

Performance of a Batch Operation Microbial Fuel Cell (MFC) with Cobalt Micronutrient Addition Based on Kinetic Models

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SUPPORTING INFORMATION (SI, DOI: <https://doi.org/10.9767/bcrec.20259>)

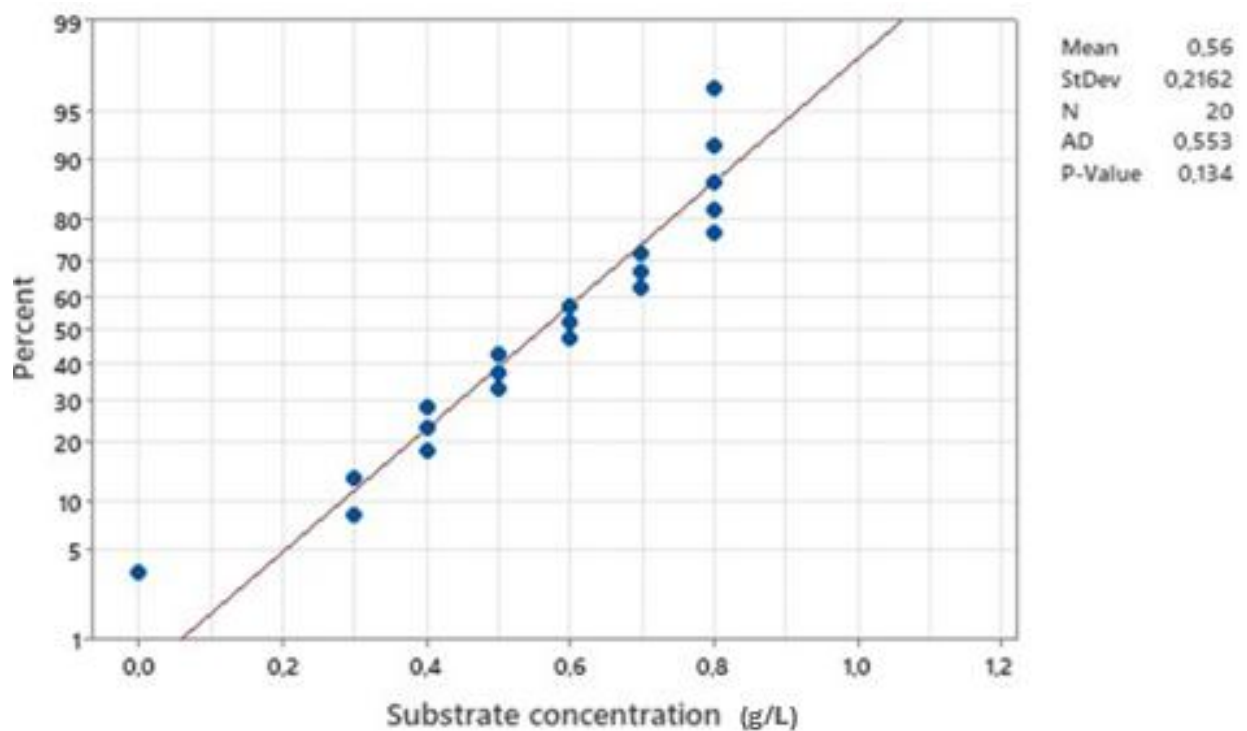


Figure S1. Probability plot of substrate concentration (g/L)

