Electronic Supplementary Material (ESI) for Green Chemistry.

Supporting Information

Tuning Particle-Particle Interactions to Control Pickering Emulsions Constituents Separation

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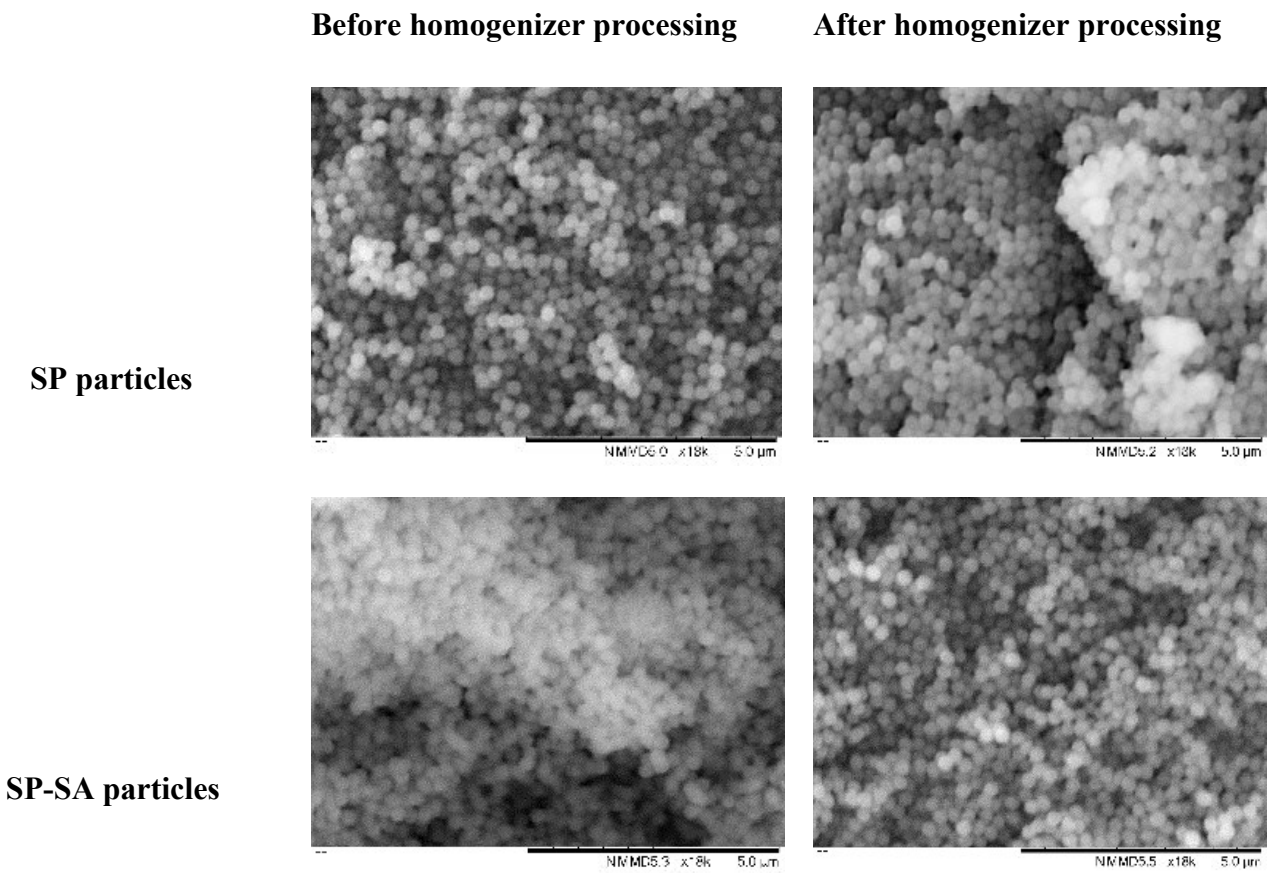


Figure S1. SEM micrographs of SP and SP-SA particles before and after homogenizer processing.

