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## SUPPLEMENTARY MATERIAL TO

## Treatment of sugar industry effluent using an electrocoagulation process: Process optimization using the response surface methodology

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No.	Parameter	Sahu <i>et al</i> . <sup>8</sup>	Kolhe <i>et al.</i> <sup>3</sup>	Present study
1	pH	5.5	6.5-8.8	4.85
2	<i>BOD</i> , mg dm <sup>-3</sup>	-	300-2500	-
3	COD, mg dm <sup>-3</sup>	3682	1500-2800	3200
4	Dissolved Oxygen (DO), mg dm <sup>-3</sup>	-	0-2.0	-
5	Total Solid (TS), mg dm <sup>-3</sup>	1987	870-2000	2240
6	TDS, mg dm <sup>-3</sup>	1447	400-1650	1436
7	Suspended Solid (SS), mg dm <sup>-3</sup>	540	220-800	804
8	Content of Cl, mg dm <sup>-3</sup>	50	18-40	225
9	Content of S, mg dm <sup>-3</sup>	-	40-70	37.5
10	Content of oil and grease, mg dm <sup>-3</sup>	-	60-100	-
11	Content of phosphate, mg dm <sup>-3</sup>	5.9	-	0.73
12	Content of protein, mg dm <sup>-3</sup>	43	-	-

TABLE S-I. Parameters of sugar industry wastewater

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TABLE S-II. Reactor and electrode specification

No.	Reactor	Specification	
1	The material from which is made	perspex glass	
2	Volume, dm <sup>3</sup>	1.72	
3	Electrode gap, mm	25	
4	No. of electrode	4	
5	Mode of operation	batch	
6	Stirring mechanism (length × diameter, mm)	magnetic bar $(25 \times 5)$	
7	Mixing/reaction time, min	50-100	
	Electrodes		
8	Anode and cathode material	iron	
9	Shape	rectangular	
10	Size of each plate, mm	85×120	
11	Thickness, mm	2	
12	Effective size (L×H, mm)	85×80	
13	Plate arrangement	parallel	

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 $\begin{tabular}{|c|c|c|c|c|} \hline COD \ removal, \% \\ \hline & < 30 \\ \hline & 30 - 40 \\ \hline & 40 \\ \hline & 40 - 50 \\ \hline & 50 - 60 \\ \hline & 50 - 60 \\ \hline & 60 - 70 \\ \hline & > 70 \\ \hline \end{tabular}$ 100 Hold Values 90  $j = 69.58 \,\mathrm{A} \,\mathrm{m}^{-2}$ 80 -COD removal, % 70 -Hold Values  $j = 69.58 \text{ A m}^{-2}$ COD removal, % 60 60 -50 -40 90 min 40 -20 Time, 60 30 -30 6.0 7.5 20+ 5 9.0 pН 6 7 pH 8 Hold Values pH = 7 100 -COD removal, % < 40</li>
40 - 50
50 - 60
60 - 70
> 70 90-80-COD removal, % Hold Values pH = 7 70 60 50 70-Time, min 60 **50** · 40 90 Time, min 60 40 40 30 60 30-80 100 *j*/ A m<sup>-2</sup> 20-70 80 *j*/ A m<sup>-2</sup> 40 50 60 90 100 ¢  $\begin{tabular}{|c|c|c|c|c|} \hline COD \ removal, \ \% \\ \hline & < 35 \\ \hline & 35 - 40 \\ 40 - 45 \\ \hline & 45 - 50 \\ \hline & 55 - 50 \\ \hline & 55 - 60 \\ \hline & > 60 \\ \hline \end{tabular}$ Hold Values Time = 60 min 8 COD removal, % 60 50 40 pН 7 Hold Values Time = 60 min 9.0 <sup>7.5</sup> pH 30 6.0 6 40 60 <sup>60</sup>80 *j*/ A m<sup>-2</sup> 100 5 60 70 *j/* A m<sup>-2</sup> 40 50 80 90 100

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Fig. S-1. Three dimensional response surface graphs for *COD* removal in the EC treatment of SIE.

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