

Supporting Information

Methods to Coalesce Fluorinated Pickering Emulsions

Ming Pan^{1†}, Fengjiao Lyu^{2†} and Sindy K. Y. Tang^{2*}

[†]Equal Contributions

¹Department of Materials Science and Engineering, Stanford University

²Department of Mechanical Engineering, Stanford University

Email: sindy@stanford.edu

Figure S1. NP coverage on drops that were merged using different methods. SEM image of merged drop after drying on a Si wafer at (a, c, e, g) low and (b, d, f, h) high magnifications, respectively. The drops were stabilized by 200 nm F-SiO₂ NPs before merging and they were merged by (a-b) centrifugation, (c-d) freezing and thawing, (e-f) PFO addition, and (g-h) electric field, respectively.

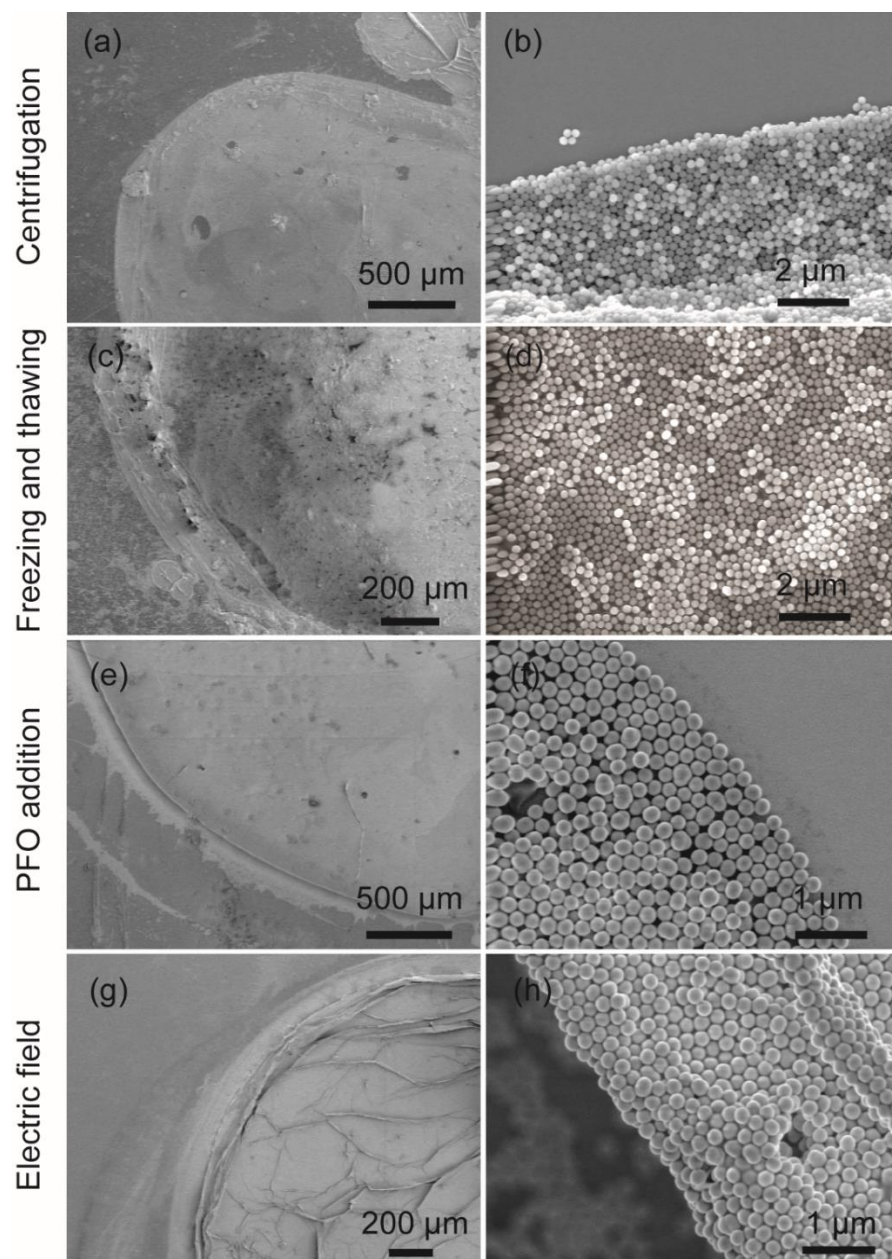


Figure S2. Optical image showing DI water drops stabilized by 200 nm F-SiO₂ NPs (a) before and (b) after heating at 90 °C for 30 minutes. There was no significant change in drop size distribution after heating, indicating their high stability.