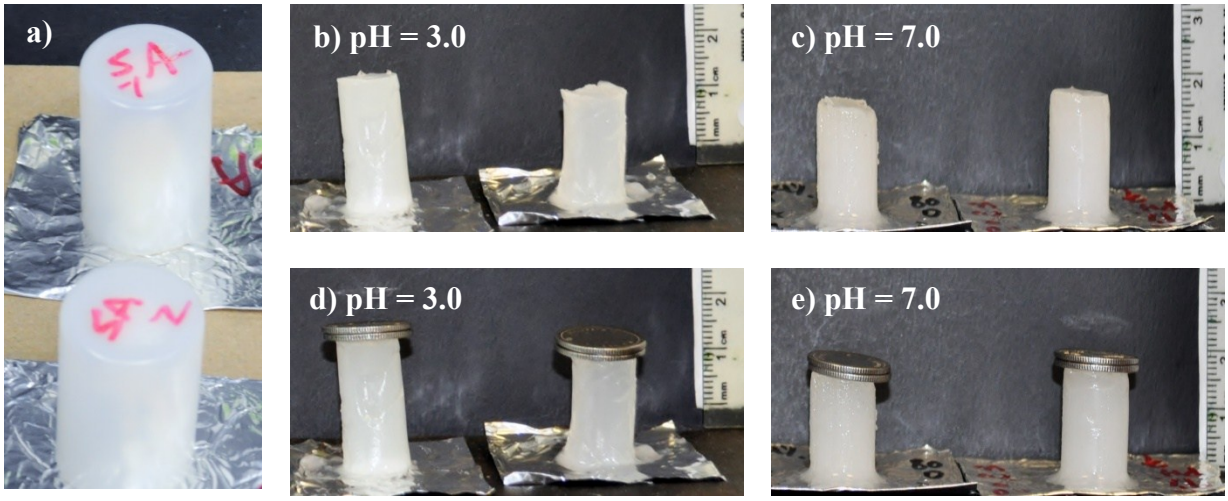


Figure S2. Pictures of concentrated oil-in-water Pickering emulsions comprising 4% SP-SA particles (ϕ_o = 0.8) when contained into the plastic molds (a), removed from plastic molds (b, c), and under compressive stress (d, e).

