| | Ultrasonic power | | | | |
|---|---|---|---|---|---|
| | 100W | 200W | 300W | 400W | 500W |
| 1 | 128. 36 | 135. 19 | 116. 18 | 62. 25 | 41. 08 |
| 2 | 126. 41 | 129. 53 | 117. 44 | 61. 47 | 41. 29 |
| 3 | 127. 37 | 132. 51 | 116. 81 | 61. 86 | 41. 98 |

**Table S1 Raw data on ultrasound power**

**ANOVA**

Ferritin extraction

| | | | square sum | degrees of freedom | mean square | F | significance |
|---|---|---|---|---|---|---|---|
| interclass | (Combined) | | 20654.06724 | 4 | 5163.517 | 1432.098 | 0.000 |
| | linear term | compare | 17628.78243 | 1 | 17628.782 | 4889.333 | 0.000 |
| | | deviation | 3025.28481 | 3 | 1008.428 | 279.687 | 0.000 |
| | Quadratic term | compare | 1744.59705 | 1 | 1744.597 | 483.863 | 0.000 |
| | | deviation | 1280.68776 | 2 | 640.344 | 177.599 | 0.000 |
| | cubic term | compare | 913.119 | 1 | 913.119 | 253.253 | 0.000 |
| | | deviation | 367.569 | 1 | 367.569 | 101.945 | 0.000 |
| | Fourth-order term | compare | 367.569 | 1 | 367.569 | 101.945 | 0.000 |
| | intra-class | | 36.056 | 10 | 3.606 | | |
| | Total | | 20690.12284 | 14 | | | |

**Table S2 ANOVA experimental analysis of ultrasound power**

| Ferritin extraction | | | | | | | |
|---|---|---|---|---|---|---|---|
| Ultrasound power | | Number of cases | Subset of Alpha = 0.05 | | | | |
| | | | 1 | 2 | 3 | 4 | 5 |
| Duncana | 500 | 3 | 41.45 | | | | |
| | 400 | 3 | | 61.86 | | | |
| | 300 | 3 | | | 116.81 | | |
| | 100 | 3 | | | | 127.38 | |
| | 200 | 3 | | | | | 132.41 |
| | significance | | 1 | 1 | 1 | 1 | 1 |
| Waller Duncana,b | 500 | 3 | 41.45 | | | | |
| | 400 | 3 | | 61.86 | | | |
| | 300 | 3 | | | 116.81 | | |
| | 100 | 3 | | | | 127.38 | |
| | 200 | 3 | | | | | 132.41 |
| The mean of each group in the chi-subset will be shown. | | | | | | | |
| a Using the reconciled mean sample size = 3.000. | | | | | | | |
| b Type I/II error severity ratio = 100. | | | | | | | |

**Table S3 Duncan and Waller Duncan tests for ultrasonic power**

| | Solid-liquid ratio | | | | |
|---|---|---|---|---|---|
| | 1：2 | 1：3 | 1：4 | 1：5 | 1：6 |
| 1 | 103.03 | 137.95 | 137.95 | 136.73 | 109.78 |
| 2 | 104.73 | 141.29 | 141.29 | 133.54 | 112.20 |
| 3 | 105.89 | 139.14 | 139.14 | 137.22 | 111.26 |

**Table S4 Raw data for solid-liquid ratio**

**ANOVA**

Ferritin extraction

| | | | square sum | degrees of freedom | mean square | F | significance |
|---|---|---|---|---|---|---|---|
| interclass | (Combined) | | 3155.91 | 4 | 788.977 | 384.513 | 0.000 |
| | linear term | compare | 26.696 | 1 | 26.696 | 13.011 | 0.005 |
| | | deviation | 3129.213 | 3 | 1043.071 | 508.347 | 0.000 |
| | Quadratic term | compare | 2853.347 | 1 | 2853.347 | 1390.597 | 0.000 |
| | | deviation | 275.866 | 2 | 137.933 | 67.222 | 0.000 |
| | cubic term | compare | 56.994 | 1 | 56.994 | 27.776 | 0.000 |
| | | deviation | 218.872 | 1 | 218.872 | 106.669 | 0.000 |
| | Fourth-order term | compare | 218.872 | 1 | 2218.872 | 106.669 | 0.000 |
| intra-class | | | 20.519 | 10 | 2.052 | | |
| Total | | | 3176.428 | 14 | | | |

