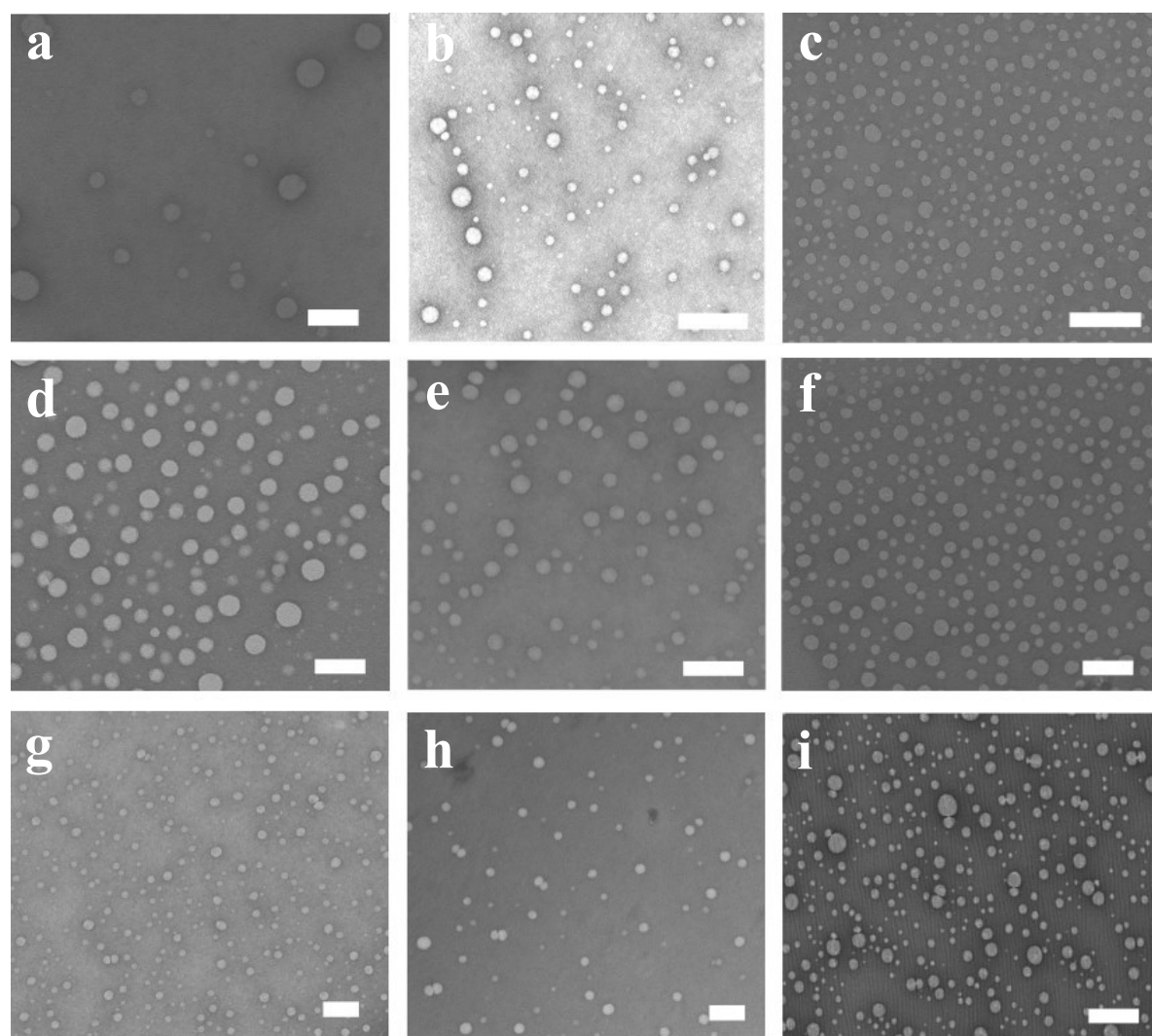


## Electronic Supplementary Information

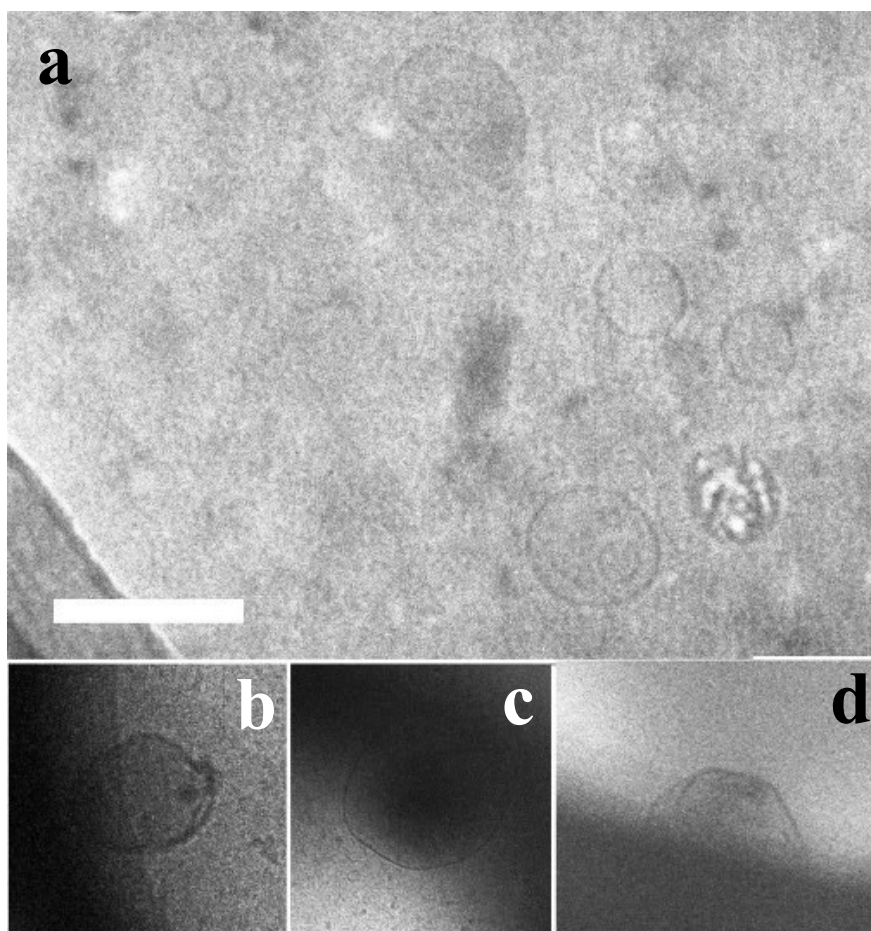
### Formation of Simple single-tailed Vesicles Mediated by Lipophilic Solid Surface

Na Du, Xiaoyu