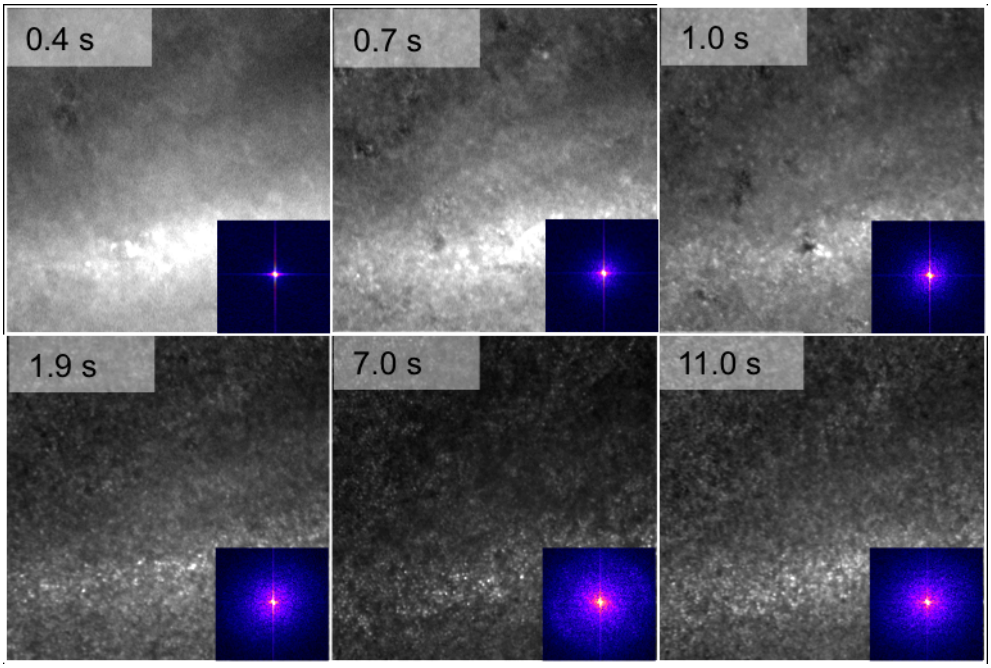
Electronic Supplementary Material (ESI) for Soft Matter.

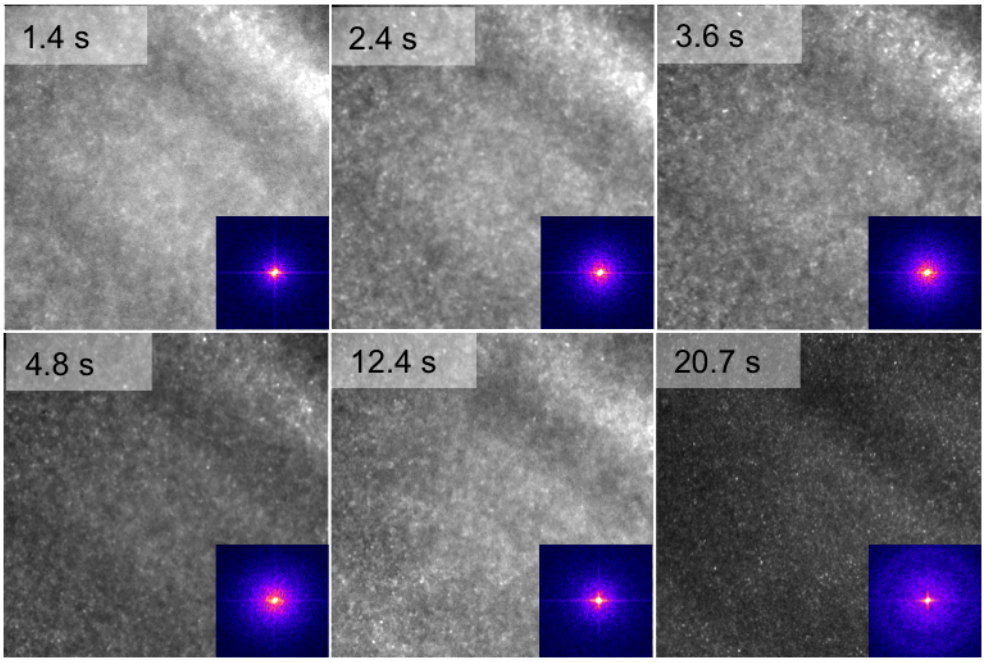
On the mechanisms of colloidal self-assembly during spin-coating.

Daniel T. W. Toolan, Syuji Fujii, Stephen J. Ebbens, Yoshinobu Nakamura and Jonathan R. Howse*

Supporting information.

