

Figure S1. Phantom Model Box. This is an illustration of the modeled phantom box used during the study. Dimensions are labeled in SI units. Grey diagrams are slice views that are sliced at black dotted lines shown in non grey diagrams. Diagrams also show FUS transducer to orient viewer.

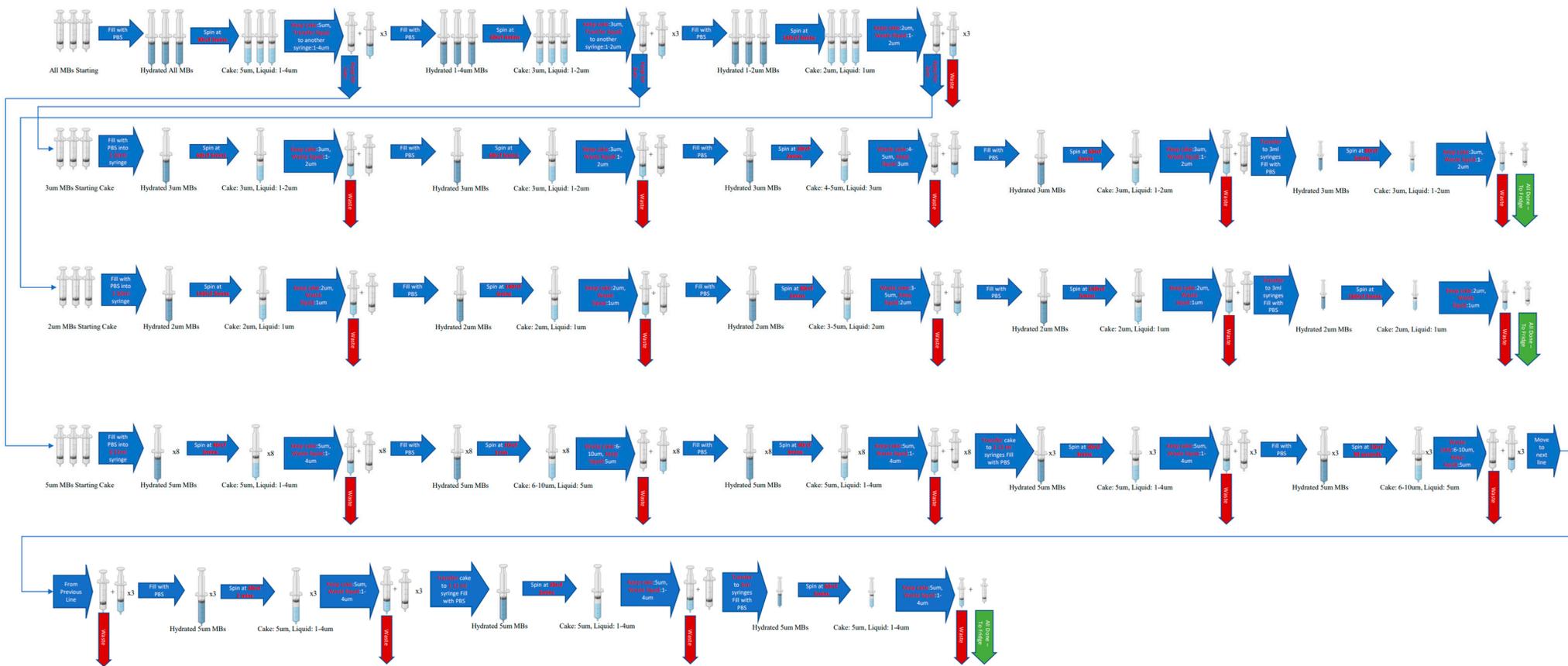


Figure S2. Size Isolation of Monodisperse Microbubbles. This is an illustration of the process used to isolate the three size distributions used in the study. Thicker blue arrow illustrates separation of phases or centrifugation. Green arrows show when cake was to be saved for measuring.

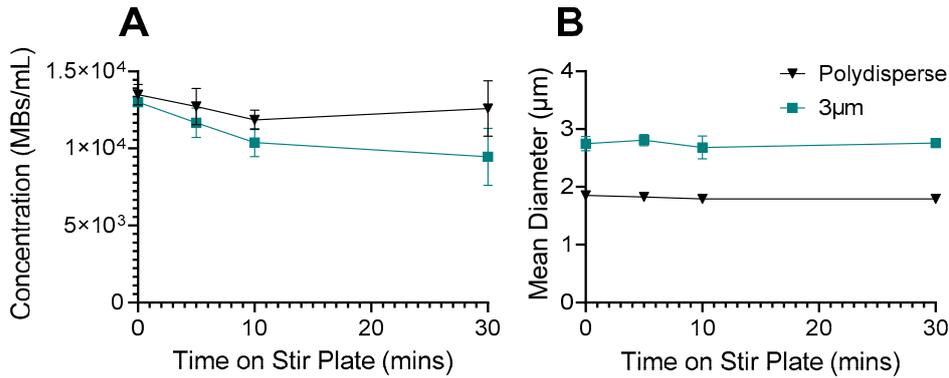


Figure S3. Microbubble Stability During Stirring. (A) Graph illustrates the change in concentration as the microbubbles are stirred. Graph (B) shows the change in mean diameter of the number weighted size distributions. Concentrations are the lowest concentrations used in this study. Data represent the mean and error bars show standard deviation (N = 3).

