Supporting Information

Complex pattern formation in solutions of protein and mixed salts using dehydrating sessile droplets

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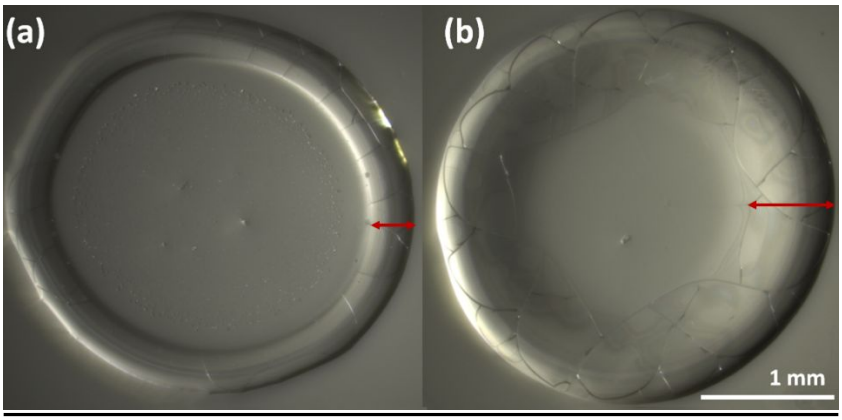

Figure S1. Final deposit of BSA droplets. We show the final deposit of droplets with an initial concentration of (a) 3% wt. BSA and (b) 7% wt. BSA in water.

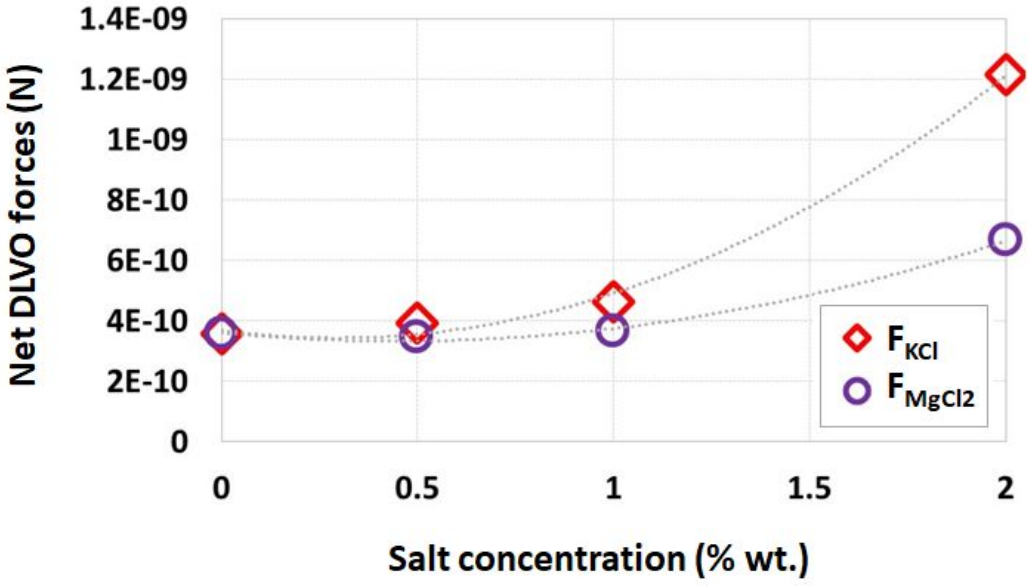

Figure S2. Comparison of the net DLVO forces. The net DLVO forces (magnitude) acting between particle-particle are plotted with the increase in the salt concentration (for BSA+KCl and BSA+$MgCl_2$ droplets; BSA: 7% wt.) [F_{KCl} and F_{MgCl2} are the net forces for KCl and $MgCl_2$ respectively]

