

Supplementary Information

Engineering polymeric composite particles by emulsion-templating: Thermodynamics versus Kinetics

Tiantian Kong^{a,b}, Zhou Liu^a, Yang Song^a, Liqiu Wang^{*a,b}, Ho Cheung Shum^{*a,c}

Interfacial tension (mN/m)	PVA with 10wt% in DI water
Dichloromethane	3
0.04 g/ml PLGA in dichloromethane	2.7
0.4 g/ml PLGA in dichloromethane	2.7
2 wt% Dow Corning 749 fluid in dichloromethane	3
50 wt% Dow Corning 749 fluid in dichloromethane	3

Table S1. Interfacial tension between the different emulsion phases, as measured by a tensiometer (Model S-59951-25, Cole-Parmer) (Interfacial tension between Dichloromethane and DI water is 25.2 mN/m)

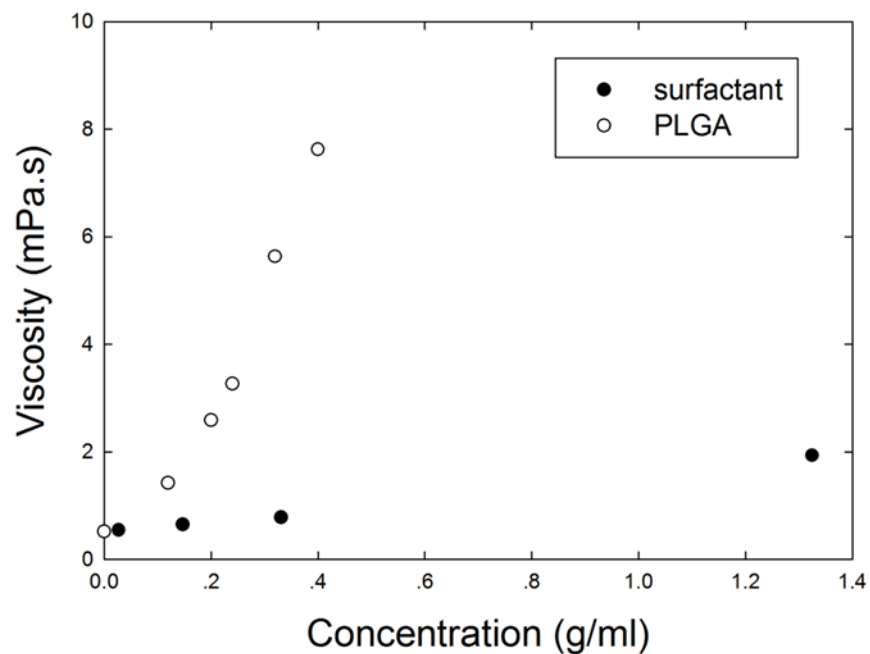


Figure S2. Plot of the viscosities of PLGA-in-dichloromethane and surfactant-in-dichloromethane with systematically varied concentrations. The viscosity of the two phases is measured by an Ubbelodhe viscometer, Viscoclock. It is an electronic time-measuring unit that determines the time elapsed due to fluid flow, which is proportional to dynamic viscosity.