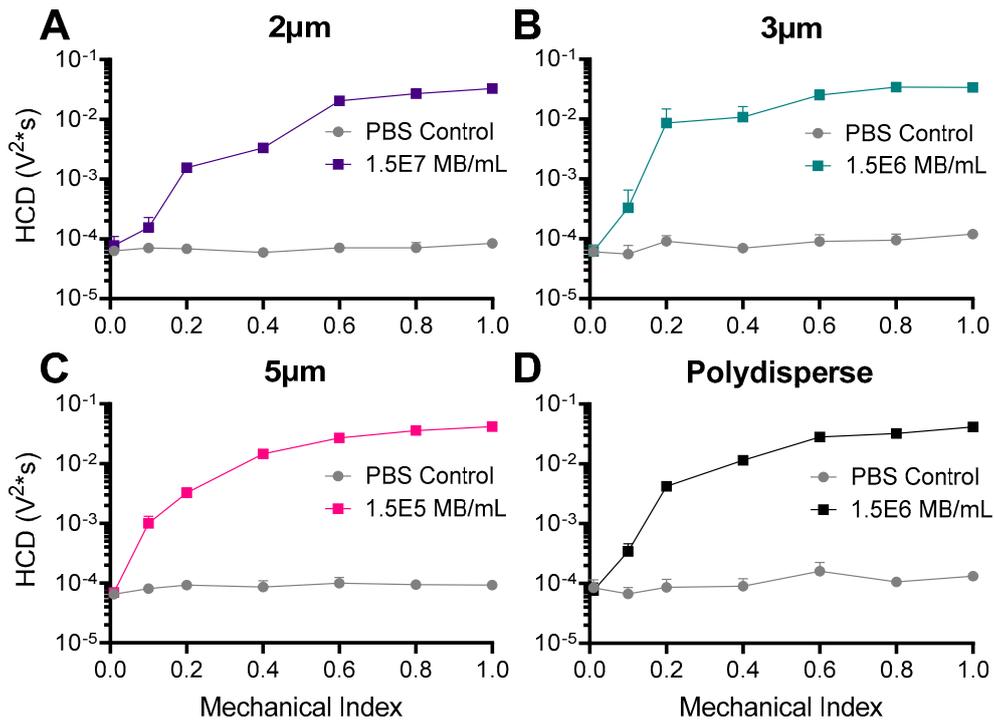


Figure S4. Harmonic Cavitation Dose (HCD) Controls. (A) 2 μ m microbubbles comparing the HCD in the PBS control and the 1.5×10^7 MBs/mL concentration. (B) 3 μ m microbubbles at 1.5×10^6 MBs/mL compared to the PBS control. (C) 5 μ m microbubbles at 1.5×10^5 MBs/mL. (D) Polydisperse microbubbles at 1.5×10^6 MBs/mL. The microbubble data is the raw HCD and was not subtracted from the PBS control like other HCD plots. Data represents the mean and errors bars show standard deviation (N = 4).

Table S1. Statistical Analysis of HCD vs MI. Table shows the adjusted *p*-values obtained when performing a Tukey’s multiple comparisons test. Test was conducted by comparing each mechanical index value with itself at each distinct microbubble concentration and microbubble size distribution. *p*-values were rounded to four significant digits. Pink-Cyan color scale was used to represent range of *p*-values relative to each other (Pink is higher and Cyan is lower *p*-values).

