Supplementary Information

Title: "Sizing Subcellular Organelles and Nanoparticles Confined within Aqueous Droplets"

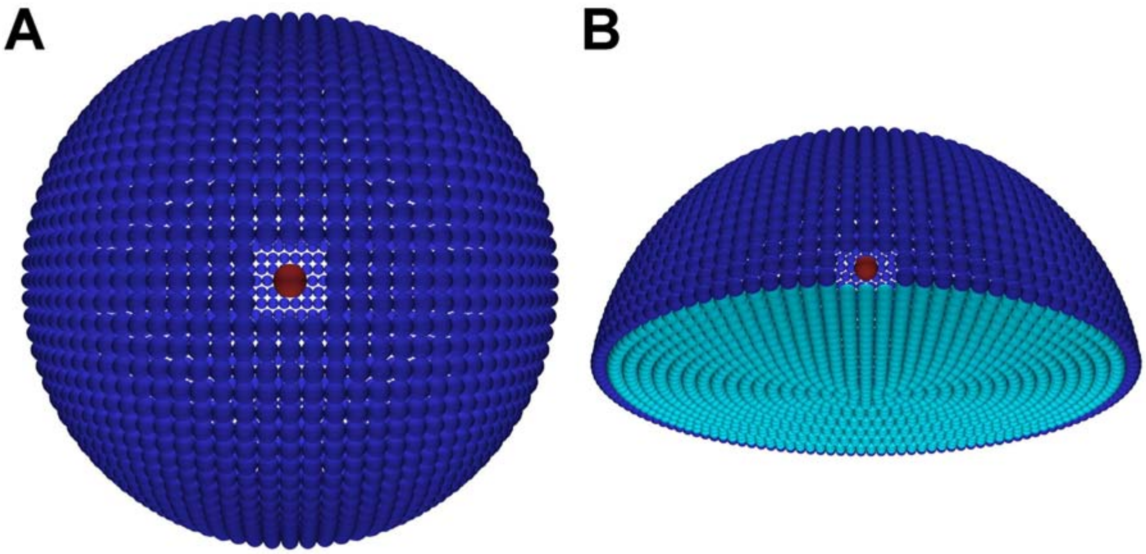

Figure S1. Two examples of the array of shell beads used to approximate the droplet wall for the diffusion-coefficient calculations. (A) 3μm-diameter spherical droplet. (B) hemispherical droplet with a 4μm-diameter base (viewed from underneath). For each shape and size of droplet, a series of calculations were performed using progressively more and smaller shell beads. For the two examples in the figure, the array of shell beads with the smallest size is shown and 9 of the shell beads have been removed to show a 200nm diameter red particle near the center of the droplet. The dark blue shell beads are positioned on a series of circles, which are located on the spherical portion of the droplet and separated by twice the radius of the shell beads. For the hemisphere, the shell beads used to fill in the base (shown in light blue) are located on a series of concentric circles where the spacing was chosen to allow the use of shell beads approximately equal in size to those on the spherical portion of the droplet. For the purposes of a friction-factor calculation, the open spaces between the shell beads are too small to allow a significant amount of leakage of the solution inside the droplet. This was confirmed by calculating the friction factor of the entire droplet (as opposed to the sphere inside the droplet). For the spherical droplets, where an analytical expression for the friction factor is available, the calculated friction factors for the array of shell beads agreed with the exact value of the friction factor to slightly better than 1%. This should be a reasonable estimate of any error introduced into the calculations due to the fact that we could not use infinitely small (and infinitely many) shell beads.