**Table S5 ANOVA experimental analysis of solid-liquid ratio**

| Ferritin extraction | | | | | | |
|---|---|---|---|---|---|---|
| solid-liquid ratio | | Number of cases | | Subset of Alpha = 0.05 | | |
| | | | 1 | 2 | 3 | 4 |
| Duncan's test | 2 | 3 | 104.55 | | | |
| | 6 | 3 | | 111.08 | | |
| | 4 | 3 | | | 135.7 | |
| | 5 | 3 | | | 135.8 | |
| | 3 | 3 | | | | 139.46 |
| | significance | | 1 | 1 | 0.898 | 1 |
| Waller-Duncan test | 2 | 3 | 104.55 | | | |
| | 6 | 3 | | 111.08 | | |
| | 4 | 3 | | | 135.7 | |
| | 5 | 3 | | | 135.8 | |
| | 3 | 3 | | | | 139.46 |
| The mean of each group in the chi-subset will be shown. | | | | | | |
| a Using the reconciled mean sample size = 3.000. | | | | | | |
| b Type I/II error severity ratio = 100. | | | | | | |

**Table S6 Duncan and Waller Duncan tests for solid-liquid ratio**

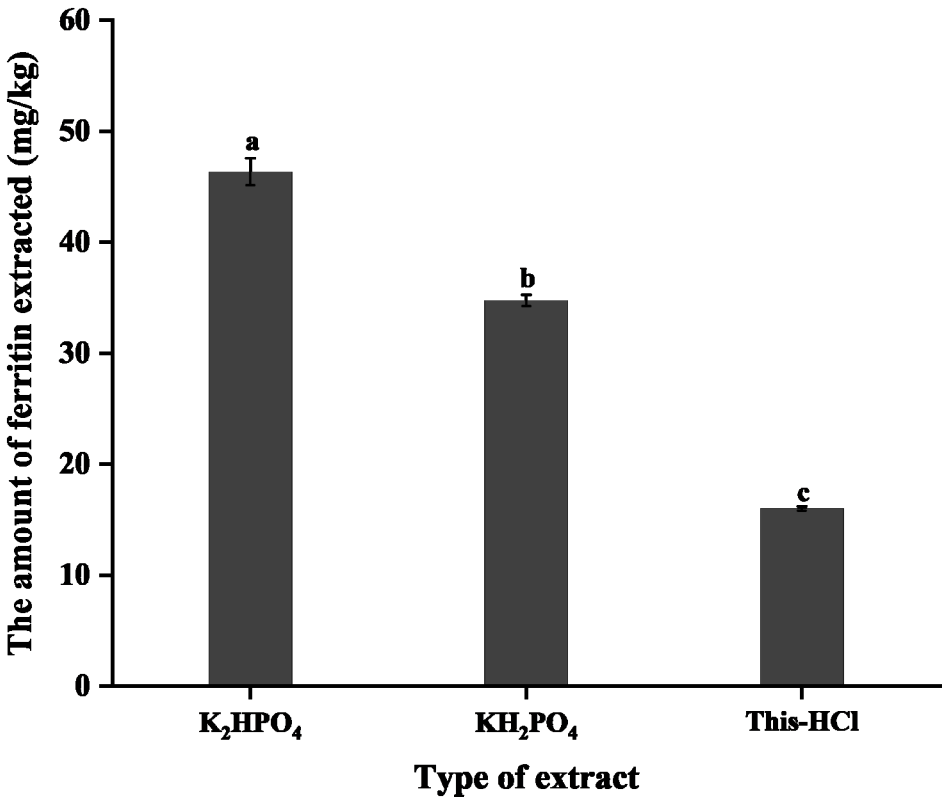


**Figure S1** Effect of different buffer types on the amount of ferritin extracted (without the addition of the sonication method)