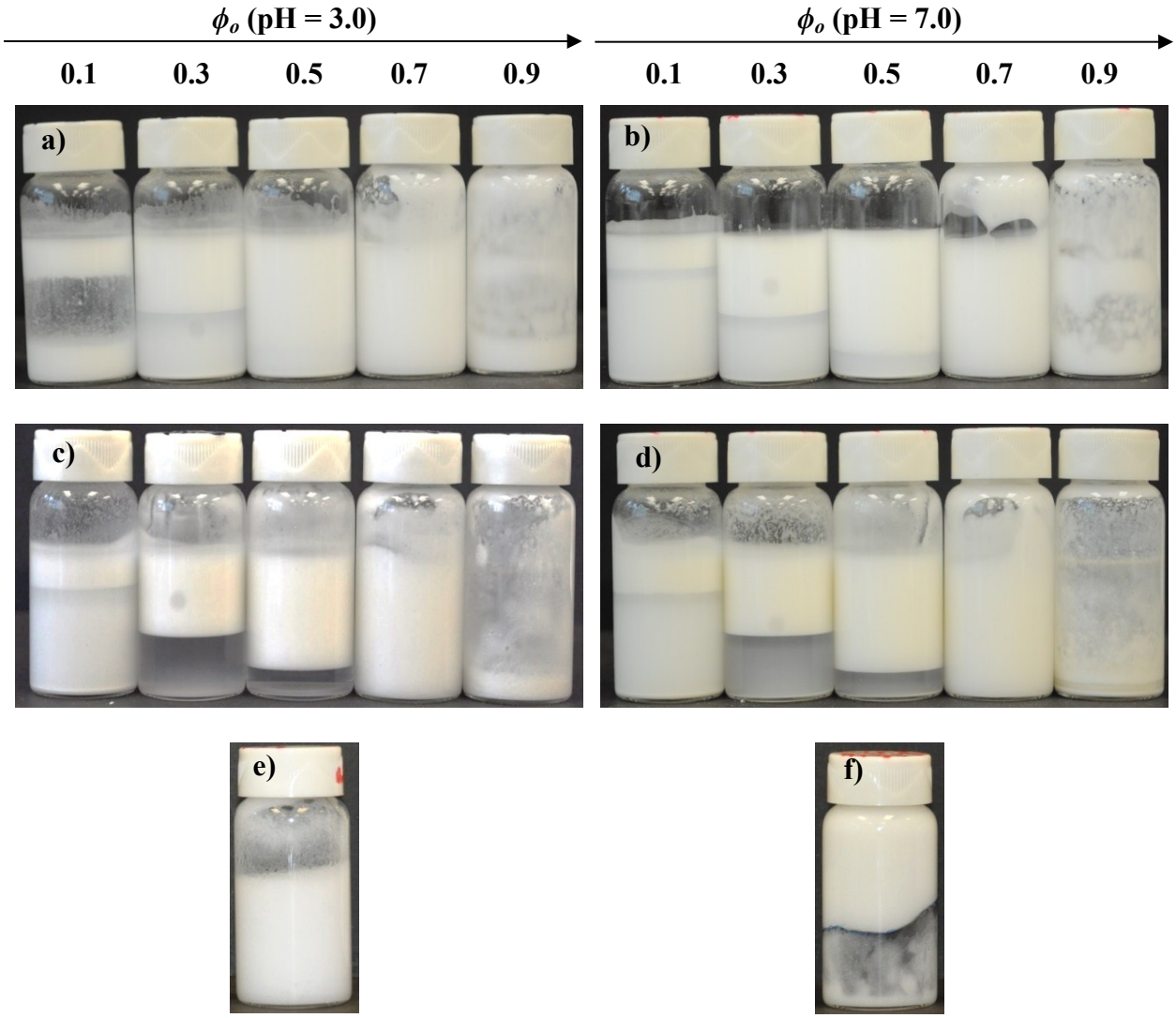


Figure S3. Effect of oil volume fraction ϕ_o on emulsion aspect, with 4% (w/v) particles: a) and b), emulsions prepared with unmodified silica particles (SP) at pHs 3.0 and 7.0, respectively; c) and d), emulsions prepared with sodium alginate-modified particles (SP-SA), at pHs 3.0 and 7.0; e) emulsion composed of SP particles (4% w/v) at ϕ_o = 0.8, compared to f) emulsion composed of SP-SA particles (4% w/v) at ϕ_o = 0.8.

