Supporting Information

Measuring Interactions between Polydimethylsiloxane and Serum Proteins at the Air-Water Interface

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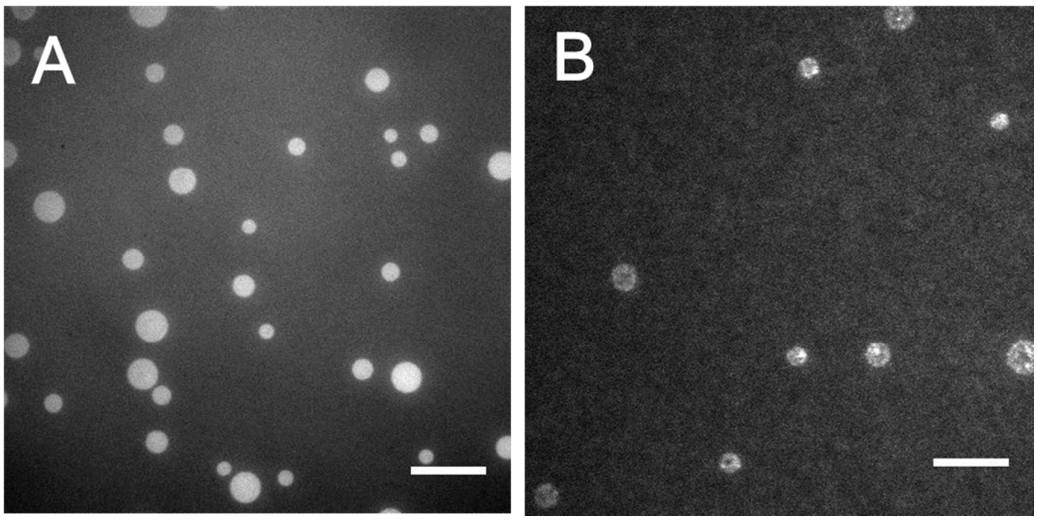

Figure S1. Domains observed at the air-water interface with human serum albumin labeled with Texas Red (HSA-TR). (A) HSA-TR at 2.0 μg/mL in 10 mM acetic acid/sodium acetate buffer (pH = 5.0), 1 h after adding solution in PDMS chamber. (B) 0.5 μg/mL of HSA-TR in the subphase (10 mM phosphate buffer, pH = 7.4) underneath the PDMS layer spread at the air-water interface in Langmuir trough. Scale bar: 20 μm.

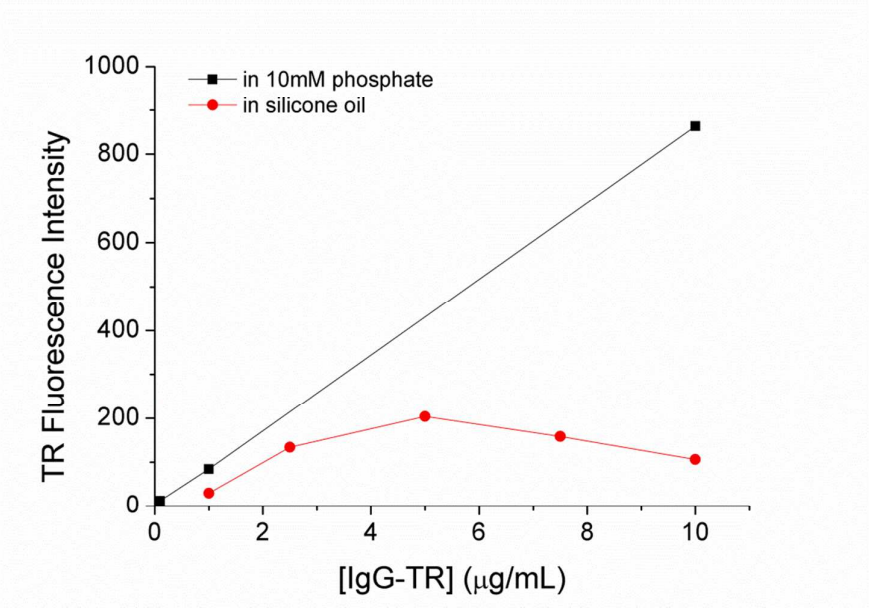

Figure S2. Fluorescence intensity of IgG-TR at different concentrations in 10 mM phosphate (pH = 7.4) and silicone oil measured by fluorometry. Steady-state fluorescence data were collected on a Varian Cary Eclipse fluorescence spectrometer. IgG-TR was dissolved in 10 mM phosphate buffer at 100 μg/mL, and diluted to concentrations ranging from 0.1-10 μg/mL in Eppendorf tubes. The solutions were frozen in liquid nitrogen and lyophilized under vacuum. 1.0 mL of silicone oil (pure linear polydimethylsiloxane in liquid state) was added to each tube to re-dissolve the protein. Solutions were sonicated to ensure protein was completely dissolved. The fluorescence intensity was measured using a 0.9 mL quartz cell (Starna Cells) at excitation wavelength 550 nm (excitation slit 5 nm) and collected at 580-700 nm range (emission slit 5 nm) at 20 °C, PMT voltage = 1000 V.