| Adjusted P-Values - Tukey's multiple comparisons test | | | | | | | | | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Mechanical Index Comparisons | 2um | | | | 3um | | | | |
| | Concentration | | | | Concentration | | | | |
| | 1.5 × 10 ⁵ | 1.5 × 10 ⁶ | 1.5 × 10 ⁷ | 1.5 × 10 ⁸ | 1.5 × 10 ⁴ | 1.5 × 10 ⁵ | 1.5 × 10 ⁶ | 1.5 × 10 ⁷ | 1.5 × 10 ⁸ |
| 0.01 vs. 0.1 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 |
| 0.01 vs. 0.2 | 0.9999 | 0.0088 | 0.9525 | 0.9999 | 0.9999 | 0.9988 | 0.113 | 0.9999 | 0.9999 |
| 0.01 vs. 0.4 | 0.9999 | 0.0097 | 0.2989 | 0.9999 | 0.9999 | 0.995 | 0.017 | 0.9878 | 0.9999 |
| 0.01 vs. 0.6 | 0.9532 | 0.0001 | 0.0001 | 0.0001 | 0.9996 | 0.002 | 0.0001 | 0.0006 | 0.7417 |
| 0.01 vs. 0.8 | 0.9567 | 0.0001 | 0.0001 | 0.0001 | 0.9572 | 0.0001 | 0.0001 | 0.0001 | 0.0554 |
| 0.01 vs. 1.0 | 0.3522 | 0.0001 | 0.0001 | 0.0001 | 0.7023 | 0.0001 | 0.0001 | 0.0001 | 0.0407 |
| 0.1 vs. 0.2 | 0.9999 | 0.0087 | 0.9624 | 0.9999 | 0.9999 | 0.9989 | 0.1374 | 0.9999 | 0.9999 |
| 0.1 vs. 0.4 | 0.9999 | 0.0095 | 0.3243 | 0.9999 | 0.9999 | 0.9953 | 0.022 | 0.9879 | 0.9999 |
| 0.1 vs. 0.6 | 0.952 | 0.0001 | 0.0001 | 0.0001 | 0.9996 | 0.002 | 0.0001 | 0.0006 | 0.7421 |
| 0.1 vs. 0.8 | 0.9555 | 0.0001 | 0.0001 | 0.0001 | 0.9578 | 0.0001 | 0.0001 | 0.0001 | 0.0555 |
| 0.1 vs. 1.0 | 0.3491 | 0.0001 | 0.0001 | 0.0001 | 0.7039 | 0.0001 | 0.0001 | 0.0001 | 0.0408 |
| 0.2 vs. 0.4 | 0.9999 | 0.9999 | 0.8867 | 0.9999 | 0.9999 | 0.9999 | 0.9924 | 0.9895 | 0.9999 |
| 0.2 vs. 0.6 | 0.9874 | 0.0001 | 0.0001 | 0.0001 | 0.9999 | 0.0107 | 0.0001 | 0.0007 | 0.7386 |
| 0.2 vs. 0.8 | 0.9887 | 0.0001 | 0.0001 | 0.0001 | 0.9714 | 0.0001 | 0.0001 | 0.0001 | 0.0546 |
| 0.2 vs. 1.0 | 0.4944 | 0.0001 | 0.0001 | 0.0001 | 0.7495 | 0.0001 | 0.0001 | 0.0001 | 0.0401 |
| 0.4 vs. 0.6 | 0.9761 | 0.0001 | 0.0001 | 0.0001 | 0.9998 | 0.0169 | 0.0004 | 0.0091 | 0.8132 |
| 0.4 vs. 0.8 | 0.9782 | 0.0001 | 0.0001 | 0.0001 | 0.9681 | 0.0001 | 0.0001 | 0.0001 | 0.0771 |
| 0.4 vs. 1.0 | 0.4288 | 0.0001 | 0.0001 | 0.0001 | 0.7374 | 0.0001 | 0.0001 | 0.0001 | 0.0575 |
| 0.6 vs. 0.8 | 0.9999 | 0.0001 | 0.0006 | 0.0029 | 0.9976 | 0.6391 | 0.0668 | 0.1053 | 0.7653 |
| 0.6 vs. 1.0 | 0.9202 | 0.0001 | 0.0001 | 0.0001 | 0.9095 | 0.0376 | 0.0859 | 0.0689 | 0.6968 |