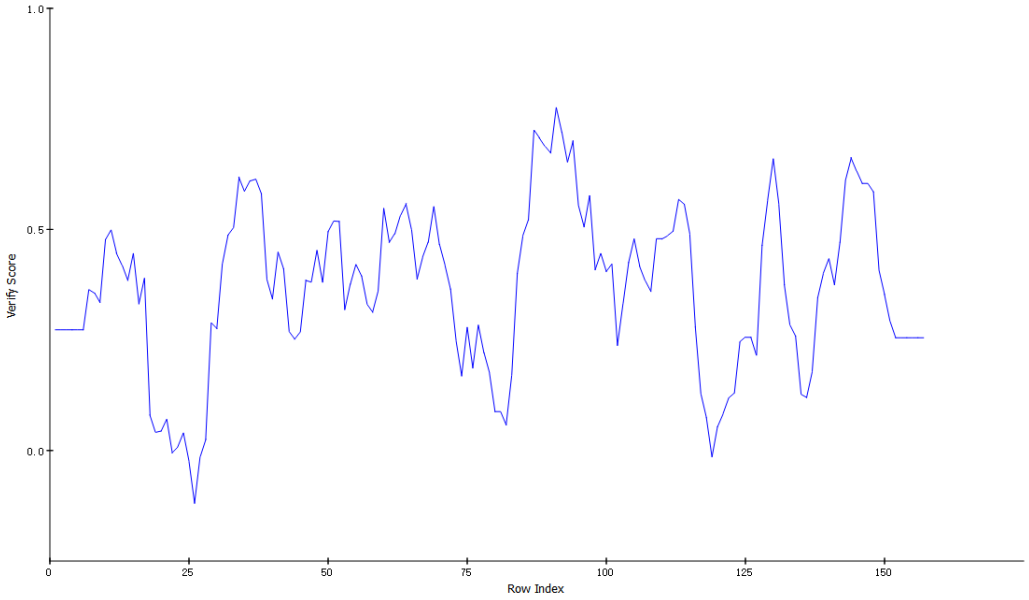


**Figure S2** The verify-3D plot of NPLF

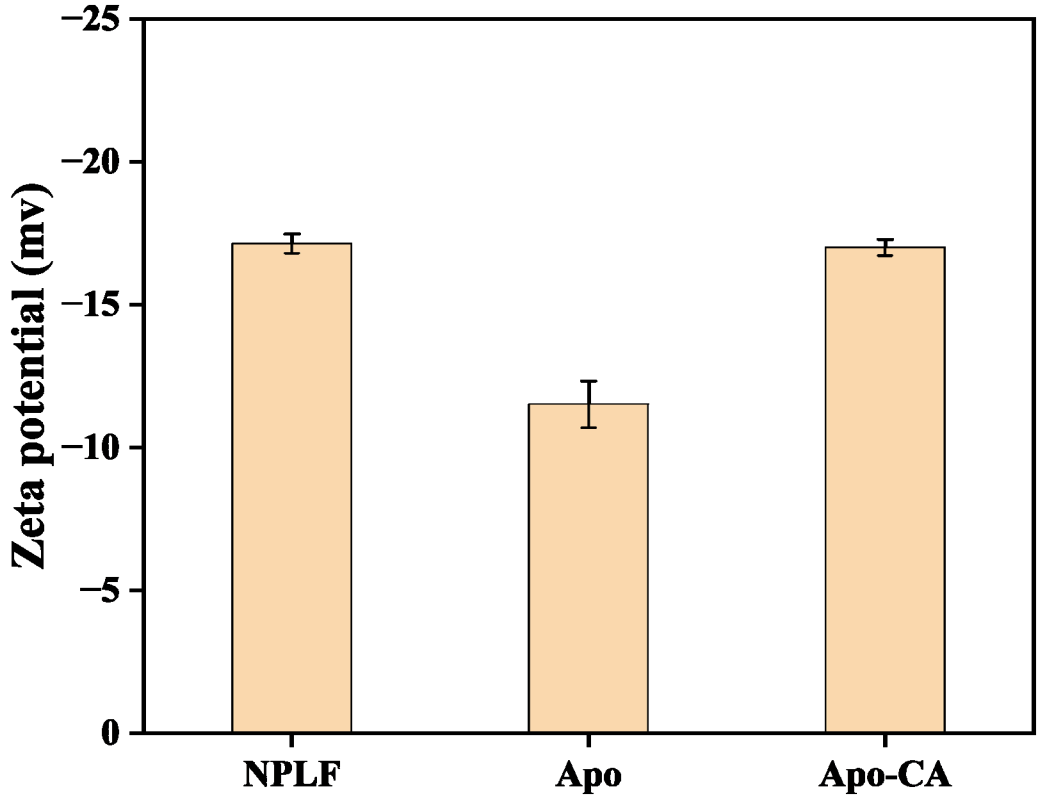


**Figure S3** Zeta potential analysis of different samples (NPLF, Apo, Apo-CA)