Supporting Information

pH-responsive Pickering Emulsions Stabilized by Silica Nanoparticles in Combination with a Conventional Zwitterionic Surfactant

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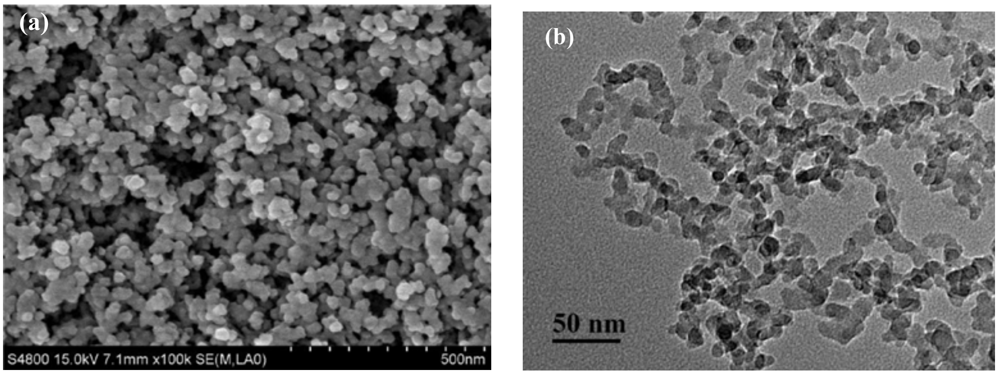
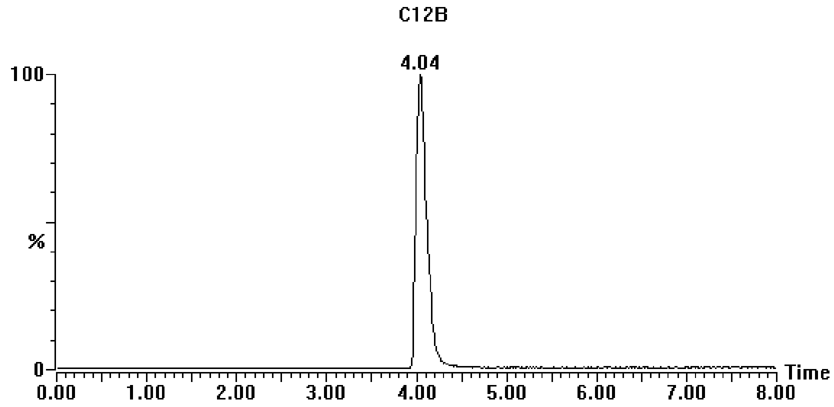
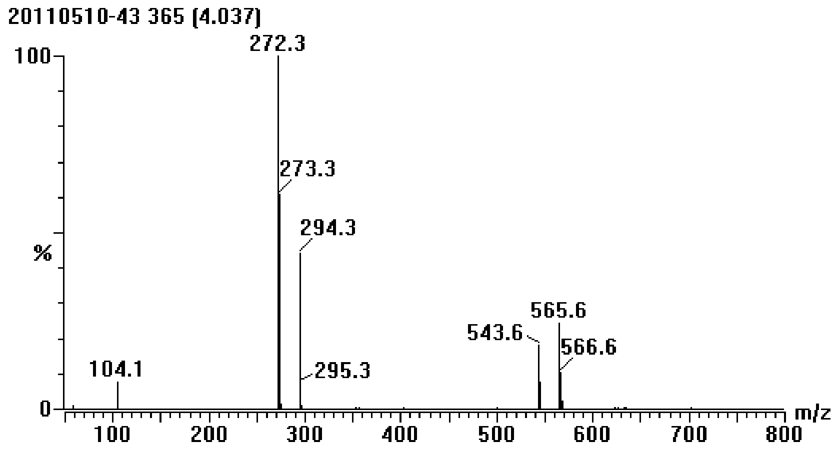


Figure S1. (a) SEM and (b) TEM images of powdered silica nanoparticles of HL-200 with a BET surface area of 200 ± 20 m^2 g^{-1}.