| 0.8 vs. 1.0 | 0.9151 | 0.9798 | 0.0043 | 0.4407 | 0.997 | 0.7772 | 0.9999 | 0.9999 | 0.9999 |
| Mechanical Index Comparisons | 5um | | | | Polydisperse | | | | |
| | Concentration | | | | Concentration | | | | |
| | 1.5 × 10 ⁴ | 1.5 × 10 ⁵ | 1.5 × 10 ⁶ | 1.5 × 10 ⁷ | 1.5 × 10 ⁴ | 1.5 × 10 ⁵ | 1.5 × 10 ⁶ | 1.5 × 10 ⁷ | 1.5 × 10 ⁸ |
| 0.01 vs. 0.1 | 0.9999 | 0.9857 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 |
| 0.01 vs. 0.2 | 0.9999 | 0.1171 | 0.0573 | 0.9999 | 0.9999 | 0.9987 | 0.3035 | 0.9999 | 0.9999 |
| 0.01 vs. 0.4 | 0.9999 | 0.0001 | 0.0001 | 0.8206 | 0.9999 | 0.9882 | 0.0001 | 0.9948 | 0.9999 |
| 0.01 vs. 0.6 | 0.9768 | 0.0001 | 0.0001 | 0.0001 | 0.9999 | 0.0914 | 0.0001 | 0.0001 | 0.0003 |
| 0.01 vs. 0.8 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.9999 | 0.0003 | 0.0001 | 0.0001 | 0.0001 |
| 0.01 vs. 1.0 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.9991 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 0.1 vs. 0.2 | 0.9999 | 0.4869 | 0.1237 | 0.9999 | 0.9999 | 0.999 | 0.3903 | 0.9999 | 0.9999 |
| 0.1 vs. 0.4 | 0.9999 | 0.0001 | 0.0001 | 0.8185 | 0.9999 | 0.9897 | 0.0001 | 0.9956 | 0.9999 |
| 0.1 vs. 0.6 | 0.9774 | 0.0001 | 0.0001 | 0.0001 | 0.9999 | 0.0956 | 0.0001 | 0.0001 | 0.0004 |
| 0.1 vs. 0.8 | 0.0467 | 0.0001 | 0.0001 | 0.0001 | 0.9999 | 0.0003 | 0.0001 | 0.0001 | 0.0001 |
| 0.1 vs. 1.0 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.9991 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 0.2 vs. 0.4 | 0.9999 | 0.0001 | 0.0001 | 0.8202 | 0.9999 | 0.9999 | 0.0039 | 0.9993 | 0.9999 |
| 0.2 vs. 0.6 | 0.9903 | 0.0001 | 0.0001 | 0.0001 | 0.9999 | 0.2713 | 0.0001 | 0.0001 | 0.0004 |
| 0.2 vs. 0.8 | 0.0652 | 0.0001 | 0.0001 | 0.0001 | 0.9999 | 0.0018 | 0.0001 | 0.0001 | 0.0001 |
| 0.2 vs. 1.0 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.9993 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 0.4 vs. 0.6 | 0.9909 | 0.0001 | 0.0001 | 0.0001 | 0.9999 | 0.4135 | 0.0001 | 0.0001 | 0.0009 |
| 0.4 vs. 0.8 | 0.0666 | 0.0001 | 0.0001 | 0.0001 | 0.9999 | 0.0042 | 0.0001 | 0.0001 | 0.0001 |
| 0.4 vs. 1.0 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.9994 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |