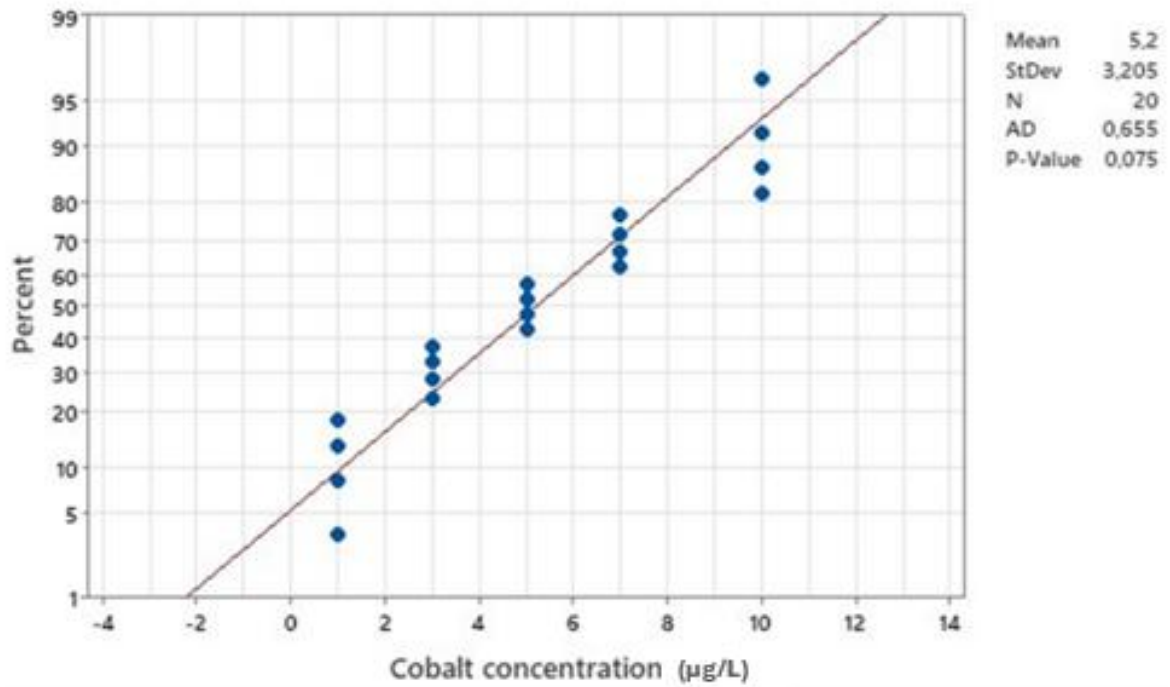


Figure S2. Probability plot of cobalt concentration(µg/L)