(a)



(b)



(c)

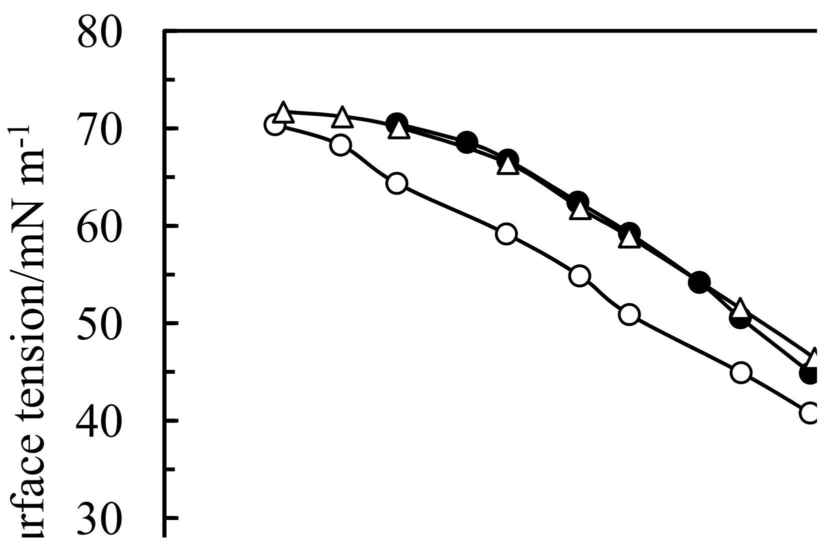


Figure S2. (a) HPLC analysis, (b) mass spectrum and (c) surface tension of aqueous solutions of dodecyl dimethyl carboxyl betaine ($C_{12}B$) as a function of concentration at different pH.

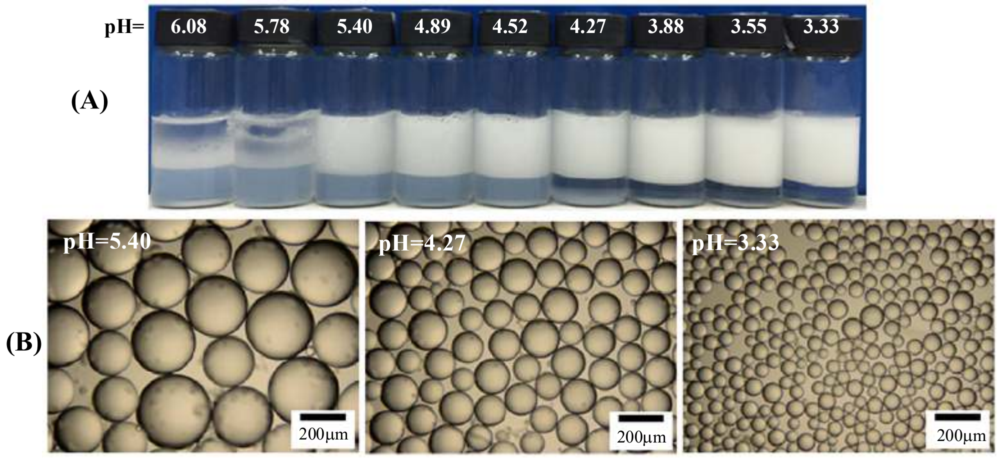


Figure S3. (A) Photographs and (B) micrographs of *n*-decane-in-water (7 mL/7 mL) batch emulsions stabilized by a mixture of 0.5 wt.% silica nanoparticles and 0.2 mM $C_{12}B$ at different pH shown in the vessels (vessel 1 is pure water), taken 24 h after preparation.

