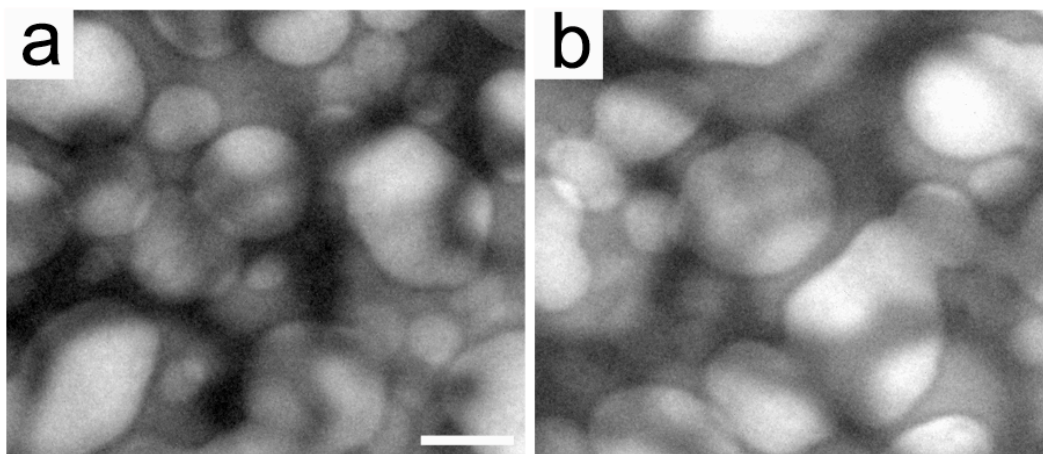


Electronic Supplementary Information.



Supplementary Fig. 1. Representative images of bubbles formed in the liquid cell during a 10-minute exposure at 120 kV at the beginning **(a)** and at the end **(b)** of a TEM session. Scale bar is 100 nm.

Movie 1. The mobility of gold nanorods in solution. As the incident electron beam heated the liquid sample, individual PVP-coated gold nanorods initially migrated away from the beam and accumulated in adjacent areas of liquid. As the solution continued to heat, wavefronts consistent with the appearance of nanoscale tidal waves swept into the viewing area as separate events. These waves effectively concentrated the number of nanorods in the imaging region upon recession.