Zhu, Ruiying Song, Renjie Zhang, Shue Song and Wanguo Hou\*

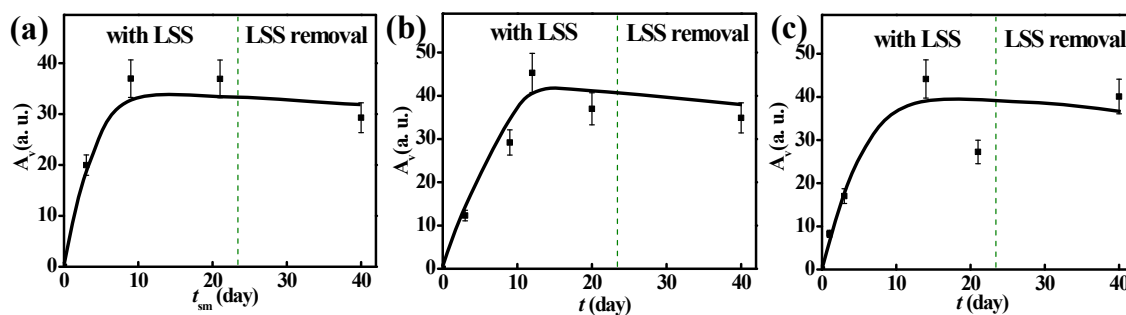
Key Laboratory of Colloid and Interface Chemistry (Ministry of Education), Shandong  
University, Jinan 250199, P.R. China