| | | | | | | | | | |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0.6 vs. 0.8 | 0.3072 | 0.0001 | 0.0001 | 0.0001 | 0.9999 | 0.5511 | 0.2515 | 0.0011 | 0.0102 |
| 0.6 vs. 1.0 | 0.0003 | 0.0001 | 0.0001 | 0.0001 | 0.9999 | 0.0998 | 0.0001 | 0.0001 | 0.0001 |
| 0.8 vs. 1.0 | 0.1898 | 0.0001 | 0.0001 | 0.0005 | 0.9999 | 0.966 | 0.0001 | 0.0266 | 0.5542 |

Table S2. Statistical Analysis of BCD vs MI. Table shows the adjusted p-values obtained when performing a Tukey's multiple comparisons test. Test was conducted by comparing each mechanical index value with itself at each distinct microbubble concentration and microbubble size distribution. P-values were rounded to four significant digits. Pink-Cyan color scale was used to represent range of P-values relative to each other (Pink is higher and Cyan is lower P-values).

| Adjusted P-Values - Tukey's multiple comparisons test | | | | | | | | | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Mechanical Index Comparisons | 2um | | | | 3um | | | | |
| | Concentration | | | | Concentration | | | | |
| | 1.5 × 10 ⁵ | 1.5 × 10 ⁶ | 1.5 × 10 ⁷ | 1.5 × 10 ⁸ | 1.5 × 10 ⁴ | 1.5 × 10 ⁵ | 1.5 × 10 ⁶ | 1.5 × 10 ⁷ | 1.5 × 10 ⁸ |
| 0.01 vs. 0.1 | 0.998 | 0.9647 | 0.9993 | 0.9981 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 |
| 0.01 vs. 0.2 | 0.9999 | 0.998 | 0.9999 | 0.9994 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 |
| 0.01 vs. 0.4 | 0.9999 | 0.9999 | 0.9974 | 0.9998 | 0.9999 | 0.9999 | 0.9988 | 0.9688 | 0.9961 |
| 0.01 vs. 0.6 | 0.9999 | 0.1544 | 0.0001 | 0.0001 | 0.9999 | 0.9999 | 0.0048 | 0.0001 | 0.0002 |
| 0.01 vs. 0.8 | 0.9985 | 0.0001 | 0.0001 | 0.0001 | 0.9999 | 0.9979 | 0.0001 | 0.0001 | 0.0001 |
| 0.01 vs. 1.0 | 0.9999 | 0.0001 | 0.0001 | 0.0001 | 0.9999 | 0.9993 | 0.0001 | 0.0001 | 0.0001 |
| 0.1 vs. 0.2 | 0.9999 | 0.9997 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 |
| 0.1 vs. 0.4 | 0.9917 | 0.8778 | 0.9459 | 0.9691 | 0.9999 | 0.9999 | 0.9995 | 0.9742 | 0.9971 |
| 0.1 vs. 0.6 | 0.9981 | 0.013 | 0.0001 | 0.0001 | 0.9999 | 0.9999 | 0.0061 | 0.0001 | 0.0003 |
| 0.1 vs. 0.8 | 0.9359 | 0.0001 | 0.0001 | 0.0001 | 0.9999 | 0.9984 | 0.0001 | 0.0001 | 0.0001 |
| 0.1 vs. 1.0 | 0.9897 | 0.0001 | 0.0001 | 0.0001 | 0.9999 | 0.9995 | 0.0001 | 0.0001 | 0.0001 |
| 0.2 vs. 0.4 | 0.9995 | 0.9794 | 0.9834 | 0.9823 | 0.9999 | 0.9999 | 0.9997 | 0.9777 | 0.998 |
| 0.2 vs. 0.6 | 0.9999 | 0.0404 | 0.0001 | 0.0001 | 0.9999 | 0.9999 | 0.0068 | 0.0001 | 0.0003 |