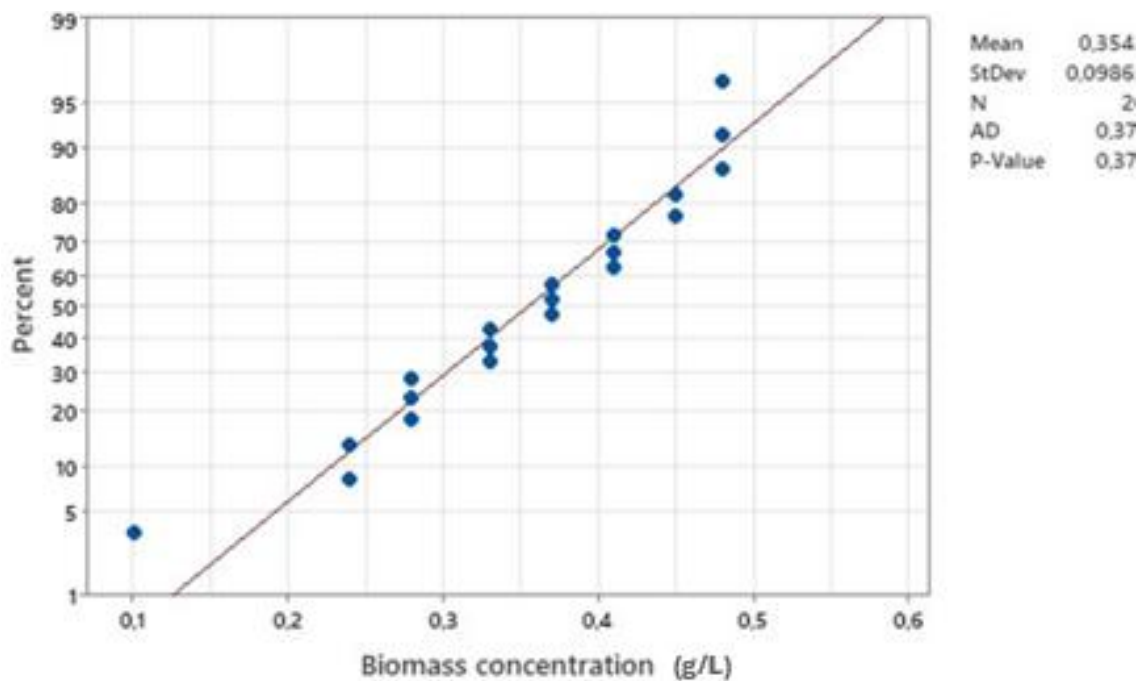


Figure S3. Probability plot of biomass concentration (g/L)

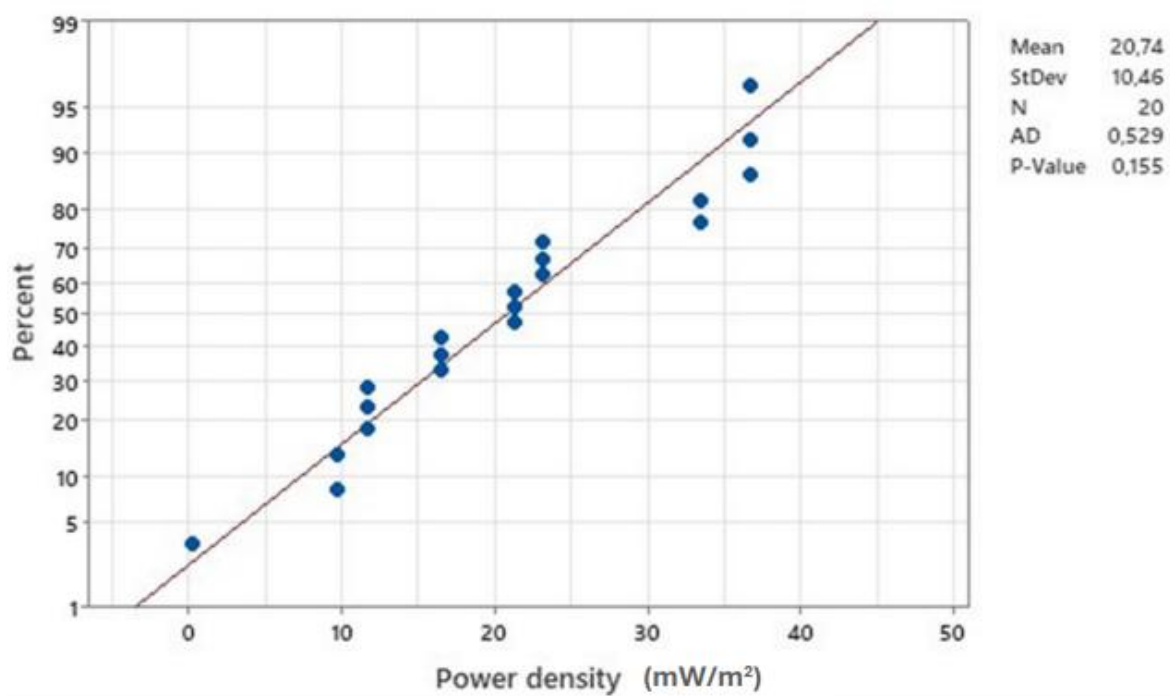


Figure S4. Probability plot of power density (mW/m²)

Table S1. Result of analysis of variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Factor	3	5546	1848.81	61.71	0
Error	76	2277	29.96		
Total	79	7823			

Table S2. Tukey simultaneous tests for differences of means

Difference of Levels	Difference of Means	SE Difference	95% CI	T-Value	Adjusted P-Value
Cobalt conce – Substrate co	4.64	1.73	(0.09; 9.19)	2.68	0.044
Biomass conc-substrate co	-0.21	1.73	(-4.76; 4.35)	-0.12	0.999
Power densit-substrate co	20.18	1.73	(15.63; 24.73)	11.66	0
Biomass conc – Cobalt conce	-4.85	1.73	(-9.40;-0.29)	-2.80	0.032
Power densit – cobalt conce	15.54	1.73	(10.99; 20.09)	8.98	0
Power densit – biomass conc	20.39	1.73	15.83; 24.94)	11.78	0