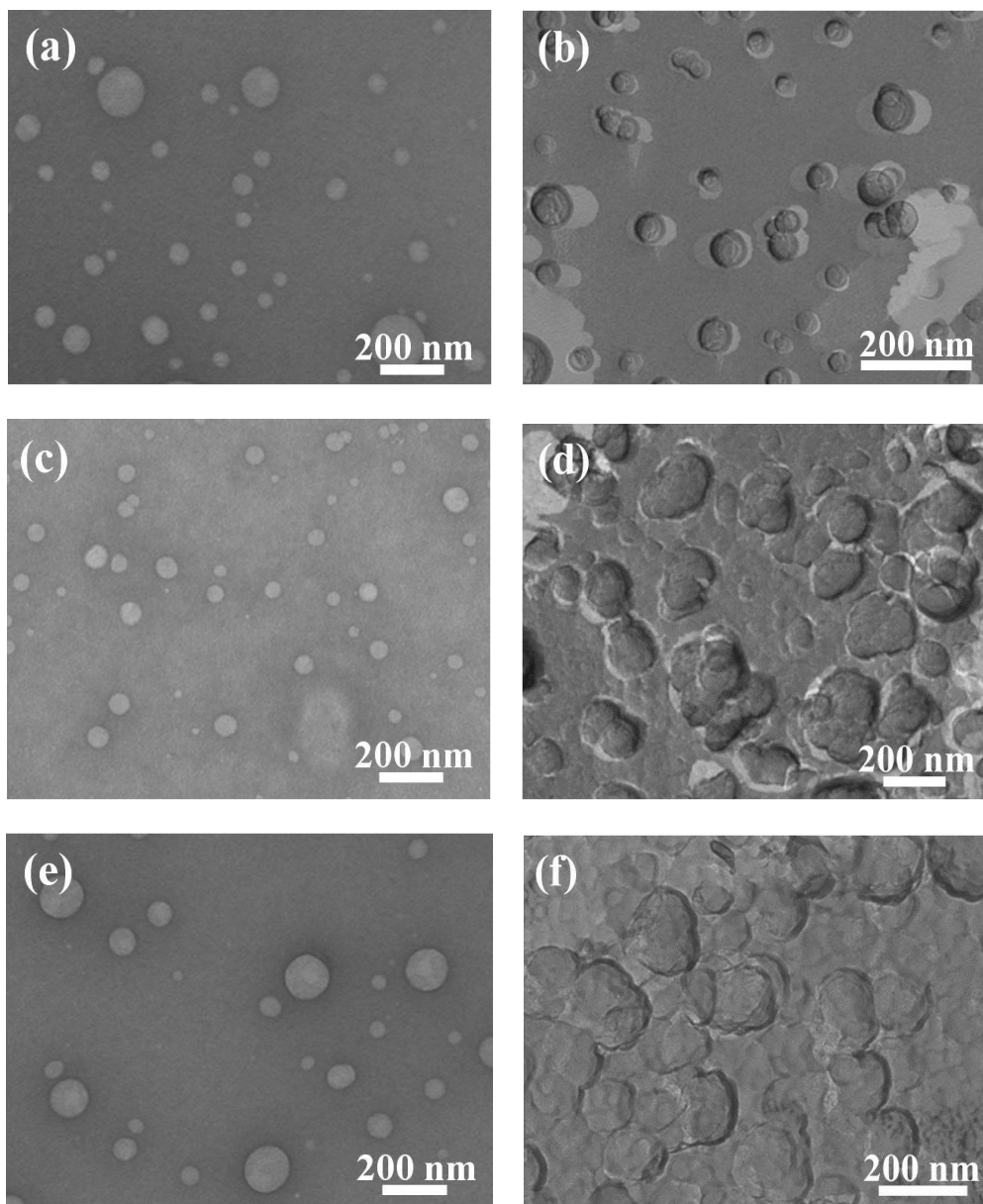
**Figure S1** Negative-staining TEM images of LSB aqueous solutions with (a, d, g) pH 4.0, (b, e, h) pH 6.8, and (c, f, i) pH 9.0 at LSS-mediation time of (a, b, c) 1 day, (d, e, f) 10 days, and (g, h, i) 30 days. Scale bar = 500 nm.



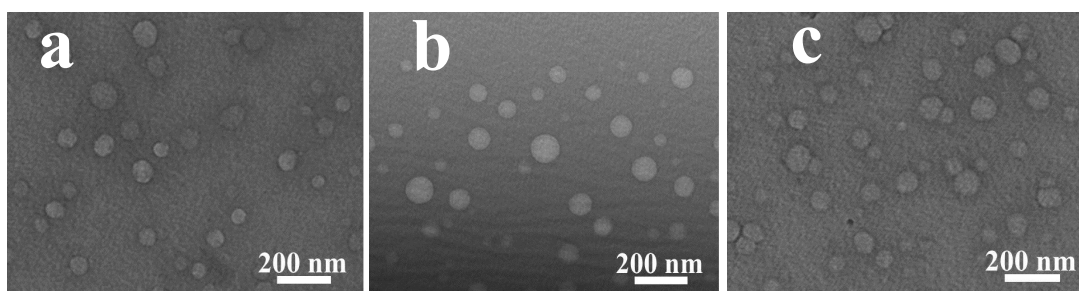
**Figure S2** Cryo-TEM images of LSB aqueous solutions with (a) pH 4.0 and (b, c, d) pH 9.0 at a LSS-mediation time of 9 days. Scale bar = 200 nm.



