Table S1 Physical properties of water and oils used in this experiment.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Molecular　weight  (g mol-1) | Molar volume  (×106 m3 mol-1) | Density  (g cm-3) | Viscosity  (mPa s) | Interfacial tension  (mN m-1) | Hildebrand solubility parameter **‡  ((J m-3)1/2×10-3) | ‡ |
| Water | 18.02 | 18.07 | 0.99705 | 0.7973 | 72 | 53.67 | - |
| Hexane | 86.18 | 130.52 | 0.6633 | 0.29 | 50.8 | 24.24 | 29.43 |
| Octane | 114.29 | 162.67 | 0.7056 | 0.48 | 51.68 | 23.56 | 30.10 |
| Decane | 142.29 | 194.92 | 0.733 | 0.835 | 52.78 | 23.00 | 30.66 |
| Dodecane | 170.34 | 226.79 | 0.7541 | 1.257 | 52.78 | 22.53 | 31.14 |
| Tetradecane | 198.39 | 260.22 | 0.7654 | 1.783 | 53.32 | 22.13 | 31.53 |
| Hexadecane | 226.45 | 292.80 | 0.7764 | 2.571 | 53.77 | 21.79 | 31.87 |
| Oleic acid | 282.47 | 316.32 | 0.893 | 27.7 | 14.4 | 12.56 | 41.06 |
| Linoleic acid | 280.45 | 310.23 | 0.916 | 18.7 | 13.8 | 12.43 | 41.24 |
| Soybean oil | 871.58† | 947.37 | 0.922 | 50.4 | 22.3 | 1.15 | 52.51 |
| Olive oil | 866.54† | 950.15 | 0.912 | 64.2 | 21.8 | 1.14 | 52.53 |

† Average molecular weight ‡ Calculated from eq.7 and eq. 8

(7)

(8)