



**Figure S1.** Linear correlation plots (a,b) between predicted and actual values and (c,d) the corresponding residual plots for different responses.

**Table S1.** Results of statistical analysis of all dependent variables  $Y_1$  and  $Y_2$ .

Source	$Y_1$		$Y_2$	
	F-value	p-value	F-value	p-value
Model	480.16	< 0.0001*	563.56	< 0.0001*
X <sub>1</sub> : Lipid concentration (%)	1665.44	< 0.0001*	496.11	< 0.0001*
X <sub>2</sub> : Edge activator, SDC (%)	306.81	< 0.0001*	851.82	< 0.0001*
X <sub>3</sub> : Surfactant concentration, Span 60 (%)	50.58	0.0009*	1272.61	< 0.0001*
Lack of Fit	3.81	0.2150	0.4224	0.7584
R <sup>2</sup> analysis				
R <sup>2</sup>	0.9988		0.9990	
Adjusted R <sup>2</sup>	0.9968		0.9972	
Predicted R <sup>2</sup>	0.9839		0.9925	
Adequate Precision	86.2734		90.6236	

X<sub>1</sub>- Lipid concentration (%); X<sub>2</sub>- edge activator (SDC) concentration (%); X<sub>3</sub>- surfactant concentration (%);  $Y_1$ , EE (%);  $Y_2$ , particle size (nm); \*, significant.