

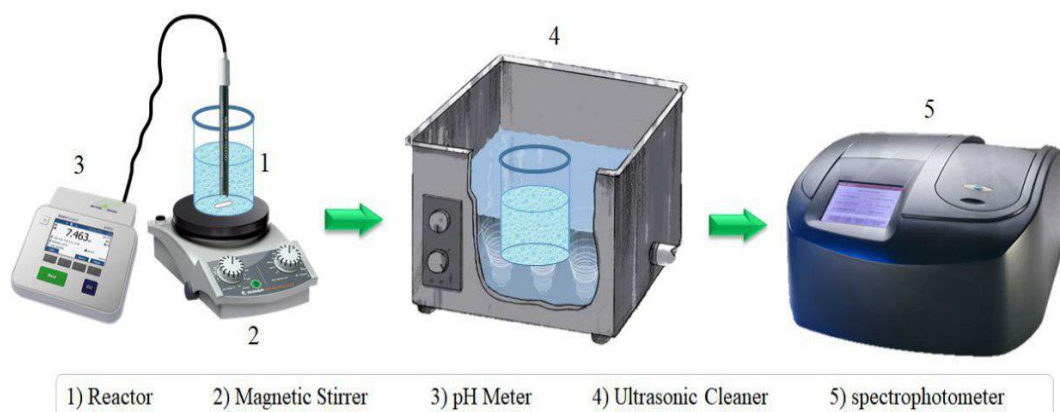


Figure S1: Schematic of the process used in this study

Table S1. Independent variables and their levels for the CCD.

Independent variables	Unit	Symbols	Level of factors				
			-1	-0.5	0	0.5	1
pH	-	X ₁	4	5	6	7	8
Time	min	X ₂	15	30	45	60	75
Catalyst dose	g/l	X ₃	100	200	300	400	500
Nitrate concentration	mg	X ₄	100	200	300	400	500
Number of Coliform	MPN	X ₅	20	40	60	80	100

Table S2. CCD with experimental and predicted values.

Run	Independent variables					NO ₃ Removal efficiency (%)		Coliform Removal efficiency (%)	
	X ₁	X ₂	X ₃	X ₄	X ₅	Experimental	RSM Prediction	Experimental	RSM Prediction
1	6	45	300	300	60	61	61.24	71	79.52
2	4	75	100	100	20	84	76.85	90	82.07
3	6	45	300	200	60	57	58.48	74	78.01
4	6	45	300	300	60	61	61.24	84	79.52
5	6	45	300	300	60	61	61.24	84	79.52
6	6	45	300	300	60	60	61.24	84	79.52
7	8	75	500	100	20	78	87	84	79.30
8	6	60	300	300	60	72	67.70	88	84.92
9	4	15	500	500	20	43	42.50	54	58.87
10	6	45	300	400	60	53	50.70	90	81.03
11	4	75	100	500	20	72	79.16	88	88.10
12	5	45	300	300	60	68	72.68	80	78.30
13	6	45	300	300	60	61	61.24	80	79.52
14	8	75	100	500	100	67	65.51	96	106.20

15	6	45	200	300	60		51	55.90	90	81.43
16	4	15	500	100	20		58	59.69	54	52.84
17	4	15	100	100	100		55	62.14	70	73.70
18	8	75	500	100	100		78	88.97	90	92.54
19	8	15	500	100	20		84	74.70	60	57.70
20	4	15	100	500	20		50	42.48	70	66.50
21	7	45	300	300	60		78	72.50	90	80.74
22	4	15	100	100	20		55	59.55	55	60.47
23	6	45	300	300	40		61	61.07	70	76.21
24	6	45	300	300	60		61	61.24	84	79.52
25	8	75	500	500	100		82	74.90	95	98.57
26	6	30	300	300	60		52	55.48	80	74.12
27	8	15	100	100	100		71	70.40	73	78.57
28	4	15	500	100	100		58	62.16	66	66.07
29	8	15	100	500	100		36	37.08	86	84.60
30	4	75	100	500	100		72	81.25	96	101.34
31	8	15	500	500	100		34	43.35	81	76.97
32	8	15	500	500	20		34	41.63	60	63.74
33	6	45	300	300	60		60	61.24	84	79.52
34	8	75	100	100	20		77	77.36	92	86.94
35	4	75	500	500	20		81	82.30	83	80.47
36	8	75	500	500	20		81	73.31	79	85.34
37	4	75	500	100	100		87	82.47	88	87.67
38	8	75	100	500	20		65	63.79	87	92.97
39	6	45	300	300	60		61	61.24	84	79.52
40	6	45	400	300	60		64	58.28	76	77.61
41	4	75	500	500	100		83	84.27	96	93.70
42	4	75	100	100	100		86	79.32	96	95.30
43	8	75	100	100	100		80	79.45	96	100.17
44	6	45	300	300	80		63	62.11	90	82.83
45	4	15	500	500	100		47	44.59	64	72.10
46	8	15	500	100	100		87	76.79	74	70.94
47	8	15	100	100	20		67	68.18	64	65.34
48	8	15	100	500	20		34	35.23	77	71.37
49	4	15	100	500	100		54	44.70	80	79.74
50	4	75	500	100	20		81	80.12	70	74.44