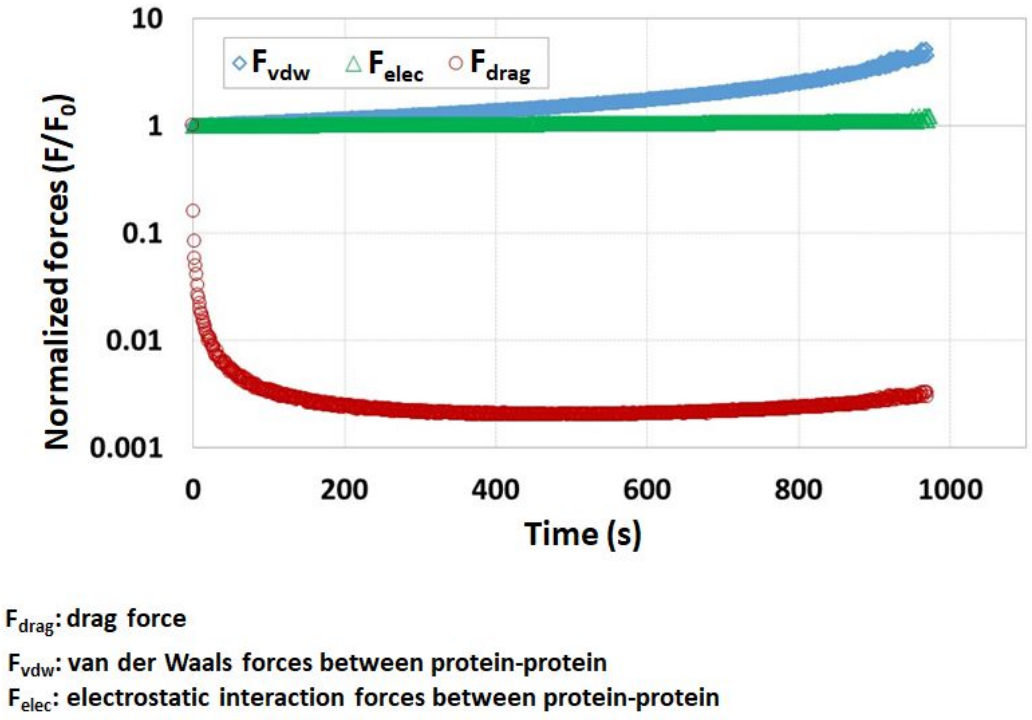

Figure S3. Temporal variation of different forces. The temporal variation of different forces are plotted for droplets of 1% wt. BSA + 2% wt. KCl salt [the forces are normalized with the forces at the initial state of the droplet (F_0: forces at time= 0)].

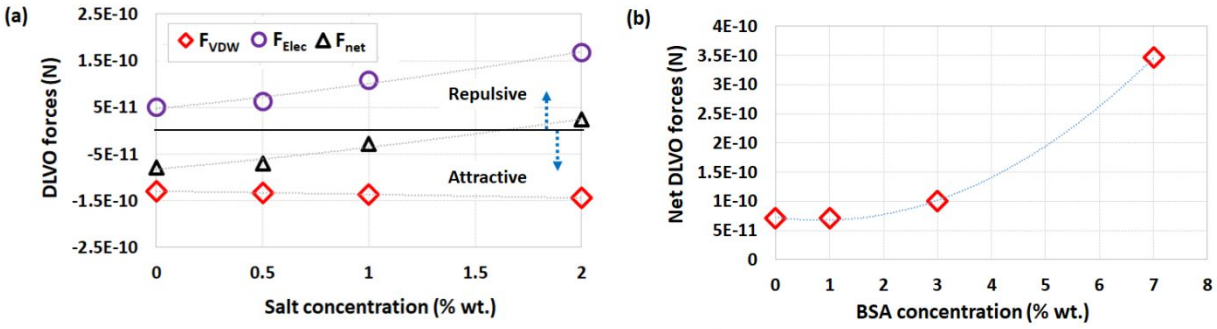

Figure S4. Variation of DLVO forces with salt concentration. The plot shows the variation of (a) DLVO forces for $MgCl_2$+BSA droplets with salt concentration for (BSA: 1% wt.) and (b) net DLVO forces ($F_{net}=F_{VDW}+F_{Elec}$) (only magnitude) with variation in the BSA concentration ($MgCl_2$: 0.5% wt.)

[van der Waals attraction: $F_{VDW} = \frac{-A}{6D^2}\frac{r_1 r_2}{(r_1 + r_2)}$ ad electrostatic repulsion forces: $F_{Elec} = \kappa Z e^{-\kappa D}\frac{r_1 r_2}{(r_1 + r_2)}$ respectively]