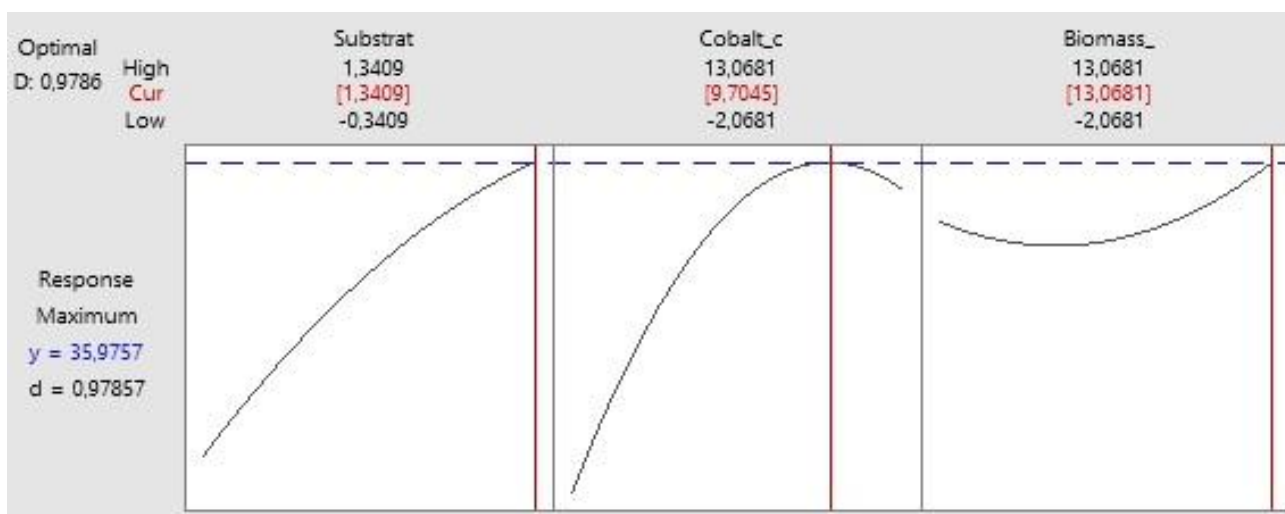


Figure S5. Result of ANOVA and the optimal condition for the best power density

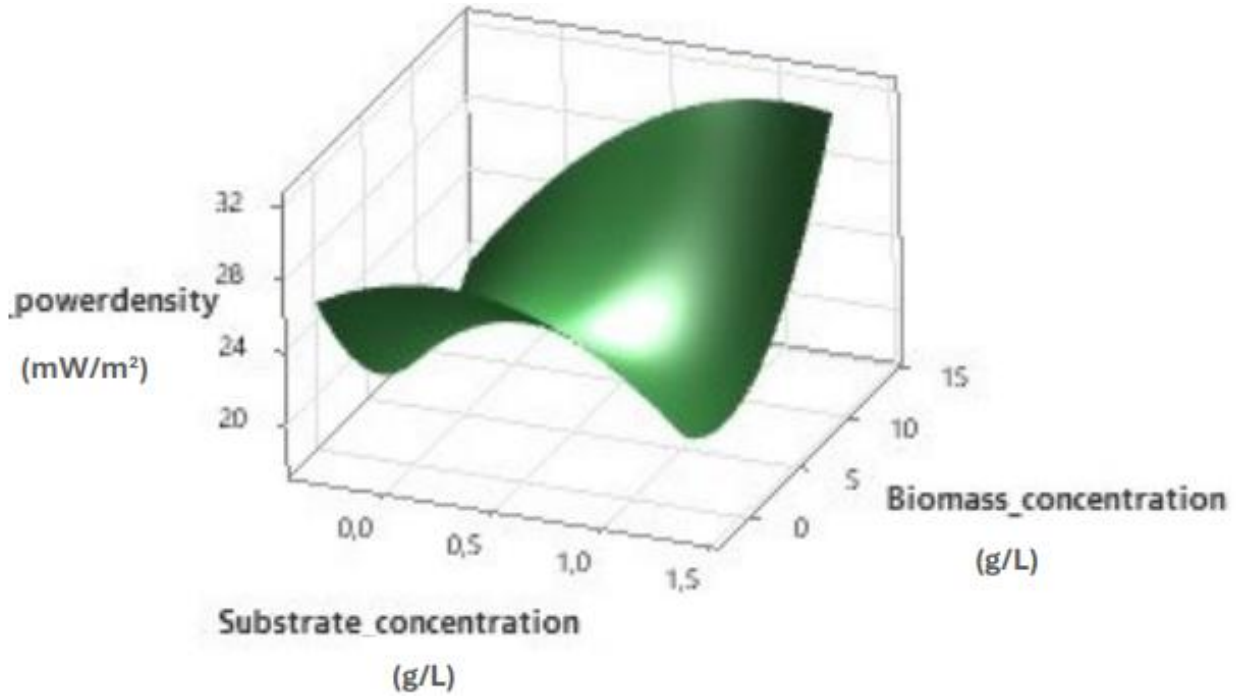


Figure S6. Three-dimensional response