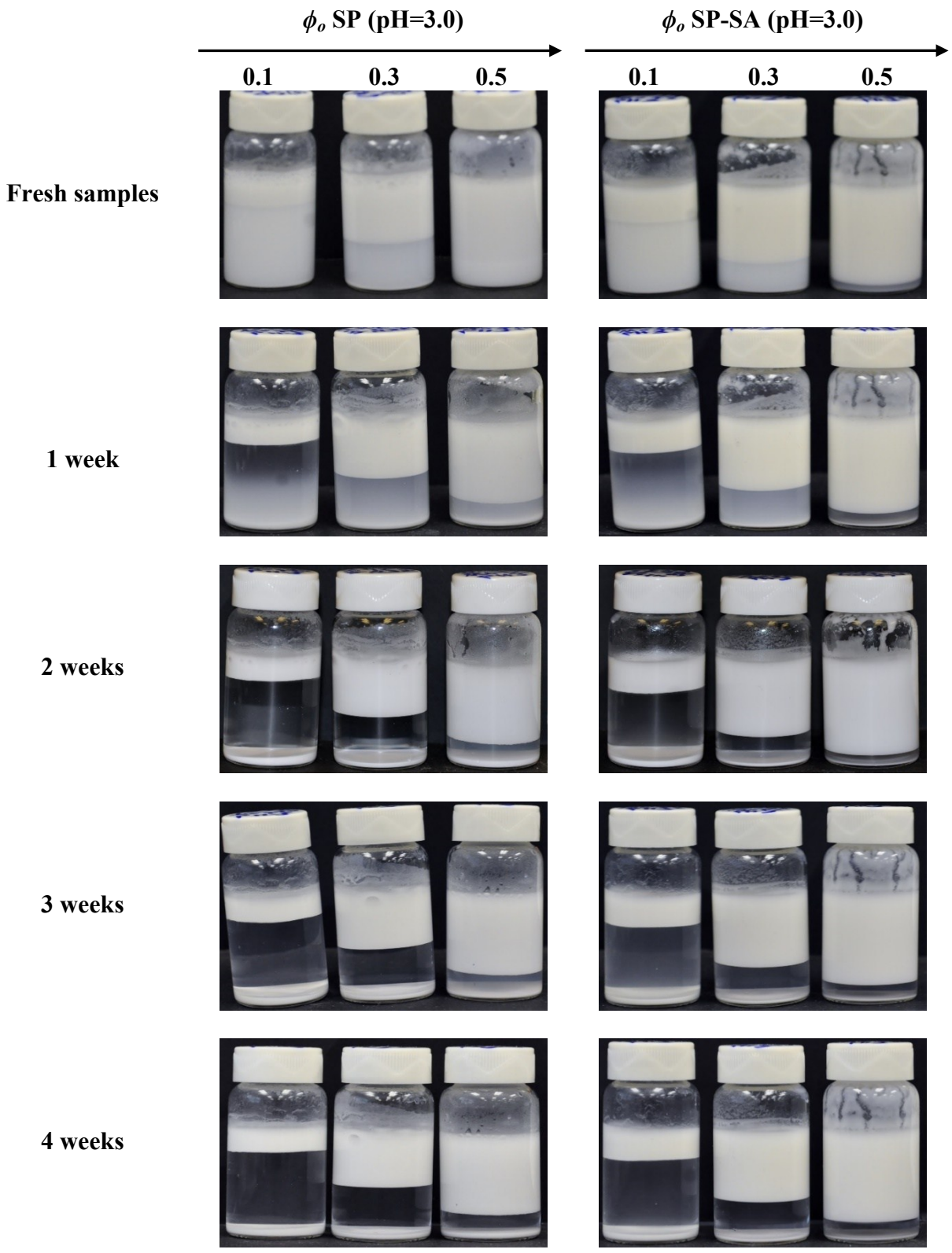


Figure S4. Emulsion stability in time at 3 different oil volume fractions ϕ_o, and constant 4% (w/v) particles.

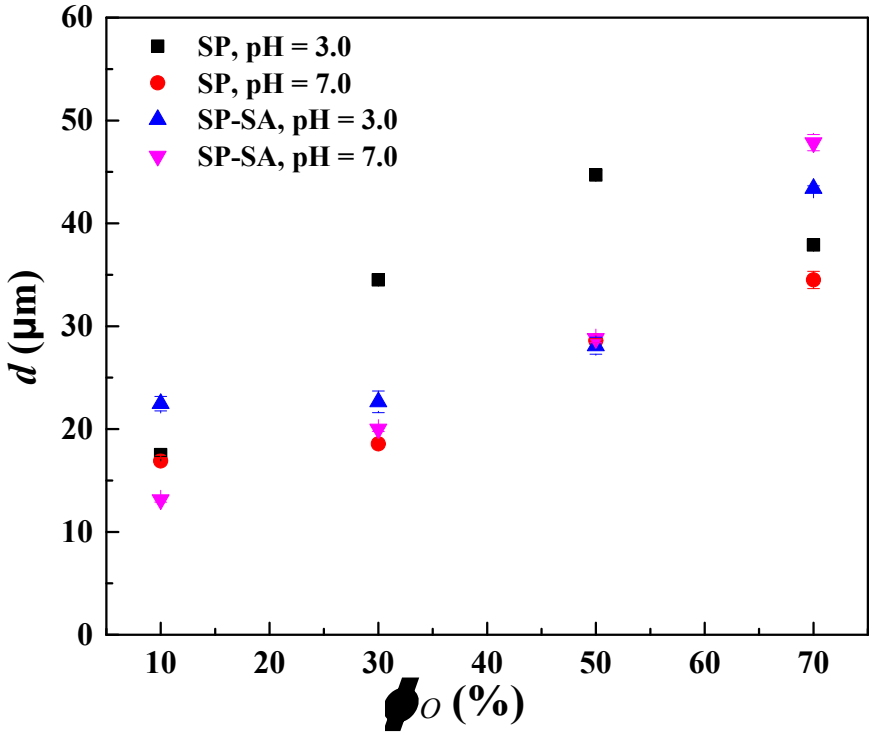


Figure S5. Number average diameter d of oil droplets as a function of oil volume fraction ϕ_o, for both SP and SP-SA particles, at pH 3.0 and 7.0, as obtained by laser diffraction (Mastersizer).