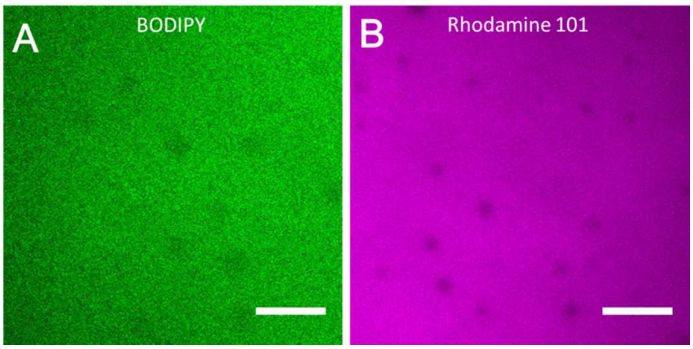

Figure S3. Fluorescence microscopy images of PDMS film (region IV) stained with BODIPY and Rhodamine 101 respectively. (A) PDMS stained with BODIPY (B) PDMS stained with Rhodamine 101.

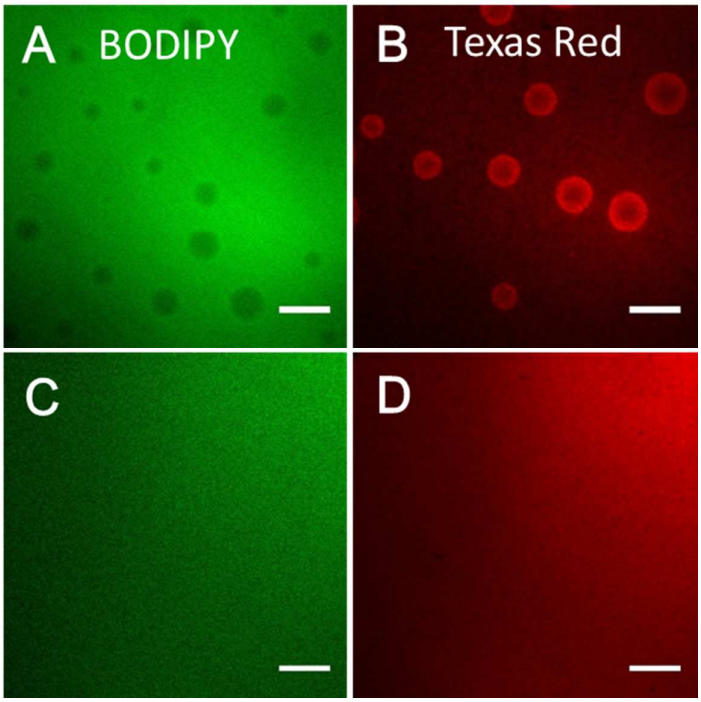

Figure S4. Titration of IgG-TR into the subphase underneath PDMS layer at the A/W interface. Fluorescence microscopy images of (A-B) PDMS + 0.33 μg/mL IgG-TR in subphase, (C-D) PDMS + 1.3 μg/mL IgG-TR in subphase. C_{surf}(PDMS) = 2.6 mg/m^2. Buffer: 10 mM phosphate, pH = 7.4.

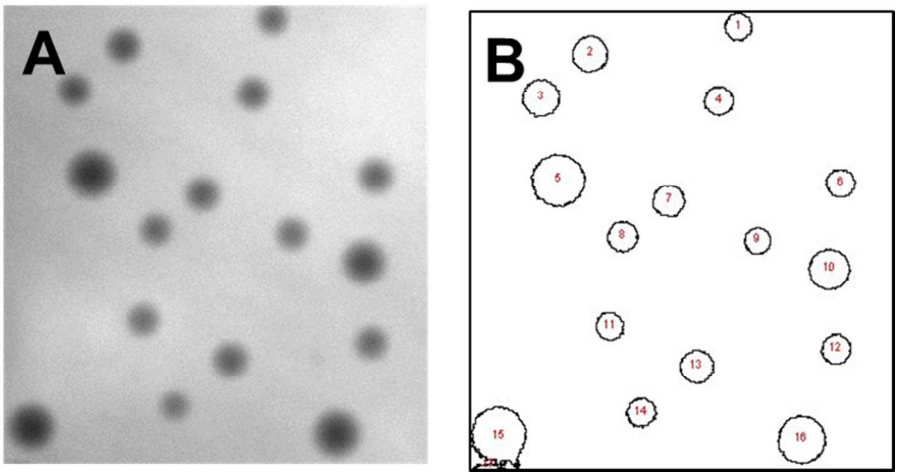

Figure S5. Calculating domain area percentage from fluorescence images of PDMS film. (A) Fluorescence image of PDMS film stained with Rhodamine 101. (B) Domains identified by image processing using ImageJ. The domain area is highlighted by the circle and numbered. The pixel areas of domains are summed up and divided by the total pixel size of the image to get the domain area percentage.