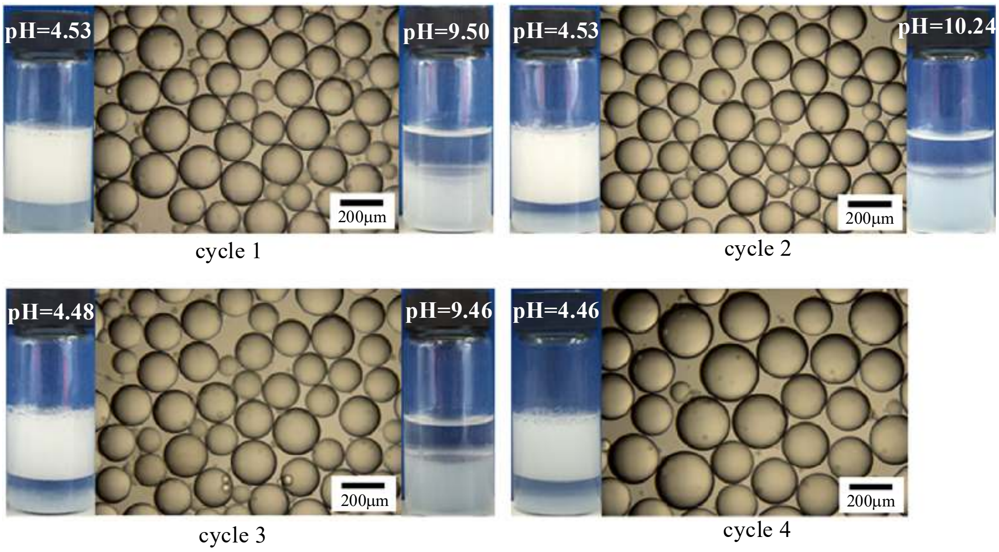


Figure S4. Photographs and micrographs (low pH only) of *n*-decane-in-water emulsions stabilized by 0.5 wt.% silica nanoparticles and 0.2 mM $C_{12}B$ following pH alternation by adding 0.1 M HCl and 0.1 M NaOH respectively, taken 24 h after preparation.

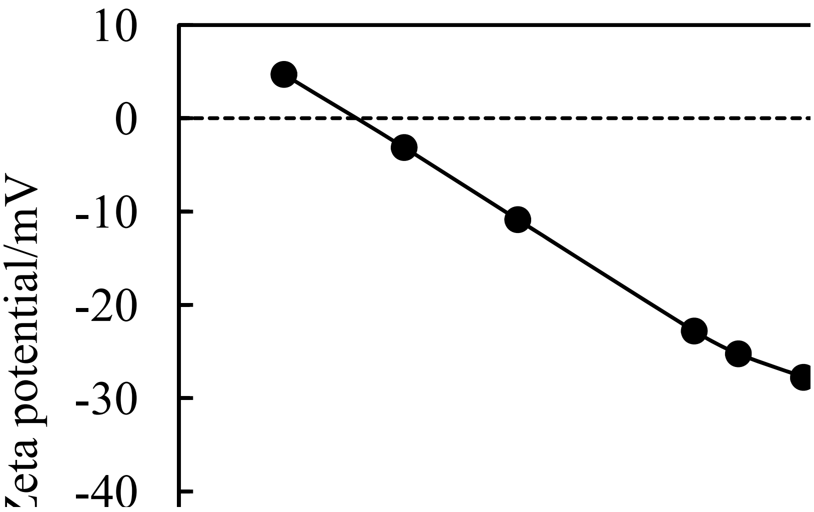


Figure S5. Zeta potential of 0.1 wt.% silica nanoparticles dispersed in water of different pH, measured 24 h after dispersion at 25 °C.

