Electronic Supplementary Material (ESI) for Soft Matter.
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Supporting Information

Soft Microcapsules with Highly Plastic Shells Formed by Interfacial Polyelectrolyte-Nanoparticle Complexation

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Materials

Polystyrene-block-poly(ethylene-ran-butylene)-block-polystyrene (s-SEBS,29 wt% styrene,55-56% sulfonated), alumina coated silica nanoparticles (LUDOX-CL), and lysozyme were obtained from Sigma Aldrich and used as nanoparticles or proteins, and polyelectrolyte in the aqueous and organic phase, respectively. The molecular weight of the s-SEBS was not provided by the manufacturer. The zeta potential for 0.1 wt.%, pH 5.8 silica nanoparticles and 0.1 wt.% lysozyme pH 5.5 nanoparticles under conditions relevant to our study are ~ 60 mV[1] and ~ 8 mV[2], respectively.

Toluene (Sigma Aldrich) served as organic solvent for s-SEBS. Tetraethyl orthosilicate (TEOS) and fluorescein isothiocyanate (FITC), ammonium hydroxide, and ethanol were obtained from Sigma Aldrich and used to fabricate amine modified silica nanoparticles. Oil Blue N was obtained from Sigma Aldrich and used as the dye for release studies.

UV-Vis Measurements

Monodisperse microcapsules (243 +/- 4.6 μm diameter) containing the dye were collected in a vial for 12 min. The vial was tightly sealed and aliquots of the supernatant are taken at set times and spectra measurements are recorded using Varian UV-VIS. Spectra measurements are converted to dye concentration based on a calibration curve

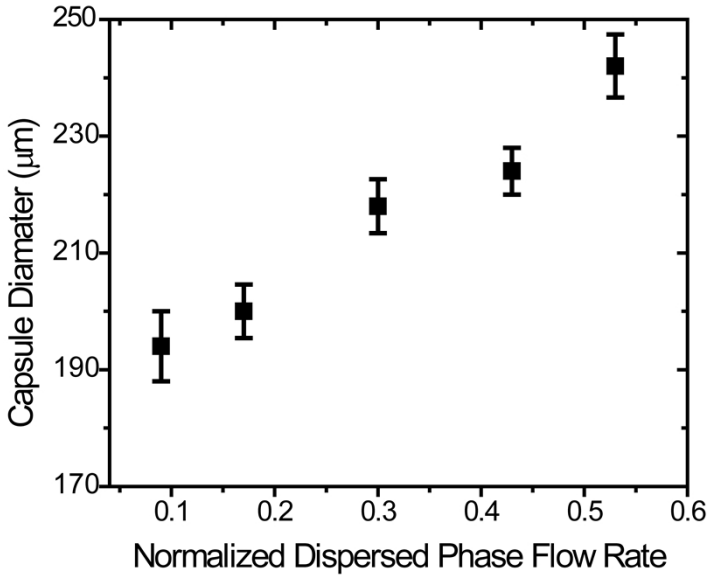

Figure S1. (a) The effect of dispersed fluid rate flow rate on capsule diameter. The dispersed phase flow rate was normalized by the continuous phase flow rate.

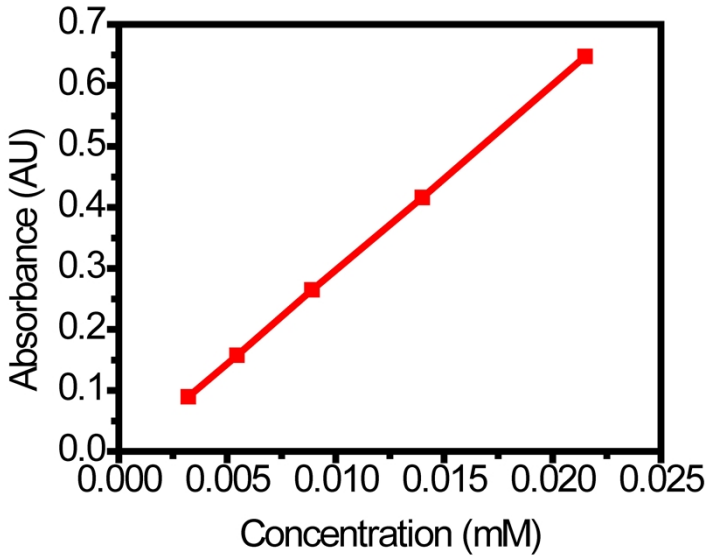

Figure S2. Calibration curve for Oil Blue N dye in toluene. Absolute absorbance recorded by UV-Vis as a function of dye concentration in toluene.

References

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