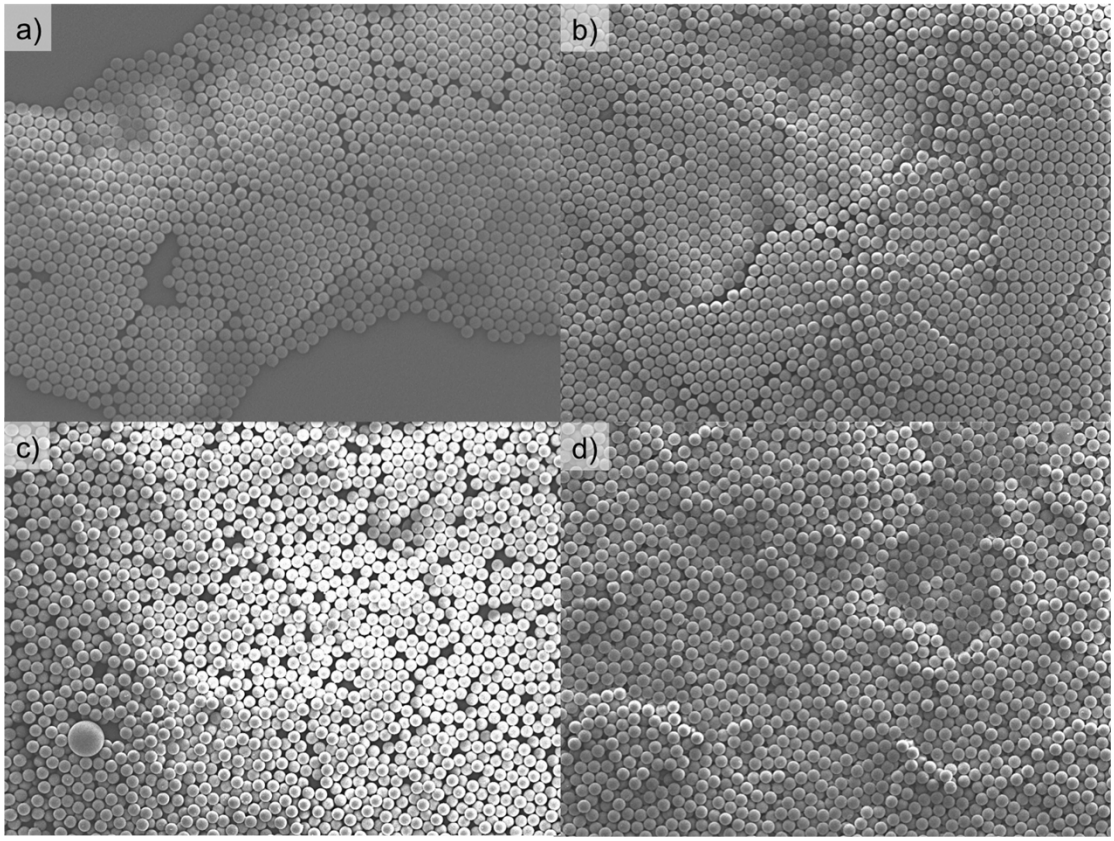


Supporting Figure 1. Series of stroboscopic microscopy images (with corresponding FFTs) for a 35 wt% colloidal dispersion in ethanol spun-cast at 1250 rpm.



Supporting Figure 2. Series of stroboscopic microscopy images (with corresponding FFTs) for a 45 wt% colloidal dispersion in ethanol spun-cast at 1250 rpm.

Supporting Fig. 1 and 2 show *in situ* microscopy data for 35 and 45 wt% colloidal dispersions in ethanol. The data shows that as the concentration increases a greater number of particles remain out of focus, longer into the spin-coating process, which we attribute to the presence of Marangoni flows. Unlike the disspersions made up in water, those in ethanol do not posses any significant order, with particles arranged in a fashion similar to a disordered glass. The presence of such flows, coupled with a higher vapour pressure solvent (than water) prevents the system from re-ordering to form ordered colloidal crystal like structures.



Supporting Figure 3. Scanning electron micrographs showing the final structures of colloidal dispersions; a).

Supporting Fig. 3. Show SEM micrographs of the final structures of colloidal dispersions spun cast from water (a and b) and ethanol (c and d) at concentrations of 25 wt% (a and c) and 45 wt% (b and d). These micrographs clearly show the ordered structures that form when the colloids where spin-coated from water, which are arranged in regular close packed arrays and the

relatively disordered structures that form when colloids where spun-cast from ethanol.