| 0.2 vs. 0.8 | 0.986 | 0.0001 | 0.0001 | 0.0001 | 0.9999 | 0.9992 | 0.0001 | 0.0001 | 0.0001 |
| 0.2 vs. 1.0 | 0.9993 | 0.0001 | 0.0001 | 0.0001 | 0.9999 | 0.9998 | 0.0001 | 0.0001 | 0.0001 |
| 0.4 vs. 0.6 | 0.9999 | 0.2774 | 0.0001 | 0.0001 | 0.9999 | 0.9999 | 0.0234 | 0.0001 | 0.0025 |
| 0.4 vs. 0.8 | 0.9998 | 0.0001 | 0.0001 | 0.0001 | 0.9999 | 0.9989 | 0.0001 | 0.0001 | 0.0001 |
| 0.4 vs. 1.0 | 0.9999 | 0.0001 | 0.0001 | 0.0001 | 0.9999 | 0.9997 | 0.0001 | 0.0001 | 0.0001 |
| 0.6 vs. 0.8 | 0.9984 | 0.0001 | 0.0001 | 0.0001 | 0.9999 | 0.9999 | 0.001 | 0.0001 | 0.006 |
| 0.6 vs. 1.0 | 0.9999 | 0.0001 | 0.0001 | 0.0001 | 0.9999 | 0.9999 | 0.0001 | 0.0001 | 0.0001 |
| 0.8 vs. 1.0 | 0.9999 | 0.0111 | 0.0001 | 0.0001 | 0.9999 | 0.9999 | 0.091 | 0.0001 | 0.0227 |
| Mechanical Index Comparisons | 5um | | | | Polydisperse | | | | |
| | Concentration | | | | Concentration | | | | |
| | 1.5 × 10 ⁴ | 1.5 × 10 ⁵ | 1.5 × 10 ⁶ | 1.5 × 10 ⁷ | 1.5 × 10 ⁴ | 1.5 × 10 ⁵ | 1.5 × 10 ⁶ | 1.5 × 10 ⁷ | 1.5 × 10 ⁸ |
| 0.01 vs. 0.1 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9997 | 0.9999 | 0.9999 |
| 0.01 vs. 0.2 | 0.9997 | 0.9999 | 0.9999 | 0.9999 | 0.9996 | 0.9999 | 0.9931 | 0.9999 | 0.998 |
| 0.01 vs. 0.4 | 0.9999 | 0.9999 | 0.9498 | 0.7319 | 0.9999 | 0.9999 | 0.4065 | 0.9836 | 0.9747 |
| 0.01 vs. 0.6 | 0.9999 | 0.9999 | 0.0001 | 0.0001 | 0.9988 | 0.5766 | 0.0001 | 0.0001 | 0.0001 |
| 0.01 vs. 0.8 | 0.9998 | 0.9916 | 0.0001 | 0.0001 | 0.9999 | 0.0502 | 0.0001 | 0.0001 | 0.0001 |
| 0.01 vs. 1.0 | 0.9999 | 0.4781 | 0.0001 | 0.0001 | 0.9943 | 0.0053 | 0.0001 | 0.0001 | 0.0001 |
| 0.1 vs. 0.2 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9997 |
| 0.1 vs. 0.4 | 0.9999 | 0.9999 | 0.965 | 0.652 | 0.9999 | 0.9999 | 0.6557 | 0.9912 | 0.9902 |
| 0.1 vs. 0.6 | 0.9999 | 0.9992 | 0.0001 | 0.0001 | 0.9996 | 0.703 | 0.0001 | 0.0001 | 0.0001 |
| 0.1 vs. 0.8 | 0.9968 | 0.963 | 0.0001 | 0.0001 | 0.9999 | 0.0829 | 0.0001 | 0.0001 | 0.0001 |
| 0.1 vs. 1.0 | 0.9999 | 0.3333 | 0.0001 | 0.0001 | 0.9977 | 0.01 | 0.0001 | 0.0001 | 0.0001 |
| 0.2 vs. 0.4 | 0.9995 | 0.9999 | 0.9549 | 0.6653 | 0.999 | 0.9999 | 0.8331 | 0.9932 | 0.9999 |
| 0.2 vs. 0.6 | 0.9999 | 0.9996 | 0.0001 | 0.0001 | 0.9999 | 0.6869 | 0.0001 | 0.0001 | 0.0001 |
| 0.2 vs. 0.8 | 0.9883 | 0.9715 | 0.0001 | 0.0001 | 0.9999 | 0.0777 | 0.0001 | 0.0001 | 0.0001 |
| 0.2 vs. 1.0 | 0.9996 | 0.3611 | 0.0001 | 0.0001 | 0.9999 | 0.0092 | 0.0001 | 0.0001 | 0.0001 |
| 0.4 vs. 0.6 | 0.9999 | 0.9996 | 0.0001 | 0.0001 | 0.9975 | 0.6419 | 0.0001 | 0.0001 | 0.0001 |