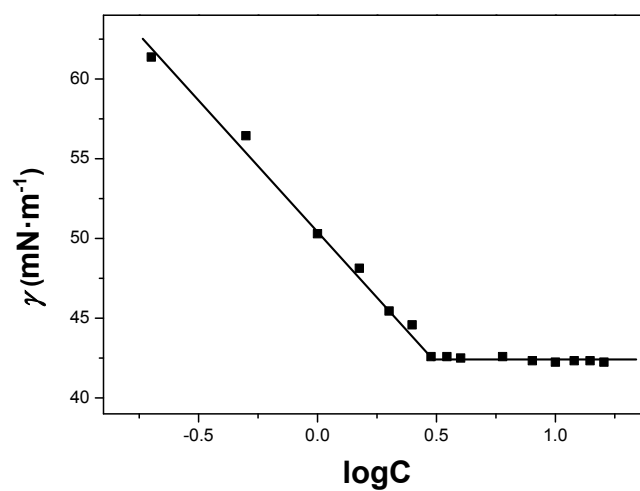
**Figure S3** Variation of the vesicle peak area for LSB solutions at (a) pH 4.0, (b) pH 6.8, and (c) pH 9.0 over different LSS-mediation time and after the removal of LSS.



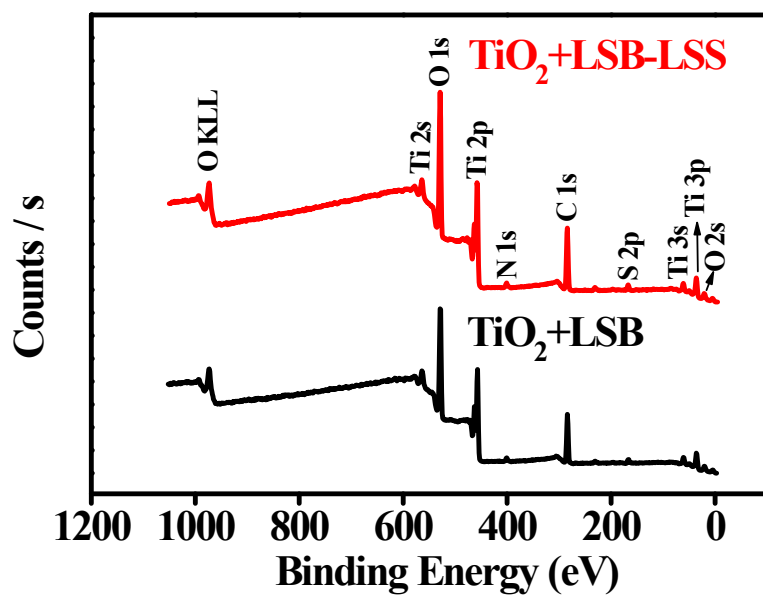
**Figure S4** Negative-staining (a, c, e) TEM images and freeze-fracture (b, d, f) TEM images of LSB vesicle systems over 20 days after the LSS removal at (a, b) pH 4.0, (c, d) pH 6.8, and (e, f) pH 9.0.