surface method by substrate and biomass concentration variables

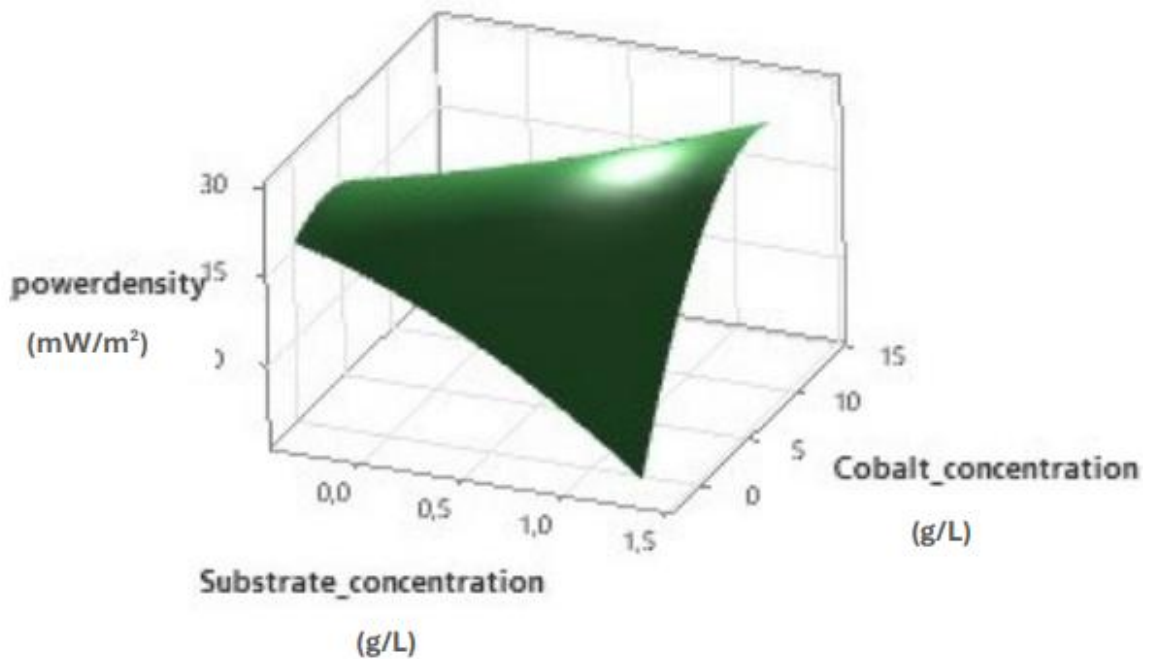


Figure S7. Three-dimensional response surface method by substrate and cobalt concentration variables