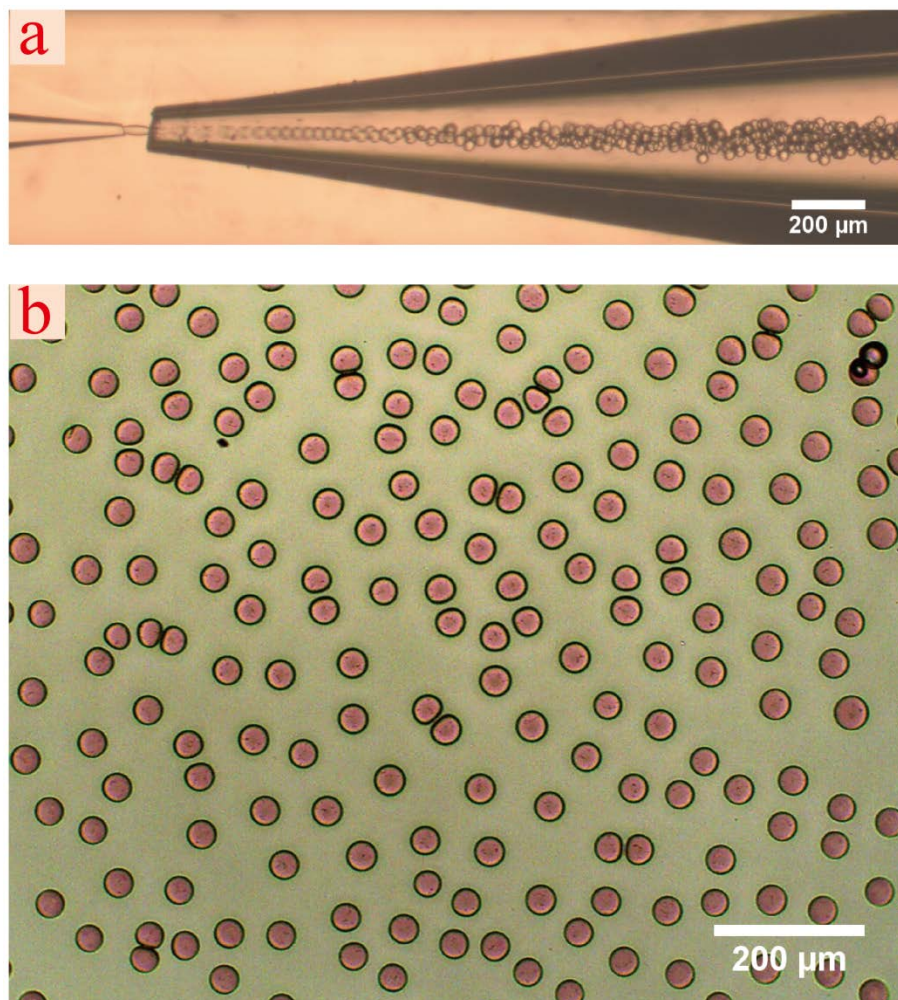


Figure S3. a) Optical microscopic image showing the generation of single emulsion droplets, with the dispersed phase being 2 wt% Dow corning 749 fluid in dichloromethane and continuous phase being PVA 10 wt% in DI water; b) Optical microscopic image of microcapsules formed by precipitation of surfactants, Dow corning 749 fluid, at the O/W interface.



v.wmv

Video S4. Video captured with an optical microscope demonstrating the formation of capsules by the precipitation of surfactants. (real time)

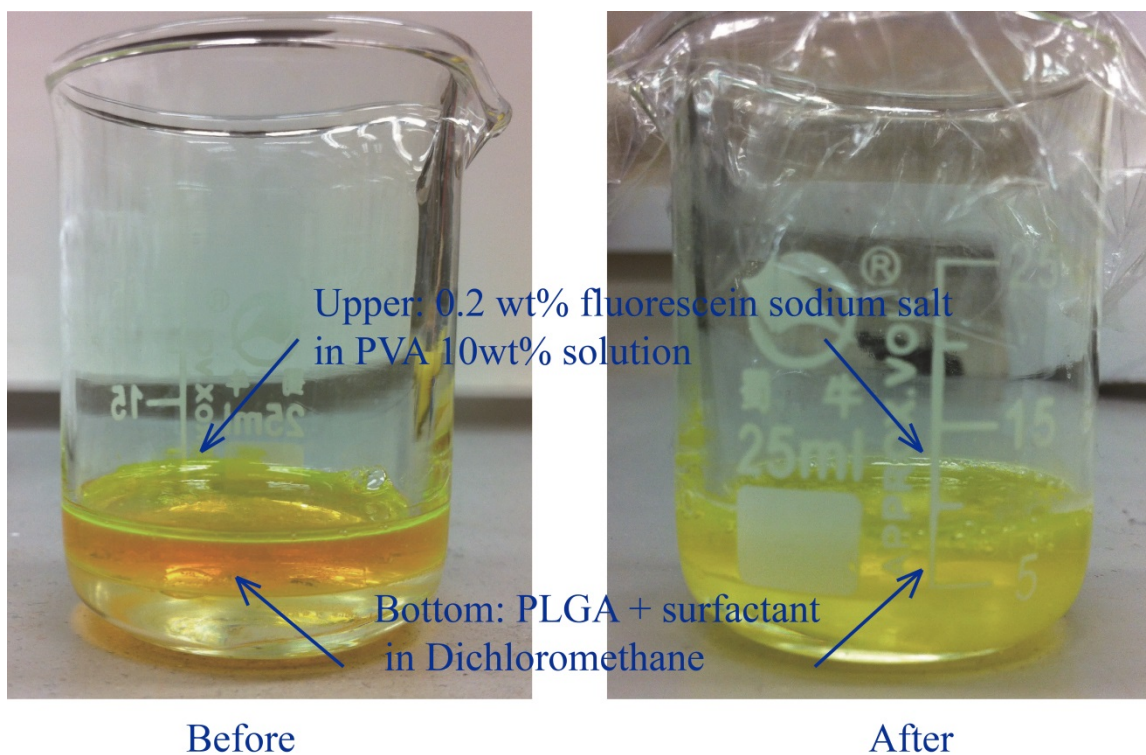


Figure S5. Photographs demonstrating the selective solubility of the fluorescein sodium salt. The salt in top layer can diffuse through the O/W interface and enters the bottom phase. (The density of DCM is 1.325g/cm^{-3})