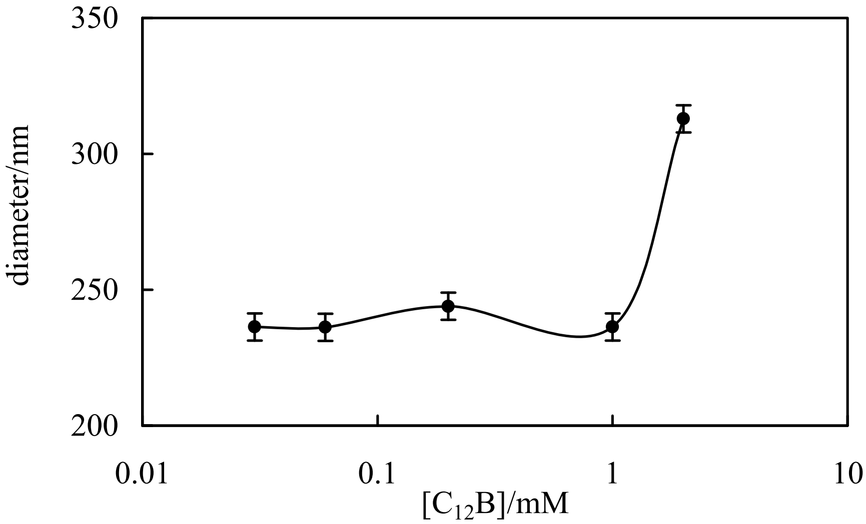


Figure S6. Average diameter of silica nanoparticles (0.1 wt.%) dispersed in aqueous solutions of $C_{12}B$ at different concentrations (neutral pH) measured 24 h after dispersion at 25 °C. (d = 236 ± 5 nm in pure water).

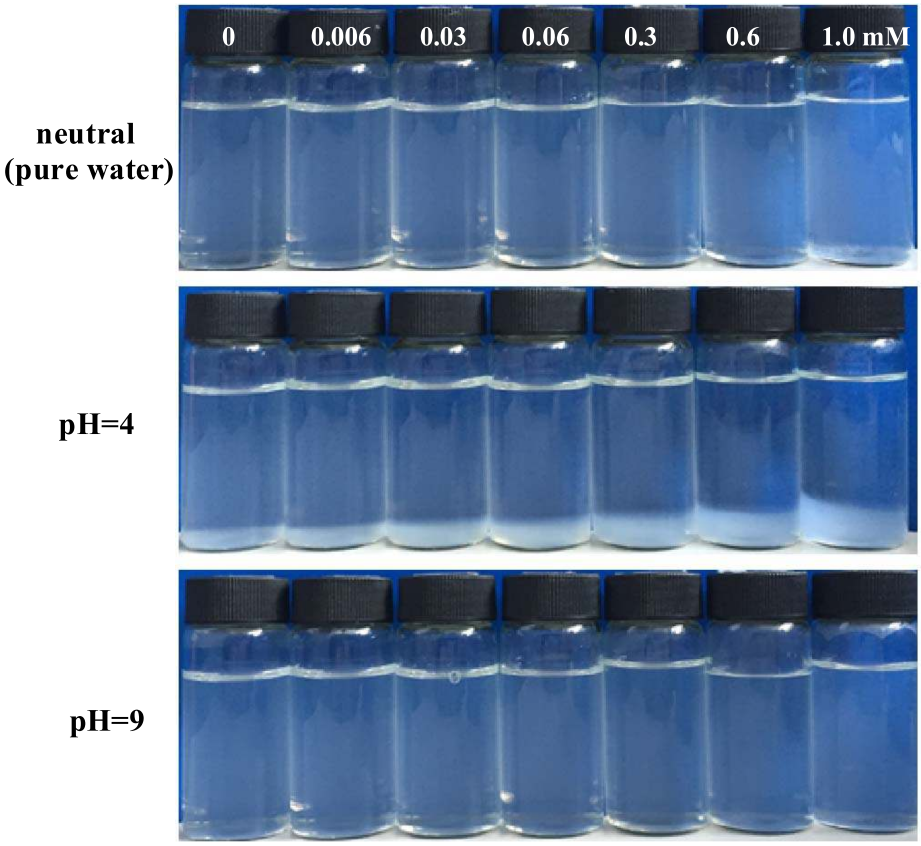


Figure S7. Photographs of vessels containing 0.1 wt.% silica nanoparticles dispersed in aqueous solutions of $C_{12}B$ at different pH as a function of $C_{12}B$ concentration (given), taken 24 h after dispersion at room temperature.