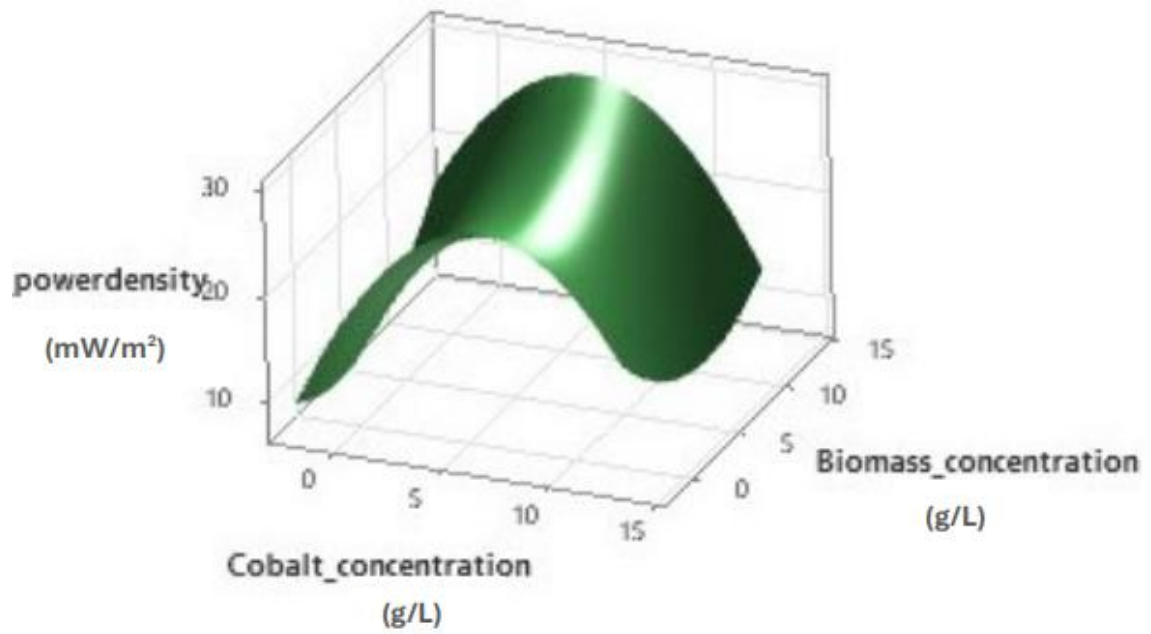


Figure S8. Three-dimensional response surface method by biomass and cobalt concentration variables