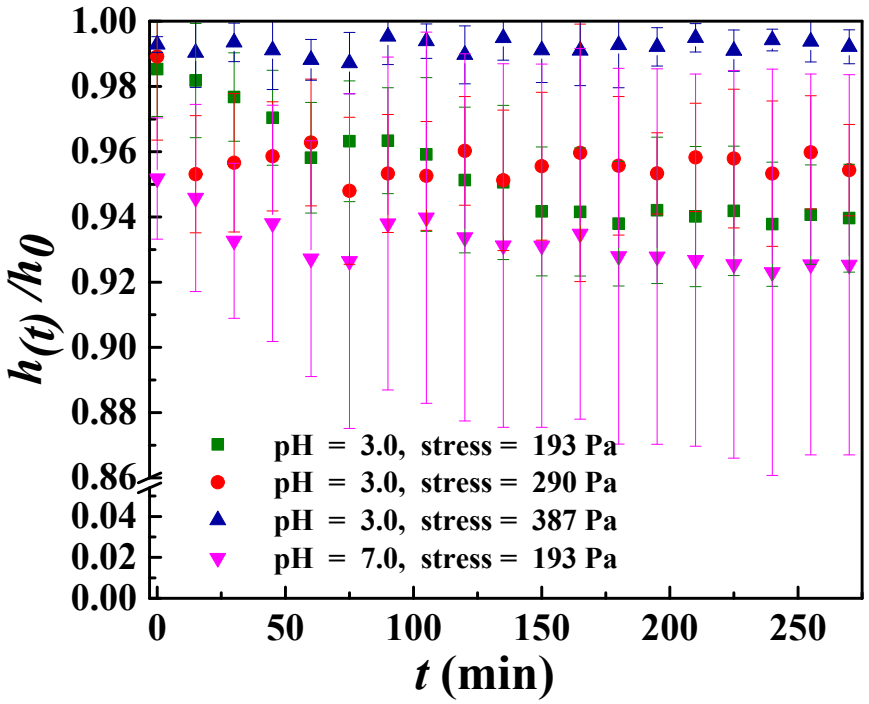


Figure S6. Normalized height ($h(t)/h_0$) with the error bars as a function of time t and applied stress on molded concentrated emulsions ($\phi_o = 0.8$) comprising 4% SP or SP-SA particles, at pH 3.0 and 7.0.

