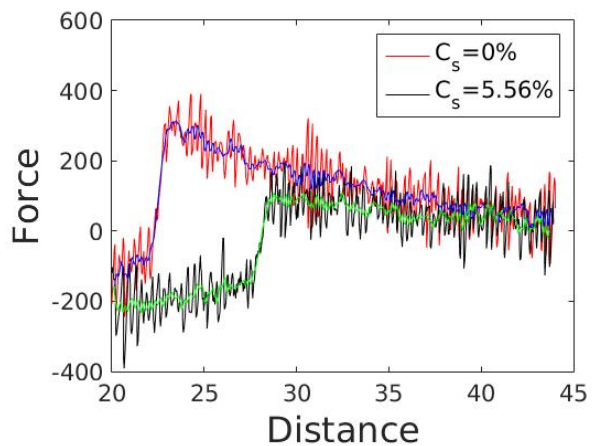


Figure S8. Simulated force-distance curves obtained during the coalescence of two o/w emulsions. The number of polyelectrolyte-grafted nanoparticles used to cover the droplet is 35 and  $\alpha = 30\%$ . The salt concentration of the system equals to 0% and 5.56% for red curve and black one respectively. Blue and green curves are obtained by averaging the forces and distances every 1000 step.



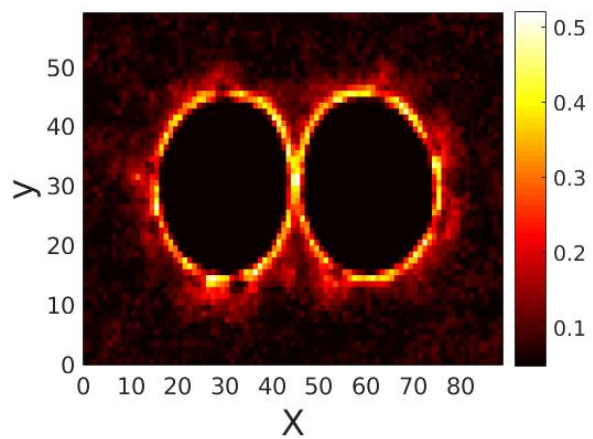


Figure S9. Time-averaged distribution of positively charged salt ions near the x-y central plane at concentration of 5.56%.