| | | | | | | | | | |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0.4 vs. 0.8 | 0.9999 | 0.973 | 0.0001 | 0.0001 | 0.9999 | 0.0651 | 0.0001 | 0.0001 | 0.0001 |
| 0.4 vs. 1.0 | 0.9999 | 0.3667 | 0.0001 | 0.0001 | 0.9906 | 0.0073 | 0.0001 | 0.0001 | 0.0001 |
| 0.6 vs. 0.8 | 0.996 | 0.999 | 0.0001 | 0.0001 | 0.9998 | 0.8754 | 0.0001 | 0.0001 | 0.0001 |
| 0.6 vs. 1.0 | 0.9999 | 0.6297 | 0.0001 | 0.0001 | 0.9999 | 0.4306 | 0.0001 | 0.0001 | 0.0001 |
| 0.8 vs. 1.0 | 0.9998 | 0.8918 | 0.0001 | 0.0001 | 0.9985 | 0.9896 | 0.0001 | 0.0001 | 0.0001 |

Table S3. Statistical Analysis of HCD vs Number Concentration. Table shows the adjusted p-values obtained when performing a Tukey’s multiple comparisons test. Test was conducted by comparing each number concentration value with itself at each distinct mechanical index and microbubble size distribution. P-values were rounded to four significant digits. Pink-Cyan color scale was used to represent range of P-values relative to each other (Pink is higher and Cyan is lower P-values).

| 2um - Adjusted P-Values - Tukey's multiple comparisons test | | | | | | | |
|---|-------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Concentration Comparisons | Mechanical Index | | | | | | |
| | 0.01 | 0.10 | 0.20 | 0.40 | 0.60 | 0.80 | 1.00 |
| 1.5 × 10⁵ vs. 1.5 × 10⁶ | 0.9999 | 0.9999 | 0.0058 | 0.0046 | 0.0001 | 0.0001 | 0.0001 |
| 1.5 × 10⁵ vs. 1.5 × 10⁷ | 0.9999 | 0.9999 | 0.8685 | 0.1664 | 0.0001 | 0.0001 | 0.0001 |
| 1.5 × 10⁵ vs. 1.5 × 10⁸ | 0.9999 | 0.9999 | 0.9973 | 0.9999 | 0.0001 | 0.0001 | 0.0001 |
| 1.5 × 10⁶ vs. 1.5 × 10⁷ | 0.9999 | 0.9999 | 0.05 | 0.5177 | 0.0442 | 0.9999 | 0.0163 |
| 1.5 × 10⁶ vs. 1.5 × 10⁸ | 0.9999 | 0.9999 | 0.0031 | 0.0055 | 0.0001 | 0.0001 | 0.0001 |
| 1.5 × 10⁷ vs. 1.5 × 10⁸ | 0.9999 | 0.9999 | 0.7698 | 0.1852 | 0.0001 | 0.0001 | 0.0001 |
| 3um - Adjusted P-Values - Tukey's multiple comparisons test | | | | | | | |
| 1.5 × 10⁴ vs. 1.5 × 10⁵ | 0.9999 | 0.9999 | 0.9932 | 0.9765 | 0.0041 | 0.0001 | 0.0001 |
| 1.5 × 10⁴ vs. 1.5 × 10⁶ | 0.9999 | 0.9999 | 0.0767 | 0.0105 | 0.0001 | 0.0001 | 0.0001 |
| 1.5 × 10⁴ vs. 1.5 × 10⁷ | 0.9999 | 0.9999 | 0.9999 | 0.9543 | 0.0014 | 0.0001 | 0.0001 |
| 1.5 × 10⁴ vs. 1.5 × 10⁸ | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.8117 | 0.279 | 0.5564 |
| 1.5 × 10⁵ vs. 1.5 × 10⁶ | 0.9999 | 0.9999 | 0.1945 | 0.0554 | 0.002 | 0.0001 | 0.0058 |
| 1.5 × 10⁵ vs. 1.5 × 10⁷ | 0.9999 | 0.9999 | 0.9892 | 0.9999 | 0.9978 | 0.6534 | 0.9999 |
| 1.5 × 10⁵ vs. 1.5 × 10⁸ | 0.9999 | 0.9999 | 0.9867 | 0.9854 | 0.0926 | 0.0563 | 0.0009 |
| 1.5 × 10⁶ vs. 1.5 × 10⁷ | 0.9999 | 0.9999 | 0.0671 | 0.0745 | 0.0058 | 0.0032 | 0.0077 |
| 1.5 × 10⁶ vs. 1.5 × 10⁸ | 0.9999 | 0.9999 | 0.0625 | 0.013 | 0.0001 | 0.0001 | 0.0001 |
| 1.5 × 10⁷ vs. 1.5 × 10⁸ | 0.9999 | 0.9999 | 0.9999 | 0.9687 | 0.0419 | 0.0008 | 0.0006 |
| 5um - Adjusted P-Values - Tukey's multiple comparisons test | | | | | | | |
| 1.5 × 10⁴ vs. 1.5 × 10⁵ | 0.9999 | 0.8325 | 0.0393 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 1.5 × 10⁴ vs. 1.5 × 10⁶ | 0.9999 | 0.9871 | 0.0166 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 1.5 × 10⁴ vs. 1.5 × 10⁷ | 0.9999 | 0.9999 | 0.9965 | 0.5933 | 0.0001 | 0.0001 | 0.0001 |
| 1.5 × 10⁵ vs. 1.5 × 10⁶ | 0.9999 | 0.9559 | 0.9888 | 0.001 | 0.954 | 0.3727 | 0.0001 |
| 1.5 × 10⁵ vs. 1.5 × 10⁷ | 0.9999 | 0.8237 | 0.0222 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 1.5 × 10⁶ vs. 1.5 × 10⁷ | 0.9999 | 0.9851 | 0.0089 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| Polydisperse - Adjusted P-Values - Tukey's multiple comparisons test | | | | | | | |
| 1.5 × 10⁴ vs. 1.5 × 10⁵ | 0.9999 | 0.9999 | 0.9889 | 0.9512 | 0.1085 | 0.0004 | 0.0001 |
| 1.5 × 10⁴ vs. 1.5 × 10⁶ | 0.9999 | 0.9999 | 0.1979 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 1.5 × 10⁴ vs. 1.5 × 10⁷ | 0.9999 | 0.9999 | 0.9998 | 0.973 | 0.0001 | 0.0001 | 0.0001 |
| 1.5 × 10⁴ vs. 1.5 × 10⁸ | 0.9999 | 0.9999 | 0.9999 | 0.9994 | 0.0006 | 0.0001 | 0.0001 |
| 1.5 × 10⁵ vs. 1.5 × 10⁶ | 0.9999 | 0.9999 | 0.4434 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 1.5 × 10⁵ vs. 1.5 × 10⁷ | 0.9999 | 0.9999 | 0.998 | 0.9999 | 0.0099 | 0.0001 | 0.0001 |
| 1.5 × 10⁵ vs. 1.5 × 10⁸ | 0.9999 | 0.9999 | 0.9869 | 0.9875 | 0.4206 | 0.0066 | 0.0003 |
| 1.5 × 10⁶ vs. 1.5 × 10⁷ | 0.9999 | 0.9999 | 0.2726 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |