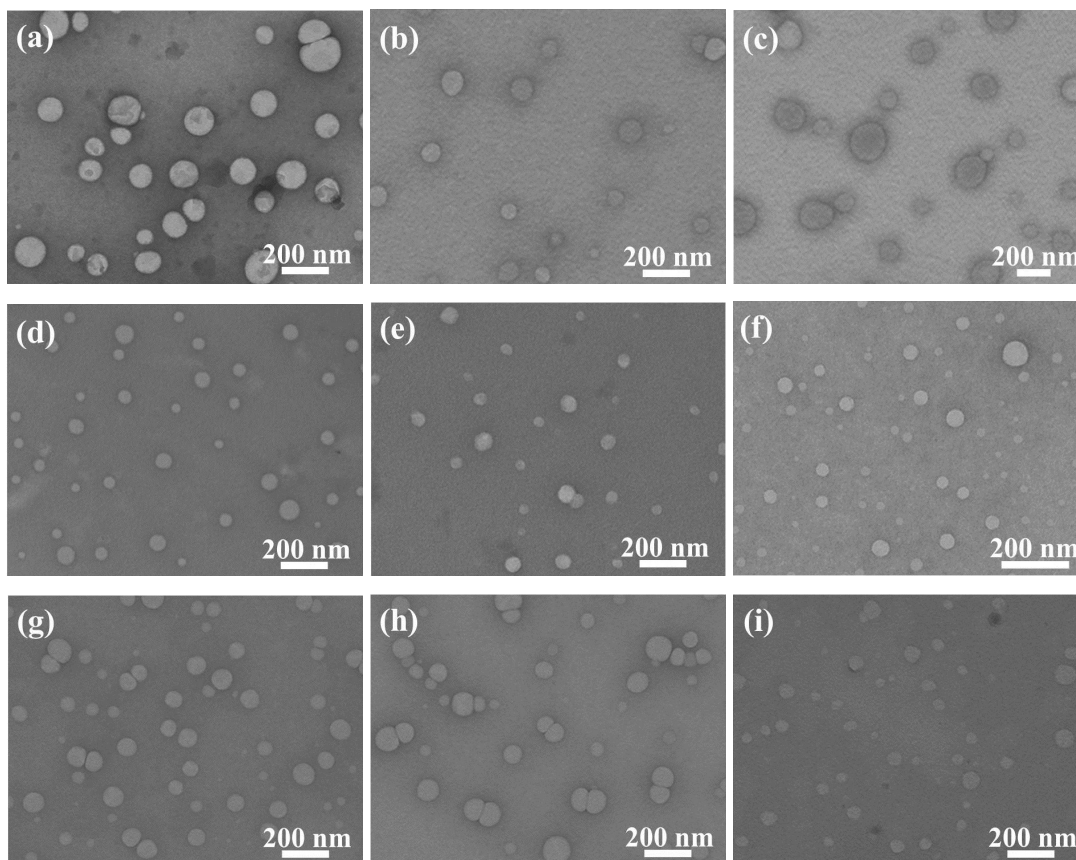
**Figure S5** NS-TEM images of LSB solutions (pH 6.8) with concentrations of (a) 10 mM, (b) 50 mM, and (c) 100 mM at a LSS-mediation time of 9 days.



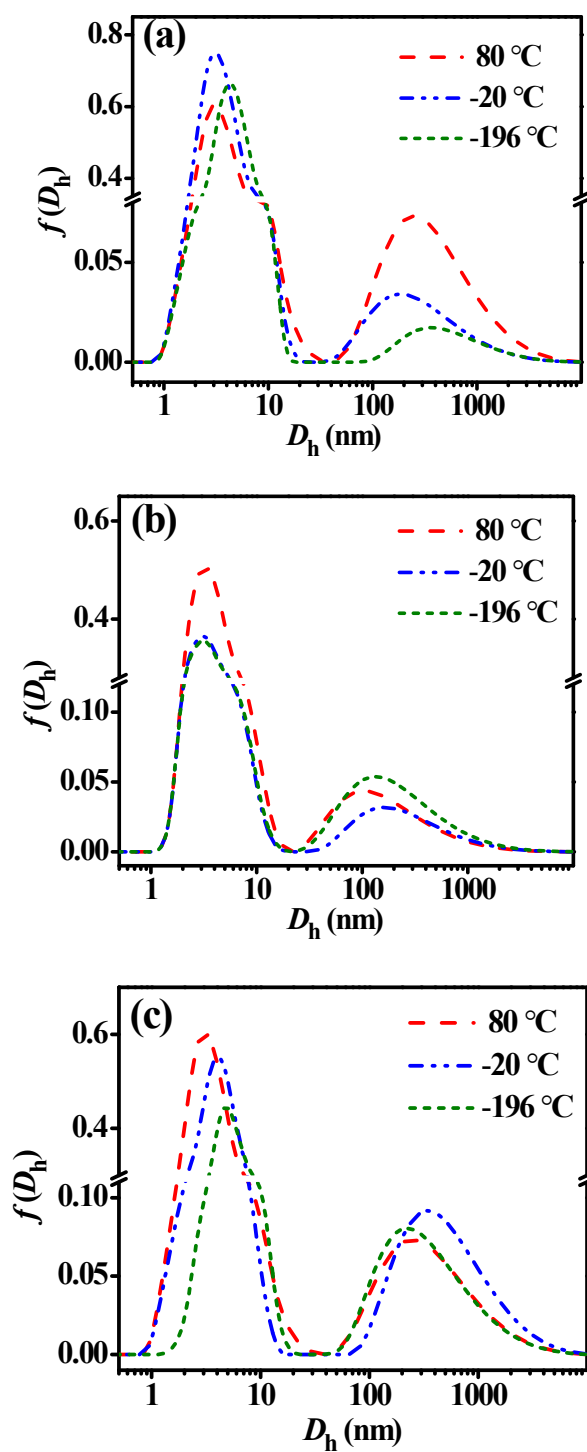
**Figure S6** Semi-logarithmic plots of surface tension ( $\gamma$ ) vs. concentration ( $C$ ) of purified LSB solution. The *cmc* of the LSB solution is  $\sim 3$  mM.



