

Microscale Determination of Aqueous Two Phase System Binodals by Droplet Dehydration in Oil

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This supporting information includes all binodal curves determined by the conventional diluting method and a binodal curve in 500k DEX – 35k PEG system determined by the proposed dehydrating method as well as some of the droplet images before and at binodal points.

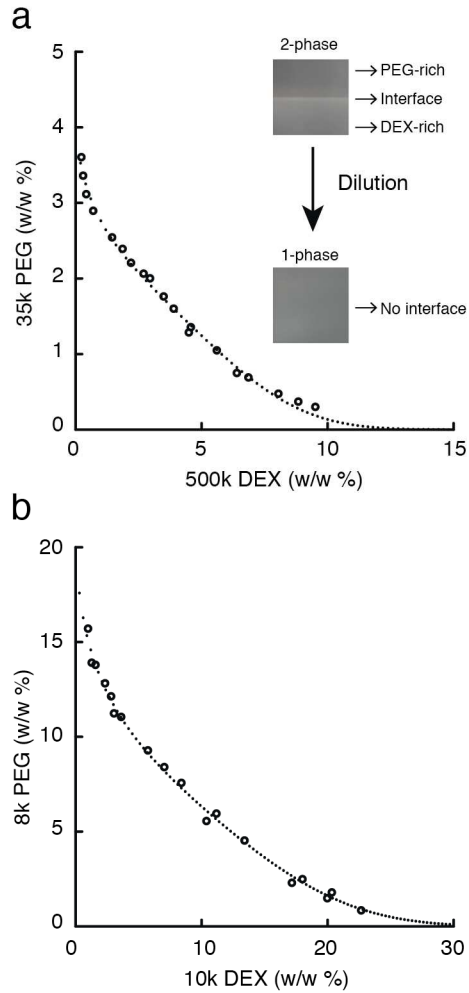


Figure S-1. Binodal points (open circle) in DEX-PEG system determined by the diluting technique: a) 500k DEX – 35k PEG and b) 10k DEX – 8k PEG. Those points were fitted (see ref 25) to obtain a binodal curve (dotted curve line). Measurements were conducted at 25 °C.

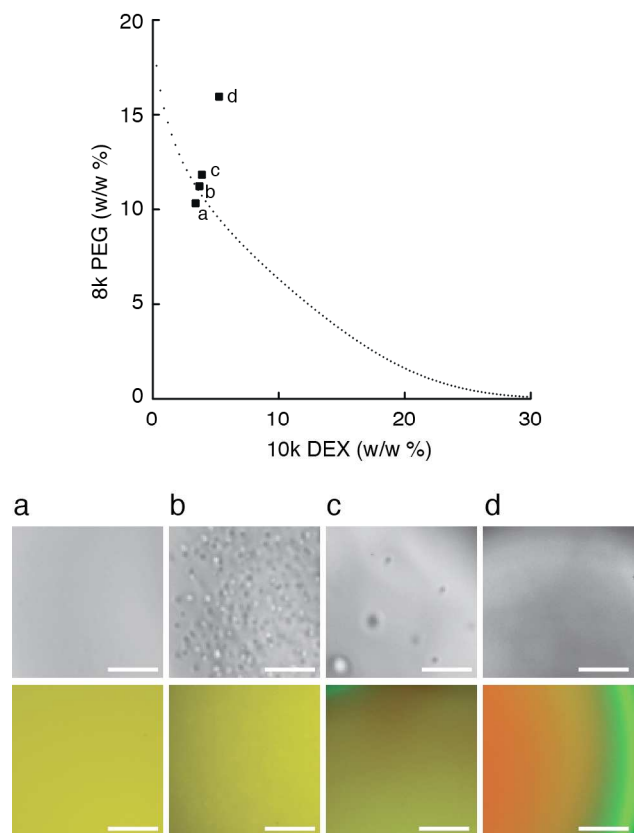


Figure S-2. Time-lapse droplet images in 10k DEX – 8k PEG system determined by the dehydrating technique: a) before Binodal, b-c) on binodal, and d) completed phase separation. Phase contrast images (top) and merged fluorescent images (bottom) of DEX (green) and PEG (red). Measurements were conducted at 25 °C. Scale bar 50 μm .

