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**Figure Captions**

**Fig. 1.** The evolution of bubble size distribution function in a system originally containing 40% v/v of gas. The initial average bubble radius is 3.5 μm and bubbles were stabilised by nanoparticles of size 7 nm with an initial concentration of 0.04%. Different curves show the distribution function at different times; t=0 (short dashed), t=0.5 (dash-dotted), t=1.0 (long dashed) and once all bubbles are fully stabilised (solid line). The time is expressed in units of $\tau <R(0)>^3$.

**Fig. 2.** The average size (a) and standard deviation (b) of bubbles plotted as a function of time for three different systems containing different amount of nanoparticles, 0.04% v/v (dash-dotted), 0.02% v/v (dashed) and 0.01% v/v (solid). The initial bubble size distribution is that shown in Fig. 1, with a bubble volume fraction of 40%. The inset in (b) shows the variation of the relative width of the distribution with time for each system.

**Fig. 3.** The average size (a) and standard deviation (b) of bubbles plotted as a function of time for three different systems containing different initial volume fraction of gas bubbles 2% (solid line), 10% (dash-dotted line), 40% (dashed line). The initial bubble size distribution was the same as that shown in Fig. 1, but with $<R(0)>$=7 μm. The concentration of stabilising nanoparticles was 0.01% v/v and their size 7 nm, in all cases.

**Fig. 4.** The value of the radius below which the bubbles are no longer shrinking, plotted as a function of time, for each of the three systems in Fig. 3.

**Fig. 5.** The variation of the number of particles still remaining in the bulk solution, after a time t (in normalised units). The particle concentration is expressed as a fraction of its initial starting value. Each graph represents the same corresponding system as that in Fig. 3.

**Fig. 6.** Comparison of the final bubble size distributions, obtained for each of the three systems in Fig. 3 once all bubbles have been stabilised.

**Fig. 7.** Graph showing the variation of the final radius of the larger bubbles, plotted as a function of the fraction of gas initially in these bigger bubbles. Results are obtained for bimodal bubble size distribution functions in which the initial radii of large and small bubbles were set to 10.5 and 3.5 μm, respectively.

**Fig. 8.** The percentage of the retained gas for the same systems as those in Fig. 7, plotted against the initial fraction of gas which is contained in the larger bubbles.
Figure 1

![Graph showing distribution of $P(R)$ vs. $R / \langle R(0) \rangle$](image-url)
Figure 2a
Figure 2b
Figure 3a
Figure 3b
Figure 4

![Graph showing the relationship between $R_{\text{stable}}$ and $<R(0)>^3$. The graph plots $R_{\text{stable}}$ against $t / \tau <R(0)>^3$ with different curves indicating varying conditions or parameters.]
Figure 7

A graph showing the relationship between the initial fraction of gas in large bubbles (%) and the final radius of large bubbles (μm). The graph indicates a positive correlation, with the final radius increasing as the initial fraction of gas increases.
Figure 8

The graph shows the relationship between the retained gas (%) and the initial fraction of gas in large bubbles (%). The data points indicate a positive correlation, with the retained gas increasing as the initial fraction of gas in large bubbles increases.