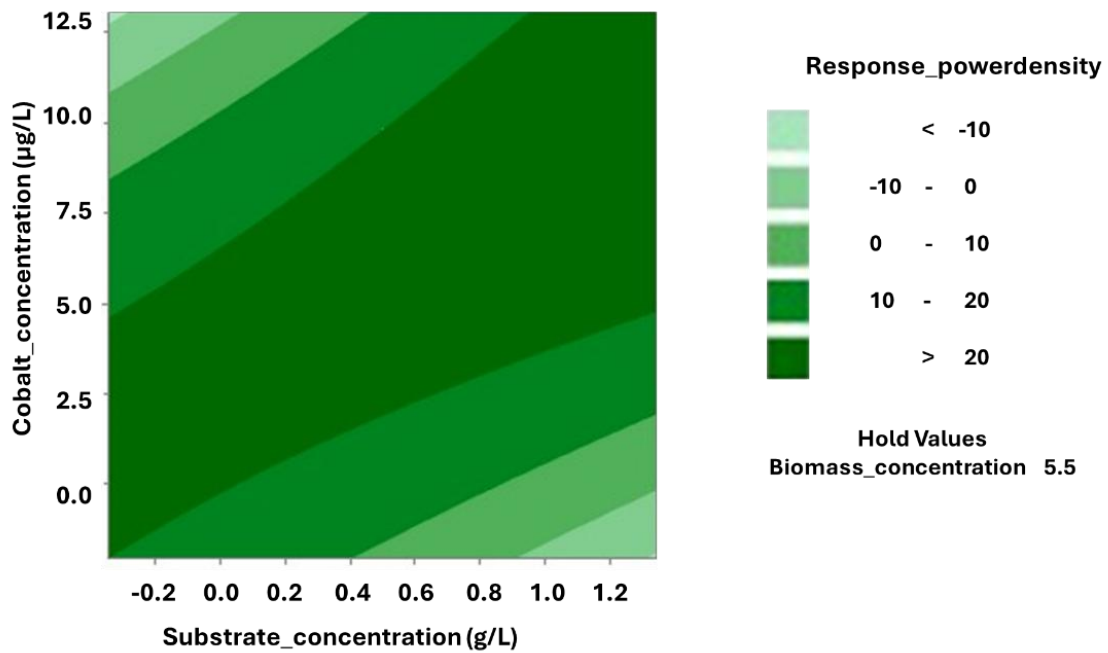


Figure S9. Contour profile by substrate and cobalt concentration variables

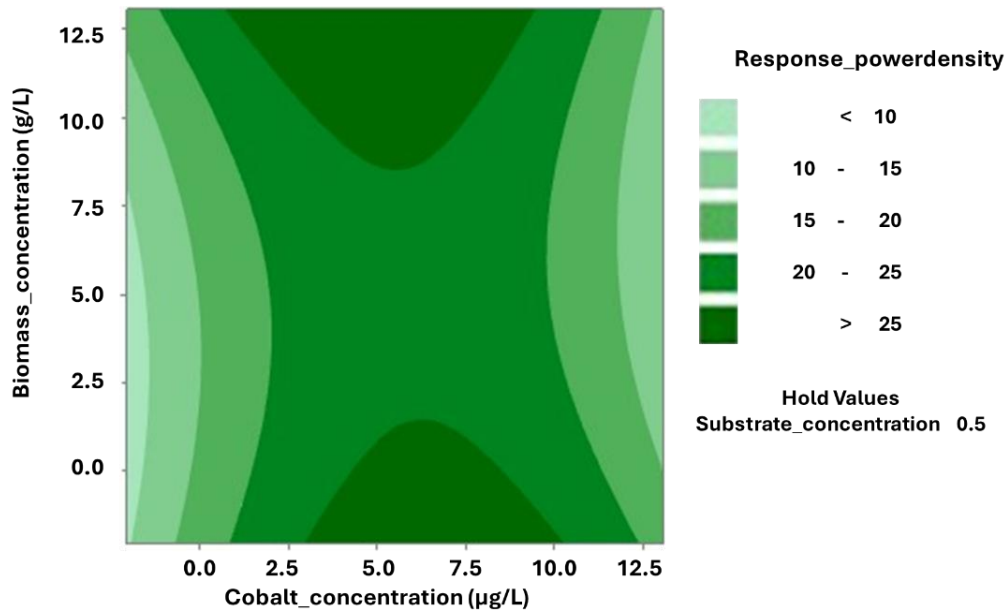


Figure S10. Contour profile by biomass and cobalt concentration variables

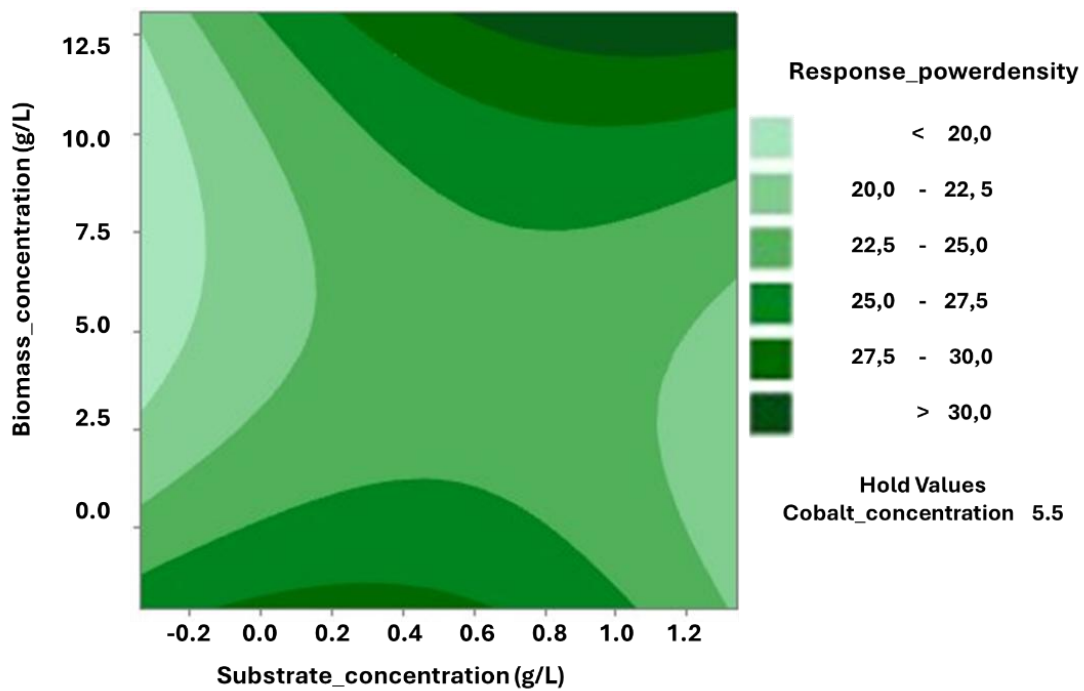


Figure S11. Contour profile by substrate and biomass concentration variables