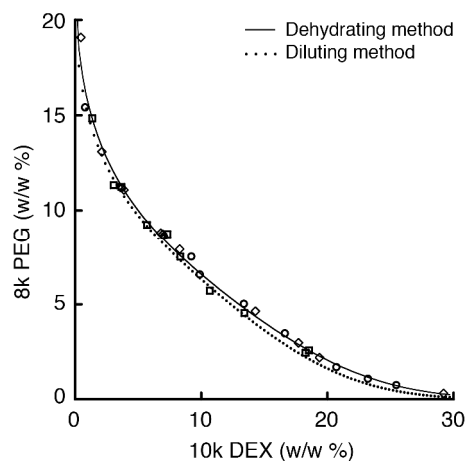


Figure S-3. The uncertainty of binodal points in 10k DEX – 8k PEG system determined by the dehydrating technique: three independent measurements (open square, diamond, and circle). Binodal curves determined by the dehydrating technique (solid line) and diluting technique (dotted line). Measurements were conducted at 25 °C.

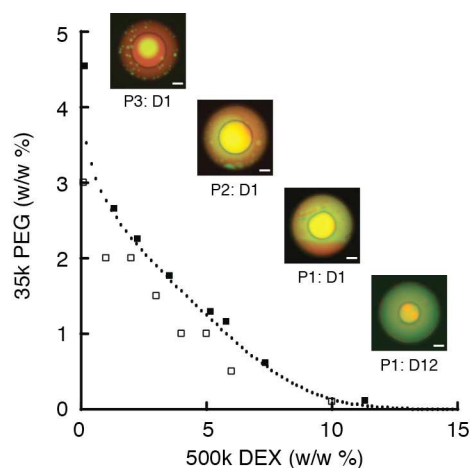


Figure S-4. Binodal points (closed square) for a 500k DEX – 35k PEG system determined by the dehydrating technique. Various initial concentrations of 1-phase DEX-PEG solution (open square) were tested. The merged fluorescent images of DEX (green) and PEG (red) after 24 hours of dehydration far above the critical points. Measurements were conducted at 25 °C.

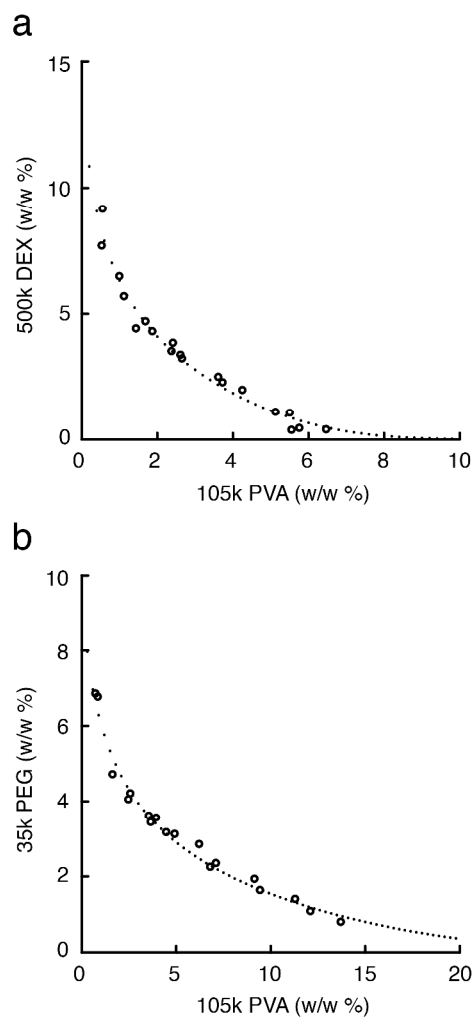


Figure S-5. Binodal points (open circle) and fitted binodal curves (dotted curve line) in DEX-PVA system and PEG-PVA system determined by the diluting technique: a) 500k DEX – 105k PVA and b) 35k PEG – 105k PVA. Measurements were conducted at 25 °C.