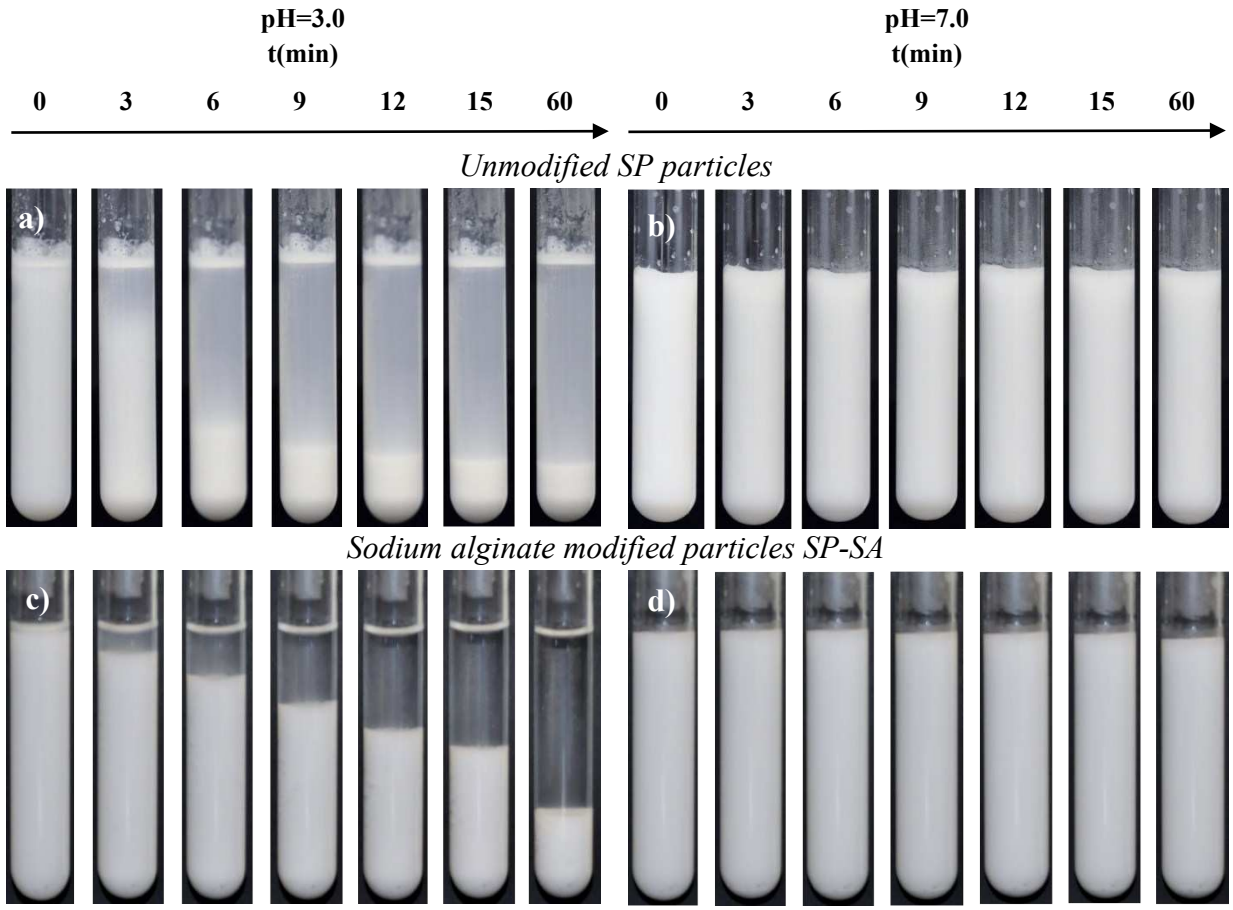
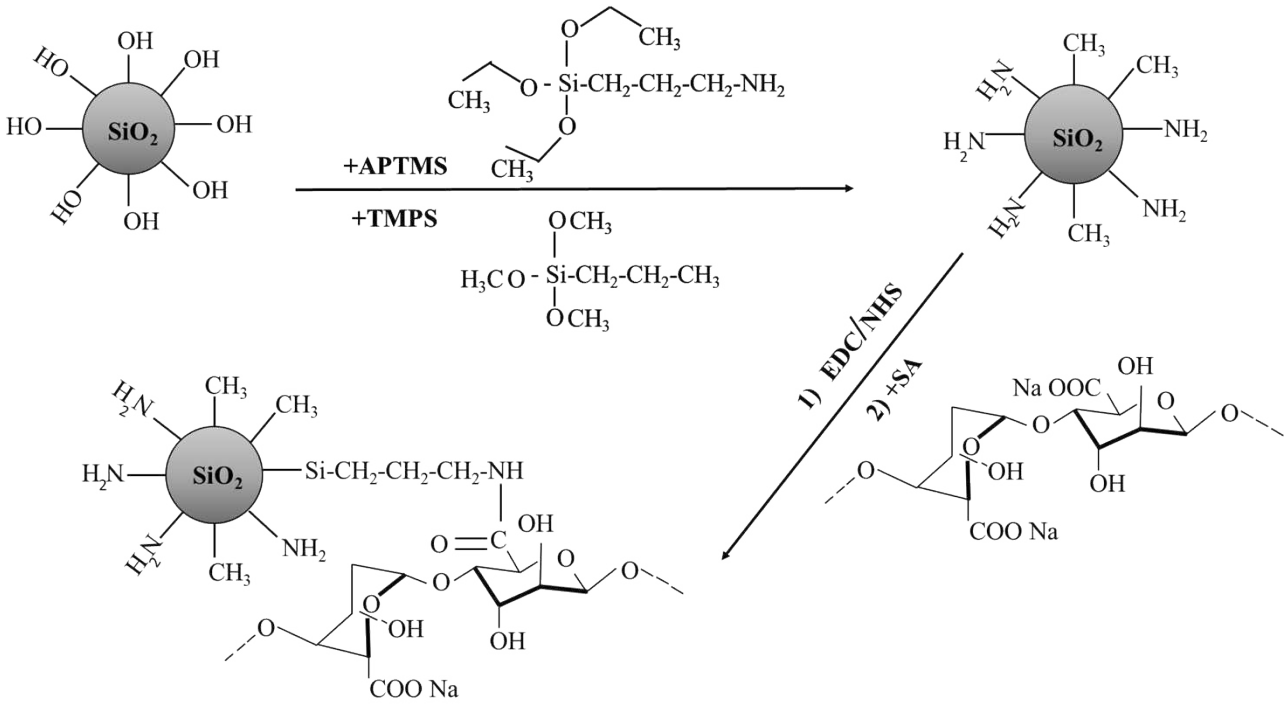


Figure S7. Pictures of the particle's behavior during sedimentation in water (height of test tube = 15.3 cm) for SP (a, b) and SP-SA (c, d), over 60 min at pHs 3.0 and 7.0.



Scheme S1 Reaction Schemes to modify SP particles with APTMS, TMPS and SA molecules respectively