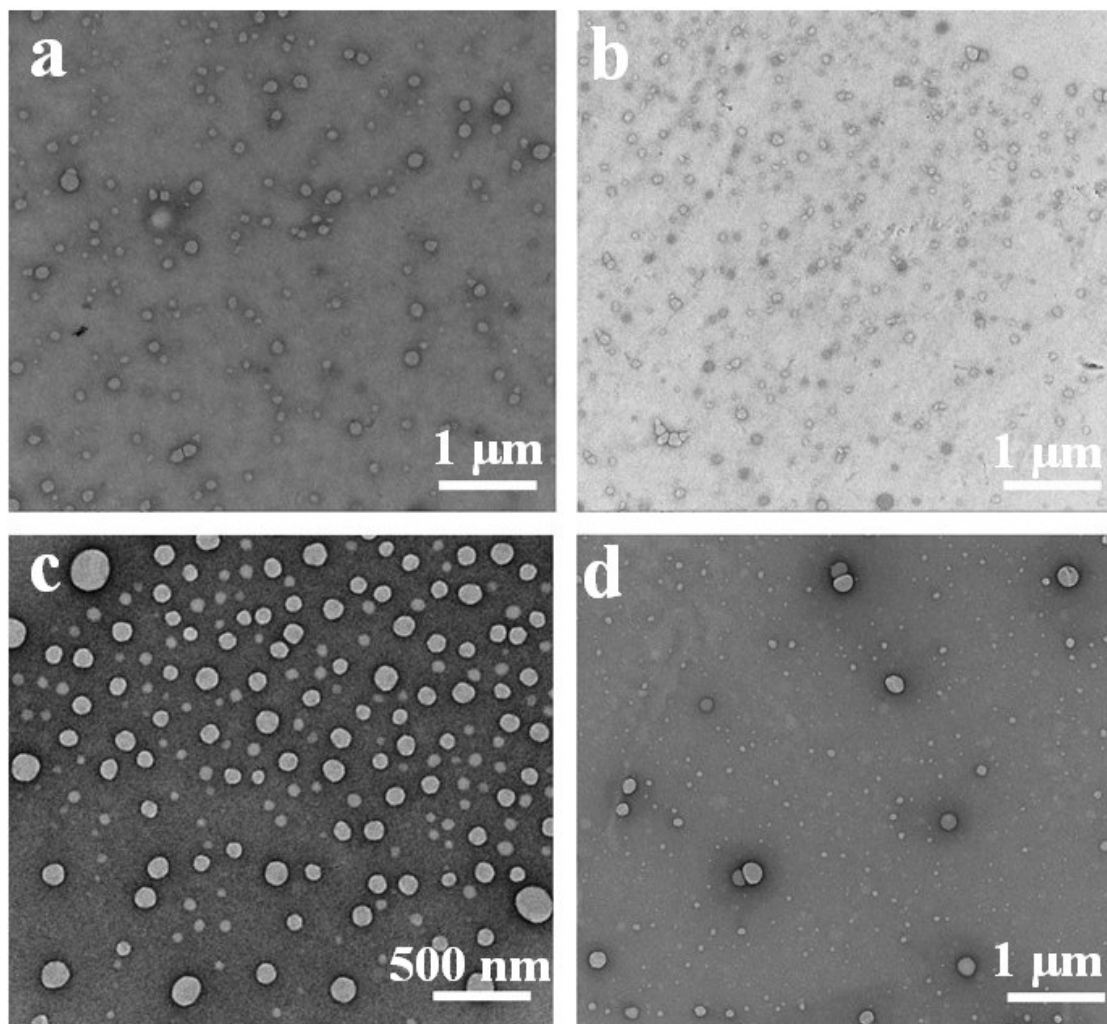
**Figure S7** XPS survey spectra for LSB vesicle solution with and without LSS-mediation. Both of the samples were dried on titania. Some peaks were indexed with reference [3].



**Figure S8** Negative-staining TEM images of LSB vesicle solutions with (a–c) pH 4.0, (d–f) pH 6.8, and (g–i) pH 9.0 after (a, d, g) thermal treatment at 80 °C for 2 h, and (b–i) freezing at (b, e, h)  $-20$  °C and (c, f, i)  $-196$  °C for 2 h and then thawing at room temperature.

