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## Connecting particle clustering and rheology in attractive particle networks: Supplementary information

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Figure S1: Example amplitude sweep data for two  $\theta=87\pm8^\circ$  samples.



Figure S2: Confocal 2D images of phase separated samples (point IX) with (a)  $\theta = 87 \pm 8^{\circ}$  and (b)  $\theta = 115 \pm 8^{\circ}$ .



Figure S3: Representative 3D structures for points I, II and III with a contact angle of  $\theta = 87 \pm 8^{\circ}$  for several amounts of secondary fluid.



Figure S4: Representative 3D structures for points IV, V and VI with a contact angle of  $\theta = 87 \pm 8^{\circ}$  for several amounts of secondary fluid.



Figure S5: Representative 3D structures for points VII, VIII and IX with a contact angle of  $\theta = 87 \pm 8^{\circ}$  for several amounts of secondary fluid.



Figure S6: Representative 3D structures for points I, II and III with a contact angle of  $\theta = 115 \pm 8^{\circ}$  for several amounts of secondary fluid.



Figure S7: Representative 3D structures for points IV, V and VI with a contact angle of  $\theta = 115 \pm 8^{\circ}$  for several amounts of secondary fluid.



Figure S8: Representative 3D structures for points VII, VII and IX with a contact angle of  $\theta = 115 \pm 8^{\circ}$  for several amounts of secondary fluid.



Figure S9: Zoom of the structural parameters for  $\theta = 87 \pm 8^{\circ}$  sample for low values of added, secondary fluid.



Figure S10: Dependence of different values for the clustering coefficient c on the amount of added, secondary fluid for the sample with (left)  $\theta = 87 \pm 8^{\circ}$  and (right)  $\theta = 115 \pm 8^{\circ}$ .



Figure S11: Direct relationship between the structural parameters and dynamic moduli.



Figure S12: Histograms of betweenness centrality and corresponding averages for the  $\theta=87\pm8^\circ$  samples.



Figure S13: Histograms of betweenness centrality and corresponding averages for the  $\theta=115\pm8^{\circ}.$