**Table S6** ANOVA for quadratic model and fit statistics for various responses

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ANOVA: Vesicle Size (Y1) | | | | | | |
| Source | Sum of Squares | df | Mean Square | F-value | p-value |  |
| Model | 34089.46 | 9 | 3787.72 | 417.79 | <0.0001 | significant |
| X1 | 30509.87 | 1 | 30509.87 | 3365.29 | <0.0001 |  |
| X2 | 1868.03 | 1 | 1868.03 | 206.05 | <0.0001 |  |
| X3 | 871.83 | 1 | 871.83 | 96.16 | <0.0001 |  |
| X1 X2 | 75.56 | 1 | 75.56 | 8.33 | 0.0162 |  |
| X1 X3 | 189.99 | 1 | 189.99 | 20.96 | 0.0010 |  |
| X2 X3 | 54.18 | 1 | 54.18 | 5.98 | 0.0346 |  |
| X1² | 83.96 | 1 | 83.96 | 9.26 | 0.0124 |  |
| X2² | 317.52 | 1 | 317.52 | 35.02 | 0.0001 |  |
| X3² | 209.20 | 1 | 209.20 | 23.07 | 0.0007 |  |
| Residual | 90.66 | 10 | 9.07 |  |  |  |
| Lack of Fit | 35.74 | 5 | 7.15 | 0.6507 | 0.6756 | not significant |
| Pure Error | 54.92 | 5 | 10.98 |  |  |  |
| Cor Total | 34180.12 | 19 |  |  |  |  |
| Fit statistics | | | | | | |
| Standard deviation (SD) | Mean | C.V (%) | R2 | Adjusted R2 | Predicted R2 | Adequate precision |
| 3.01 | 156.78 | 1.92 | 0.9973 | 0.9950 | 0.9892 | 74.6713 |
| ANOVA: Entrapment Efficiency (Y2) | | | | | | |
| Source | Sum of Squares | df | Mean Square | F-value | p-value |  |
| Model | 3877.68 | 9 | 430.85 | 281.11 | <0.0001 | significant |
| X1 | 1386.66 | 1 | 1386.66 | 904.71 | <0.0001 |  |
| X2 | 601.21 | 1 | 601.21 | 392.25 | <0.0001 |  |
| X3 | 595.62 | 1 | 595.62 | 388.61 | <0.0001 |  |
| X1 X2 | 895.70 | 1 | 895.70 | 584.39 | <0.0001 |  |
| X1 X3 | 13.23 | 1 | 13.23 | 8.63 | 0.0148 |  |
| X2 X3 | 180.60 | 1 | 180.60 | 117.83 | <0.0001 |  |
| X1² | 163.59 | 1 | 163.59 | 106.74 | <0.0001 |  |
| X2² | 8.14 | 1 | 8.14 | 5.31 | 0.0439 |  |
| X3² | 22.45 | 1 | 22.45 | 14.65 | 0.0033 |  |
| Residual | 15.33 | 10 | 1.53 |  |  |  |
| Lack of Fit | 6.00 | 5 | 1.20 | 0.6439 | 0.6796 | not significant |
| Pure Error | 9.32 | 5 | 1.86 |  |  |  |
| Cor Total | 3893.01 | 19 |  |  |  |  |
| Fit statistics | | | | | | |
| Standard deviation (SD) | Mean | C.V (%) | R2 | Adjusted R2 | Predicted R2 | Adequate precision |
| 1.24 | 62.77 | 1.97 | 0.9961 | 0.9925 | 0.9847 | 61.7251 |
| ANOVA: Flexibility (Y3) | | | | | | |
| Source | Sum of Squares | df | Mean Square | F-value | p-value |  |
| Model | 311.47 | 9 | 34.61 | 89.28 | <0.0001 | significant |
| X1 | 68.42 | 1 | 68.42 | 176.51 | <0.0001 |  |
| X2 | 2.41 | 1 | 2.41 | 6.23 | 0.0317 |  |
| X3 | 2.44 | 1 | 2.44 | 6.29 | 0.0310 |  |
| X1 X2 | 93.89 | 1 | 93.89 | 242.20 | <0.0001 |  |
| X1 X3 | 8.83 | 1 | 8.83 | 22.79 | 0.0008 |  |
| X2 X3 | 8.27 | 1 | 8.27 | 21.33 | 0.0010 |  |
| X1² | 87.84 | 1 | 87.84 | 226.61 | <0.0001 |  |
| X2² | 41.93 | 1 | 41.93 | 108.17 | <0.0001 |  |
| X3² | 2.03 | 1 | 2.03 | 5.25 | 0.0449 |  |
| Residual | 3.88 | 10 | 0.3876 |  |  |  |
| Lack of Fit | 2.73 | 5 | 0.5466 | 2.39 | 0.1805 | not significant |
| Pure Error | 1.14 | 5 | 0.2287 |  |  |  |
| Cor Total |  |  |  |  |  |  |
| Fit statistics | | | | | | |
| Standard deviation (SD) | Mean | C.V (%) | R2 | Adjusted R2 | Predicted R2 | Adequate precision |
| 0.6226 | 13.77 | 4.52 | 0.9877 | 0.9766 | 0.9275 | 30.6408 |