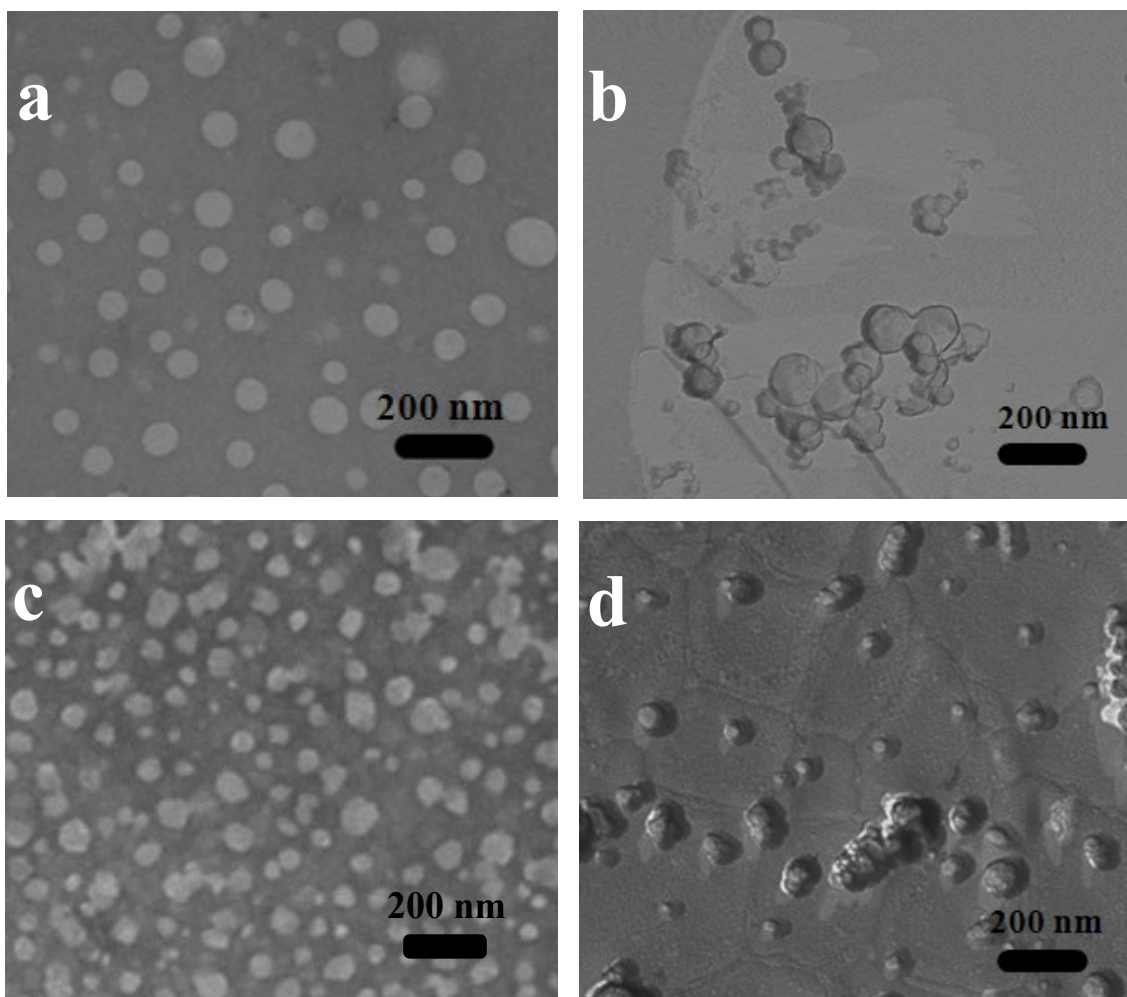


**Figure S9** Hydrodynamic diameter distributions of LSB vesicle solutions through thermal treatment, freezing treatment and then thawing at room temperature at (a) pH 4.0, (b) pH 6.8, and (c) pH 9.0.