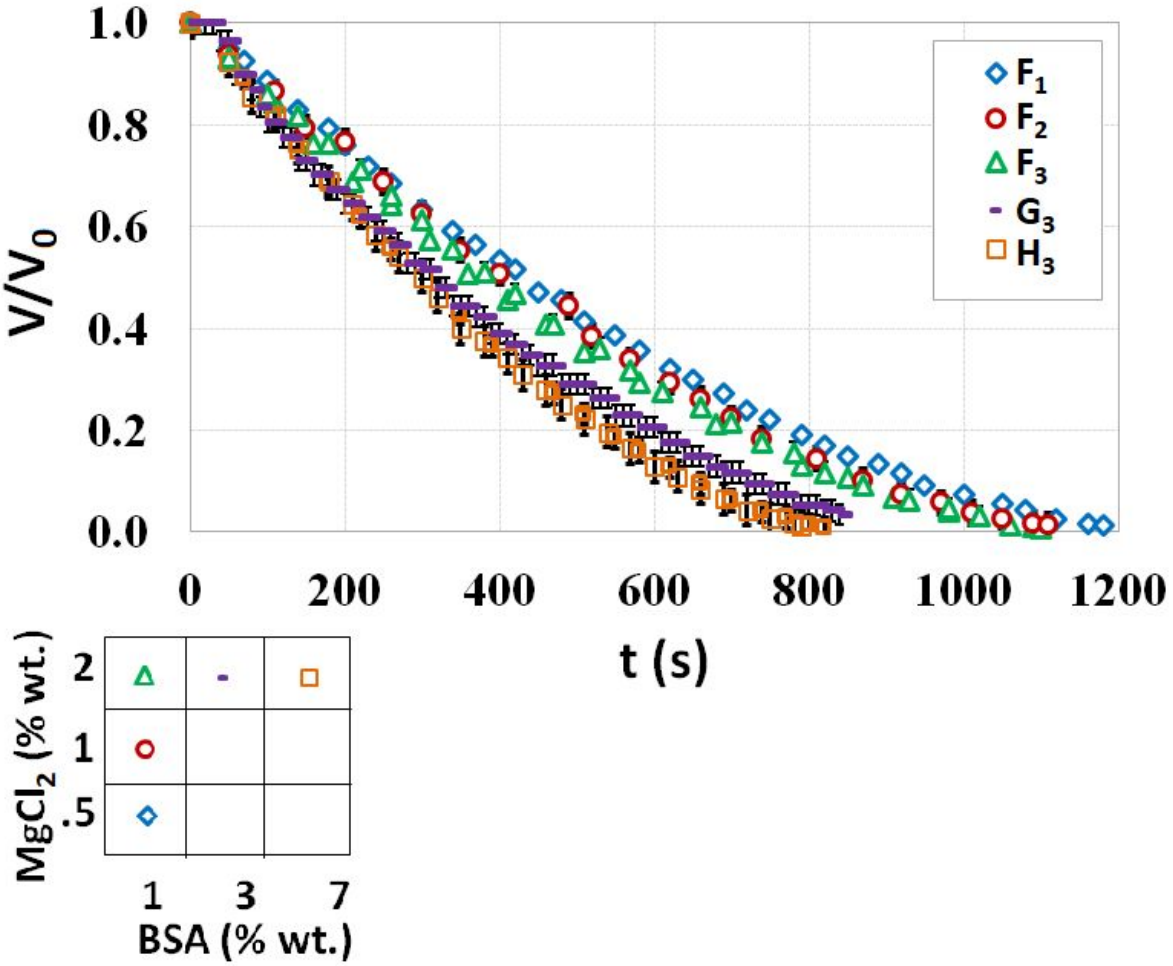

Figure S5. Temporal variation of droplet volume. The temporal variation of the volume of BSA+$MgCl_2$ droplets are plotted in the Figure. The volume is non-dimensionalized with the initial droplet volume

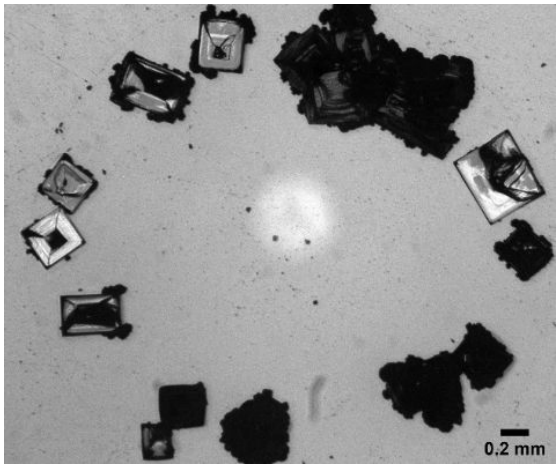

Figure S6. Final deposit of KCl crystals. The final precipitate shows the formation of ring-type peripheral deposit of KCl crystals (the initial concentration is 1 M solution in water) [unpublished data with permission from Efstratiou et. al].

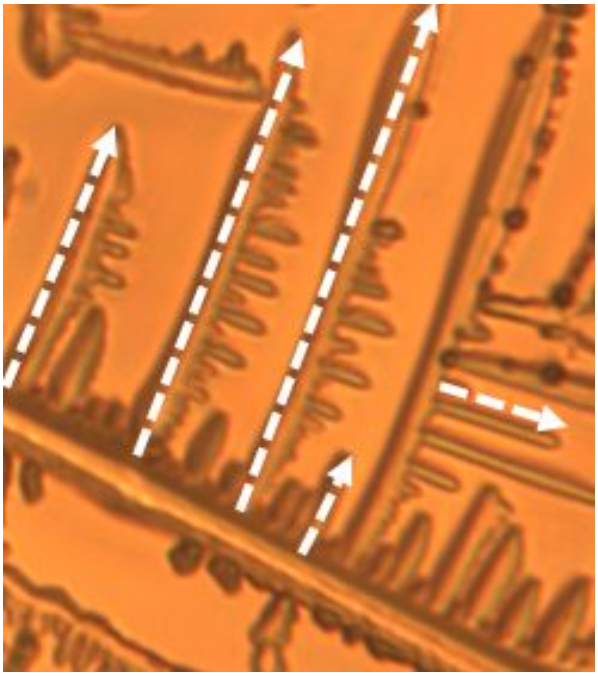

Figure S7: Estimation of l_{crys}. The l_{crys} is the axial length of the crystals measured from the point of initiation to the final growth (full grown crystal). The l_{crys} is calculated from the point of its initiation to the tip (maximum growth) for the main crystal as well as the branches.