Factor Coding: Actual

Response: Power density (W/m²)

Design Points:

● Above Surface

○ Below Surface

0,16  36,76

Actual Factor:

C = 0,29

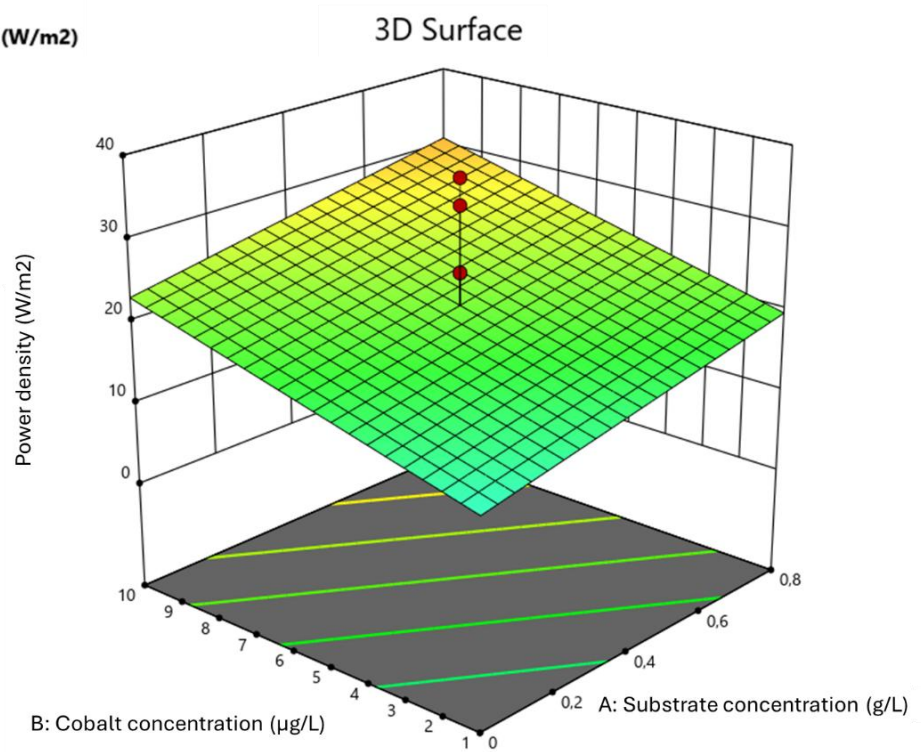


Figure S12. Three-dimensional response surface method by substrate and cobalt concentration variables