

**Supporting materials for**

**Oily Bilge Water Treatment Using DC/AC Powered Electrocoagulation**

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**Table S1 Constituents of synthetic bilge water**

Components	Recipe
Mixed oil (1000 mg/L)	50% Diesel Fuel Marine (MIL-PRF-16884K) 25% 2190 TEP Steam Lube Oil (MIL-PRF-17331H(3)) 25% 9250 Diesel Lube Oil (MIL-PRF-9000H)
Mixed detergent (100 mg/L)	50% Type 1 general purpose detergent (MIL-D-16791G) 25% commercial detergent Tide Ultra (liquid) 25% degreasing solvent (MIL-PRF-680, Type III)
Particulates (500 mg/L)	Arizona test dust (ISO 12103-A4/A2), 50% coarse, 50% fine
Sea salt (15000 mg/L)	ASTM D1141-52

**Table S2** Removal efficiency and removal rate during the first 5 min treatment.

<b>Current Density (mA/cm<sup>2</sup>)</b>	<b>3.6</b>	<b>7.1</b>	<b>10.7</b>
Removal efficiency (%)	58.1±2.1	90.1±1.6	96.5±0.1
Removal rate (mg/L/min)	98.3±9.3	153±6.0	164.7±8.5

**Table S3** Zeta potential of synthetic bilge water solution.

<b>Salt concentration (g/L)</b>	<b>Zeta (mV)</b>
0	-23.8
1	-22.8
5	-12.1
10	-10.4
15	-9.7
20	-8.1
25	-6.7

**Table S4** Element weight analysis for long-term used electrode

<b>Element weight (%)</b>	<b>Mg</b>	<b>Al</b>	<b>Ca</b>	<b>C</b>	<b>O</b>
New electrode	N.A.	67.41	N.A.	28.12	4.46
		±0.35		±1.86	±0.38
Anode	0.10	33.07	0.10	19.82	46.9
	±0.08	±0.30	±0.05	±1.47	±0.58
Cathode	4.61	34.54	1.33	10.34	49.18
	±0.27	±0.46	±0.21	±2.03	±0.69