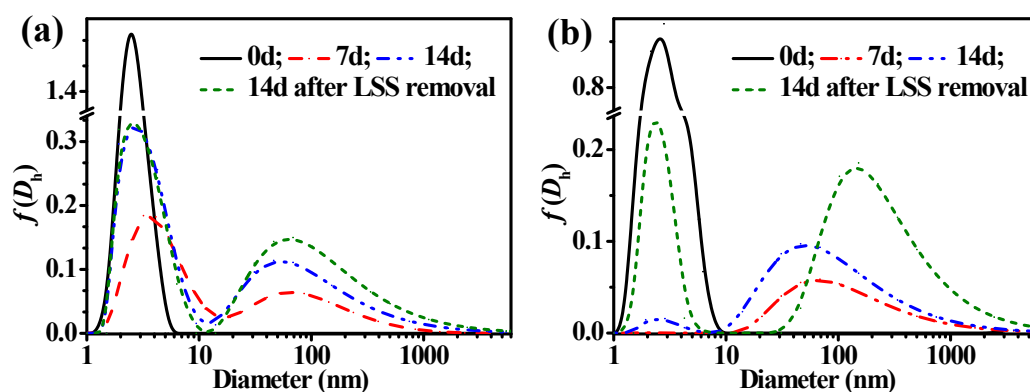


**Figure S10** Negative-staining TEM images of LSB vesicles under different concentrations of ethanol: (a, c) 5% (v./v. %) and (b, d) 20% (v./v. %), at pH 4 (a, b) and pH 9 (c, d).

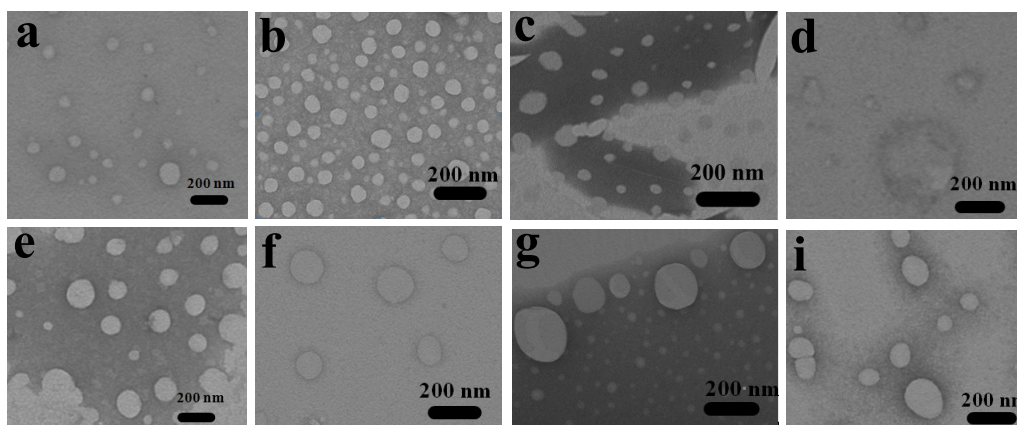




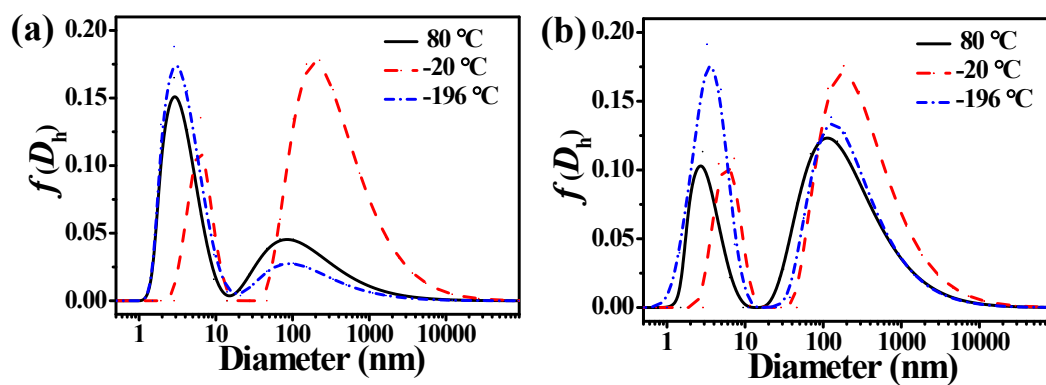
**Figure S11** Negative-staining (Left) TEM images and freeze-fracture (Right) TEM images of vesicles in (a, b) DTAB and (c, d) SDS solutions at a LSS mediated time of 9 d.



**Figure S12** Hydrodynamic diameter distributions of (a) DTAB and (b) SDS vesicle solutions over different LSS-mediation time and after the removal of LSS.



**Figure S13** Negative-staining TEM images of (a-d) DTAB and (e-i) SDS vesicle solutions through (a, e) 20 days storage, (b, f) thermal treatment at 80 °C for 2 h, (c, g) freezing at -20 °C for 2 h and (d, i) freezing at -196 °C for 2 h and then thawing at room temperature.



**Figure S14** Hydrodynamic diameter distributions of (a) DTAB and (b) SDS vesicle solutions through thermal treatment, freezing treatment and then thawing at room temperature.