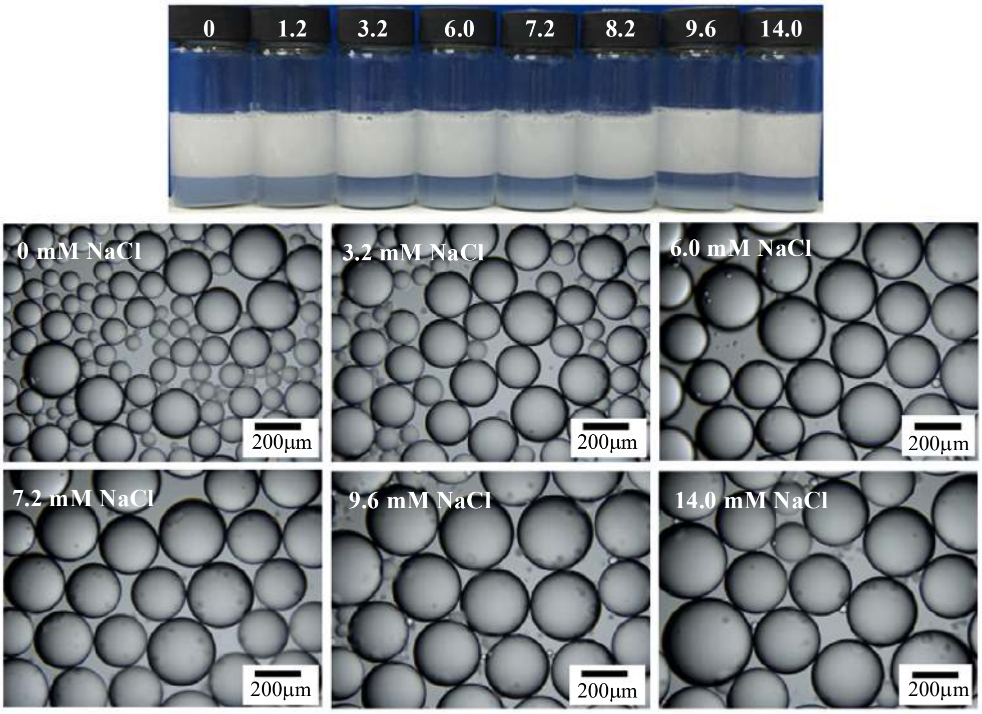


Figure S8. Photographs and micrographs of *n*-decane-in-water emulsions stabilized by 0.5 wt.% silica nanoparticles in combination with 0.06 mM $C_{12}B$ at pH = 4.4 in the presence of NaCl of different concentration given, taken 24 h after preparation.

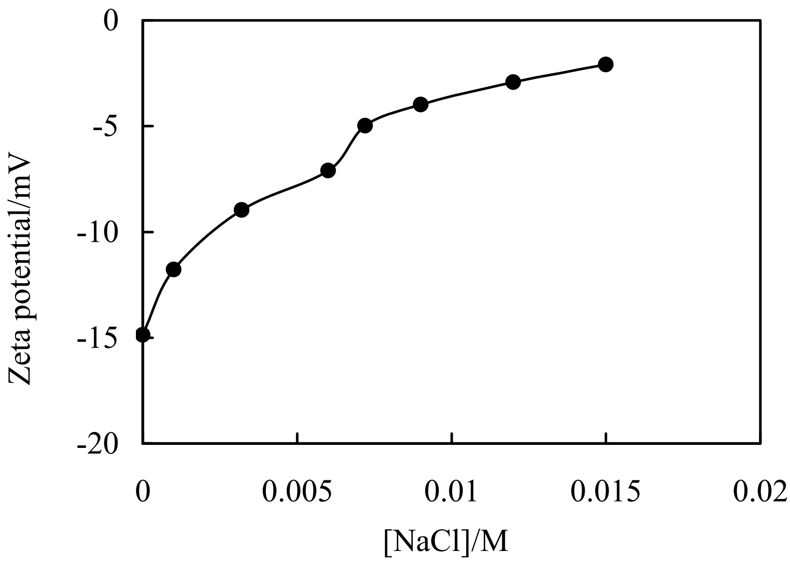


Figure S9. Effect of NaCl concentration on the zeta potential of 0.1 wt.% silica nanoparticles dispersed in water of pH = 4.4 at 25 °C.