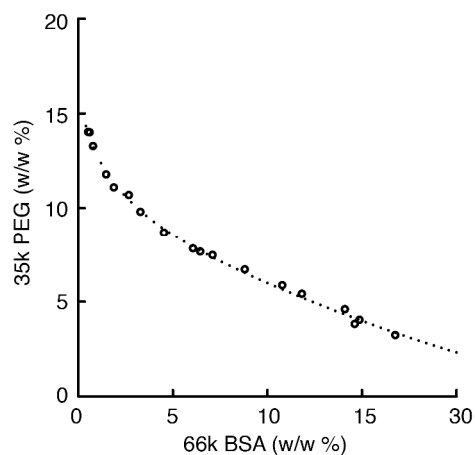


Figure S-6. Binodal points (open circles) and fitted binodal curves (dotted curve line) in 66k BSA – 35k PEG system determined by the diluting technique. Measurements were conducted at 25 °C.

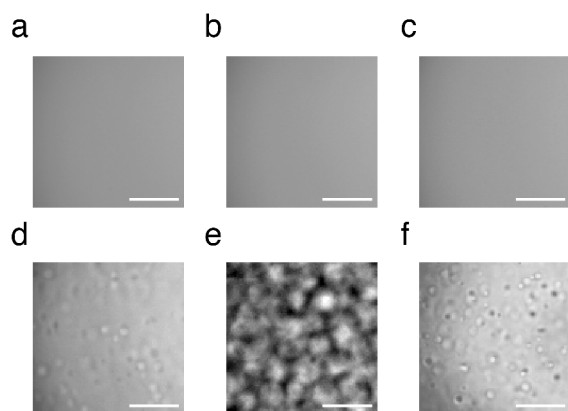


Figure S-7. Magnified phase contrast images of droplets below and at binodal point. Droplets in 500k DEX – 105k PVA, 35k PEG – 105k PVA, and 66k BSA – 35k PEG systems below binodal point (a, b, and c), and at binodal point (d, e, and f), respectively. Measurements were conducted at 25 °C. Scale bar 50 μ m.

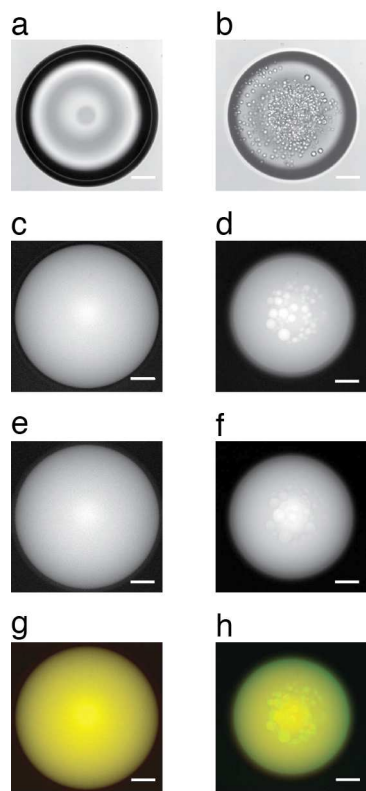


Figure S-8. Phase separation at binodal point in 66k BSA - 35k PEG system induced by dehydration of water. The phase contrast images, fluorescent images of BSA and PEG at below binodal point (a, c, and e) and at binodal point (b, d, and f), respectively. The merged fluorescent images of BSA (green) and PEG (red) below binodal point (g) and at binodal point (h). Measurements were conducted at 25 °C. Scale bar 100 μm .