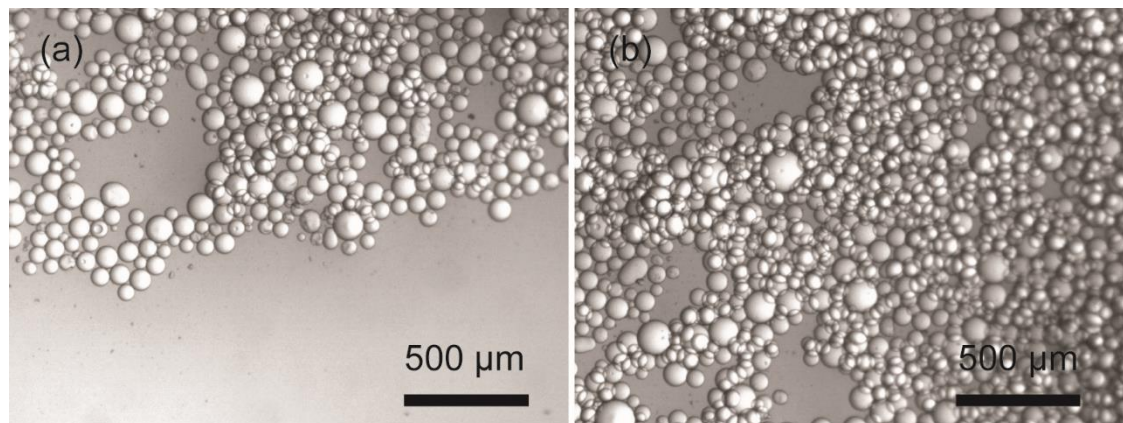


Figure S3. (a) Optical image of the drop after shaking a mixture of water in F-SiO₂ NPs in a mixture of HFE-7500 and PFO ($V_{\text{HFE}}:V_{\text{PFO}} = 1:3$, $V_{\text{H}_2\text{O}}:V_{\text{NPs in HFE/PFO}} = 1:5$). (b) Optical image of the drop after shaking a mixture of water, HFE-7500 and PFO ($V_{\text{H}_2\text{O}}:V_{\text{HFE}}:V_{\text{PFO}} = 2:5:5$) without any NPs. (c) Optical image of the drop after shaking a mixture of water in F-SiO₂ NPs dispersed in PFO ($V_{\text{H}_2\text{O}}:V_{\text{NPs in PFO}} = 1:5$).

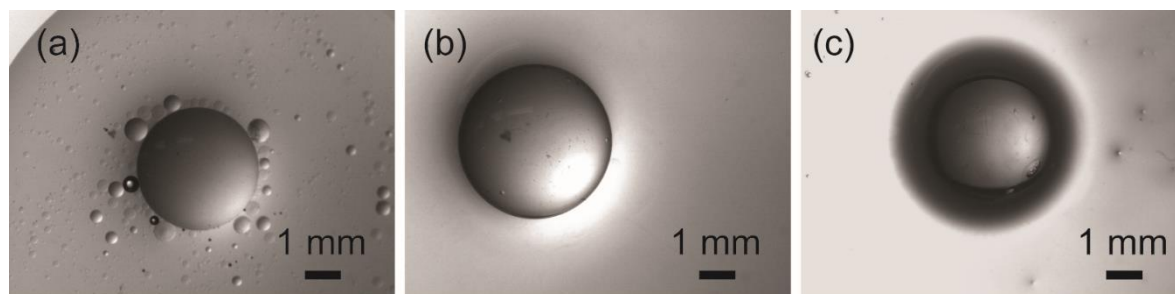


Figure S4. NPs coverage on the bulk aqueous phase after the shaking a mixture of 5% 200 nm F-SiO₂ NPs in PFO and DI water ($V_{\text{NPs in PFO}}:V_{\text{water}}=5:1$). The fluororous phase was replaced with neat PFO before transferring the aqueous phase onto a Si wafer. (a-b) SEM image of aqueous phase after drying on a Si wafer at (a) low and (b) high magnifications, respectively. Despite poor emulsion stability of water in PFO, NPs coverage on the water-PFO interface was still observed.