| | | | | | | | |
|---|--------|--------|--------|--------|--------|--------|--------|
| 1.5×10^6 vs. 1.5×10^8 | 0.9999 | 0.9999 | 0.1897 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| 1.5×10^7 vs. 1.5×10^8 | 0.9999 | 0.9999 | 0.9997 | 0.9952 | 0.4924 | 0.1623 | 0.003 |

Table S4. Statistical Analysis of BCD vs Number Concentration. Table shows the adjusted p-values obtained when performing a Tukey's multiple comparisons test. Test was conducted by comparing each number concentration value with itself at each distinct mechanical index and microbubble size distribution. P-values were rounded to four significant digits. Pink-Cyan color scale was used to represent range of P-values relative to each other (Pink is higher and Cyan is lower P-values).

| 2um - Adjusted P-Values - Tukey's multiple comparisons test | | | | | | | |
|---|------------------|--------|--------|--------|--------|--------|--------|
| Concentration Comparisons | Mechanical Index | | | | | | |
| | 0.01 | 0.10 | 0.20 | 0.40 | 0.60 | 0.80 | 1.00 |
| 1.5×10^5 vs. 1.5×10^6 | 0.9996 | 0.9918 | 0.998 | 0.9951 | 0.0449 | 0.0001 | 0.0001 |
| 1.5×10^5 vs. 1.5×10^7 | 0.9993 | 0.9999 | 0.9997 | 0.9918 | 0.0001 | 0.0001 | 0.0001 |
| 1.5×10^5 vs. 1.5×10^8 | 0.9993 | 0.9994 | 0.9898 | 0.9998 | 0.0001 | 0.0001 | 0.0001 |
| 1.5×10^6 vs. 1.5×10^7 | 0.9955 | 0.9942 | 0.9998 | 0.9999 | 0.0001 | 0.0001 | 0.0001 |
| 1.5×10^6 vs. 1.5×10^8 | 0.9956 | 0.9984 | 0.9992 | 0.9987 | 0.0001 | 0.0001 | 0.0001 |
| 1.5×10^7 vs. 1.5×10^8 | 0.9999 | 0.9998 | 0.9967 | 0.9971 | 0.0468 | 0.0001 | 0.0001 |
| 3um - Adjusted P-Values - Tukey's multiple comparisons test | | | | | | | |
| 1.5×10^4 vs. 1.5×10^5 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9989 | 0.9883 | 0.9964 |
| 1.5×10^4 vs. 1.5×10^6 | 0.9999 | 0.9999 | 0.9999 | 0.9883 | 0.003 | 0.0001 | 0.0001 |
| 1.5×10^4 vs. 1.5×10^7 | 0.9999 | 0.9999 | 0.9999 | 0.8936 | 0.0001 | 0.0001 | 0.0001 |
| 1.5×10^4 vs. 1.5×10^8 | 0.9999 | 0.9999 | 0.9999 | 0.9795 | 0.0002 | 0.0001 | 0.0001 |
| 1.5×10^5 vs. 1.5×10^6 | 0.9999 | 0.9999 | 0.9999 | 0.9917 | 0.0072 | 0.0001 | 0.0001 |
| 1.5×10^5 vs. 1.5×10^7 | 0.9999 | 0.9999 | 0.9999 | 0.9093 | 0.0001 | 0.0001 | 0.0001 |
| 1.5×10^5 vs. 1.5×10^8 | 0.9999 | 0.9999 | 0.9999 | 0.9847 | 0.0005 | 0.0001 | 0.0001 |
| 1.5×10^6 vs. 1.5×10^7 | 0.9999 | 0.9999 | 0.9999 | 0.9935 | 0.1688 | 0.0017 | 0.0001 |
| 1.5×10^6 vs. 1.5×10^8 | 0.9999 | 0.9999 | 0.9999 | 0.9999 | 0.9379 | 0.9991 | 0.9393 |
| 1.5×10^7 vs. 1.5×10^8 | 0.9999 | 0.9999 | 0.9999 | 0.9971 | 0.5777 | 0.0041 | 0.0001 |
| 5um - Adjusted P-Values - Tukey's multiple comparisons test | | | | | | | |
| 1.5×10^4 vs. 1.5×10^5 | 0.9988 | 0.9986 | 0.9999 | 0.9837 | 0.9867 | 0.9972 | 0.3051 |
| 1.5×10^4 vs. 1.5×10^6 | 0.9876 | 0.9999 | 0.9998 | 0.9146 | 0.0001 | 0.0001 | 0.0001 |
| 1.5×10^4 vs. 1.5×10^7 | 0.9953 | 0.9992 | 0.9999 | 0.5953 | 0.0001 | 0.0001 | 0.0001 |
| 1.5×10^5 vs. 1.5×10^6 | 0.9979 | 0.9991 | 0.9999 | 0.742 | 0.0001 | 0.0001 | 0.0001 |
| 1.5×10^5 vs. 1.5×10^7 | 0.9998 | 0.9999 | 0.9999 | 0.3762 | 0.0001 | 0.0001 | 0.0001 |
| 1.5×10^6 vs. 1.5×10^7 | 0.9997 | 0.9995 | 0.9999 | 0.9315 | 0.0177 | 0.2633 | 0.9915 |
| Polydisperse - Adjusted P-Values - Tukey's multiple comparisons test | | | | | | | |
| 1.5×10^4 vs. 1.5×10^5 | 0.9999 | 0.9999 | 0.9987 | 0.9999 | 0.7321 | 0.0427 | 0.0231 |
| 1.5×10^4 vs. 1.5×10^6 | 0.9986 | 0.9999 | 0.9999 | 0.3758 | 0.0001 | 0.0001 | 0.0001 |
| 1.5×10^4 vs. 1.5×10^7 | 0.9999 | 0.9999 | 0.9968 | 0.923 | 0.0001 | 0.0001 | 0.0001 |
| 1.5×10^4 vs. 1.5×10^8 | 0.9977 | 0.9988 | 0.9997 | 0.9707 | 0.0001 | 0.0001 | 0.0001 |
| 1.5×10^5 vs. 1.5×10^6 | 0.999 | 0.9999 | 0.999 | 0.4589 | 0.0001 | 0.0001 | 0.0001 |
| 1.5×10^5 vs. 1.5×10^7 | 0.9999 | 0.9999 | 0.9999 | 0.9595 | 0.0001 | 0.0001 | 0.0001 |
| 1.5×10^5 vs. 1.5×10^8 | 0.9983 | 0.997 | 0.9999 | 0.9885 | 0.0001 | 0.0001 | 0.0001 |
| 1.5×10^6 vs. 1.5×10^7 | 0.9994 | 0.9999 | 0.9974 | 0.8625 | 0.9755 | 0.0038 | 0.0189 |
| 1.5×10^6 vs. 1.5×10^8 | 0.9999 | 0.9988 | 0.9998 | 0.7625 | 0.4798 | 0.0911 | 0.0001 |
| 1.5×10^7 vs. 1.5×10^8 | 0.9988 | 0.9995 | 0.9999 | 0.9997 | 0.1774 | 0.0001 | 0.0001 |