

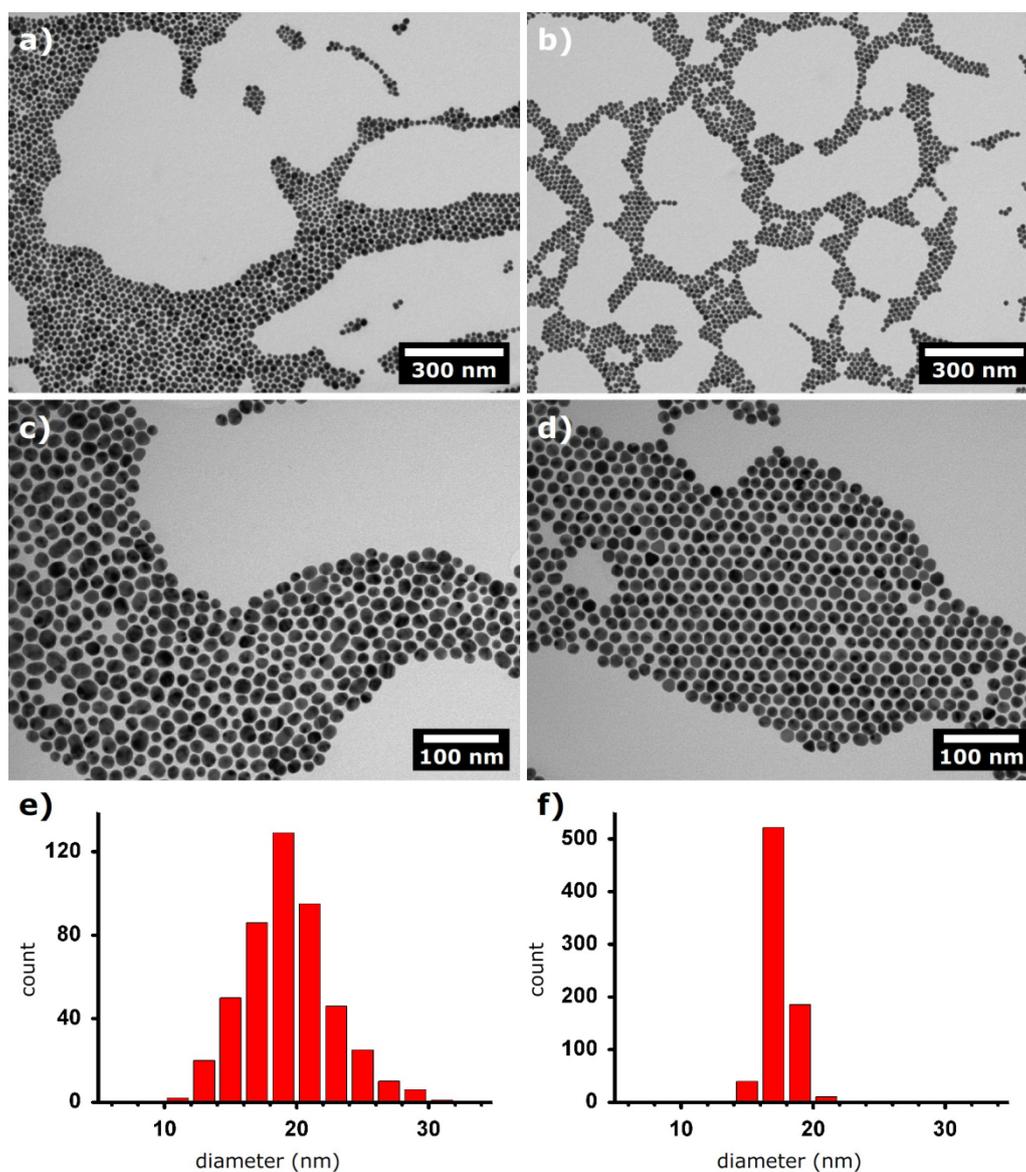
Supporting Information

## Monitoring pattern formation in drying and wetting dispersions of gold nanoparticles by ESEM

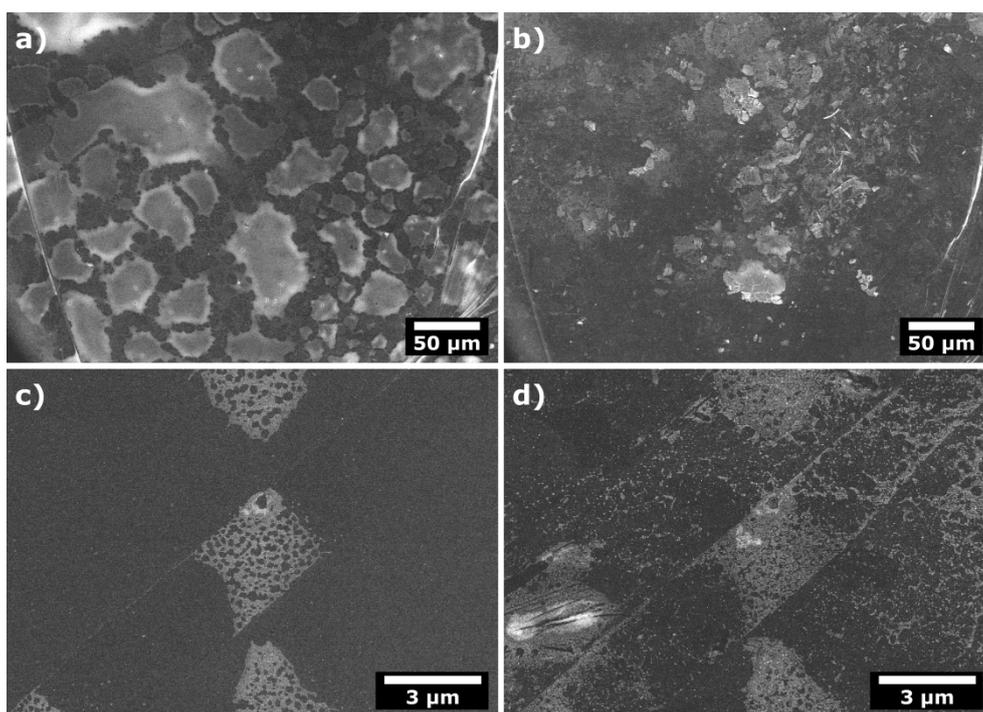
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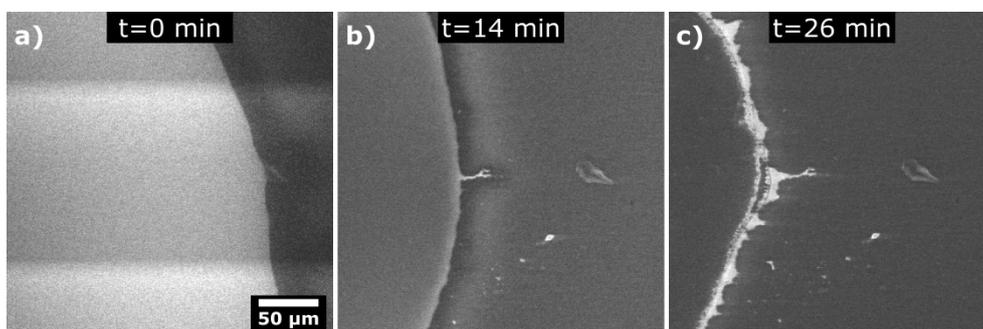
\*E-mail: [mbrust@liv.ac.uk](mailto:mbrust@liv.ac.uk)



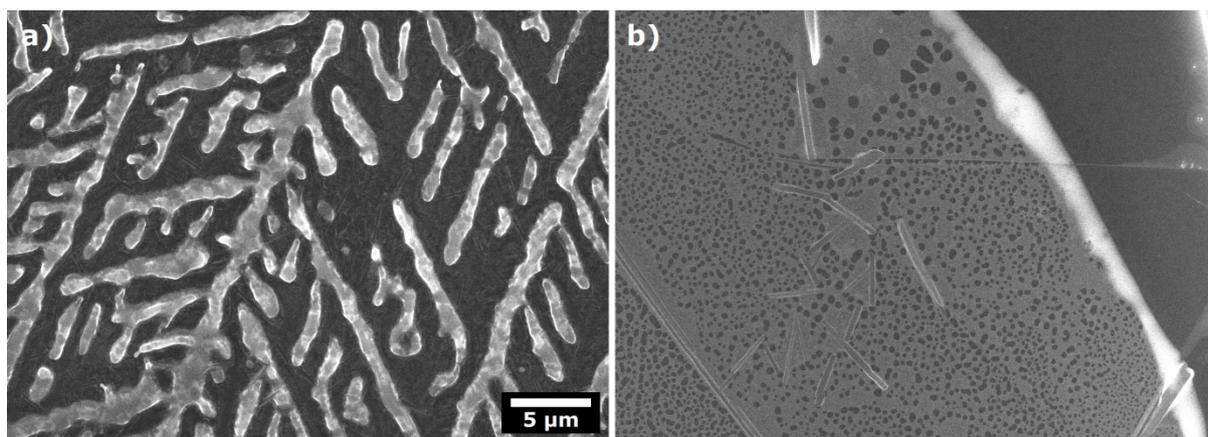
**Figure ESI1** TEM images of two GNP particle batches, *left* and *right*. Image (a) and (b) show similar long range behaviour for both samples. Image (c) and (d) show localized packing, with (d) exhibiting clear hexagonal packing. Histograms (e and f) show size distributions for both batches, obtained by analysing image (a) and (b), respectively.



**Figure ES12** SEM images showing GNP mobility on HOPG surface before (*left*) and after (*right*) full sample hydration. Image (a) show large rafts of densely packed GNP, which break up and split when water condenses on the surface (b). Image (c) show GNP partially decorating HOPG step edges (diagonal lines), while (d) show the same edges fully decorated after hydration.



**Figure ES13** SEM images showing formation of ring stain during drying of a droplet containing a GNP suspension, on a plain PDMS surface. Starting from fully hydrated (a) – (100% humidity), then down to 77.5% (b), and finally fully dry (c) – (50%). Same scalebars on all images.



**Figure ESI6** SEM images showing formation of nickel salt crystals on dry (20% relative humidity) Si (*a*) and HOPG (*b*) surfaces. Same scalebar on both images.