Supporting Information

Assessment of 2,2-dibromo-3-nitrilopropionamide biocide enhanced by D-tyrosine against zinc corrosion by a sulfate reducing bacterium

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Table S1. Electrochemical parameters from fitting electrochemical impedance spectrometry (EIS) data.

Treatment	R_s (Ω cm^2)	Y_2 (Ω^{-1} cm^{-2} s^n)	n_2	R_b (Ω cm^2)	Y_1 (Ω^{-1} cm^{-2} s^n)	W (Ω cm^2)	n_1	R_{ct} (Ω cm^2)
Abiotic control	44.9	-	-	-	0.121	0.135	0.79	858
No treatment	16.1	0.073	0.80	6	0.083	-	0.82	121
1 ppm D-tyrosine	11.7	0.051	0.84	17	0.096	-	0.96	127
100 ppm DBNPA	17.6	0.271	0.82	19	0.088	-	0.86	163
100 ppm DBNPA + 1 ppm D-tyrosine	24.9	0.682	0.97	31	0.276	0.262	0.92	442

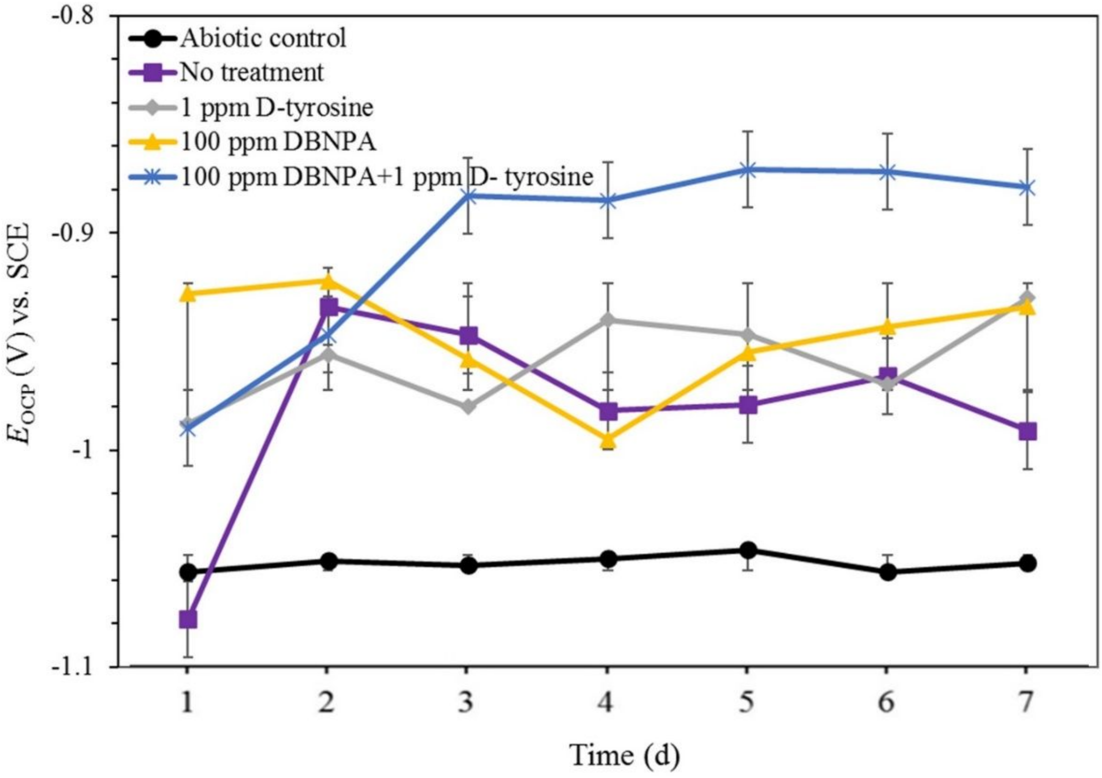

Figure S1. Open circuit potential during *Desulfovibrio vulgaris* incubation.

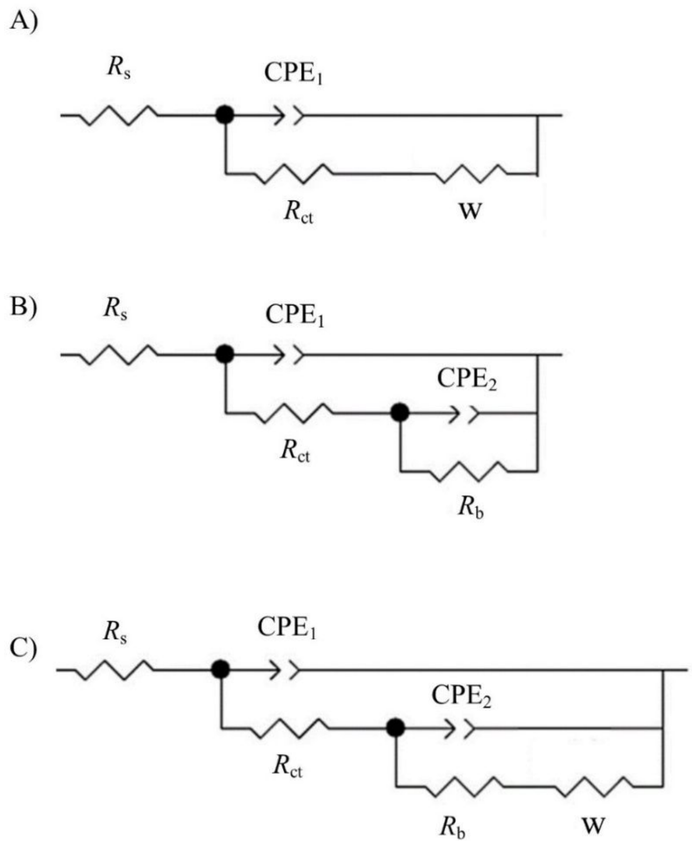

Figure S2. Circuit models used for fitting EIS data: (A) abiotic coupon, (B) untreated, 100 ppm DBNPA and 1 ppm D-tyrosine alone treated coupon, and (C) the combination of 100 ppm DBNPA + 1 ppm D-tyrosine treated coupon.

The constant phase element (CPE) was used to replace the ideal capacitor for better fitting. In Figure S2A, the circuit includes (1): R_s as solution resistance, (2) charge transfer resistance R_{ct} and CPE_1 for the zinc surface double layer capacitance with a finite Warburg element (W). In Figure S2B, the circuit includes: (1) R_s, (2) the parallel combination of R_{ct} and CPE_1 for the zinc surface double layer capacitance and CPE_2 for the biofilm resistance (R_b). In Figure S2C, the circuit includes: (1) R_s, (2) the parallel combination of R_{ct} and CPE_1 for the formation of a heterogeneous layer containing mainly corrosion products, (3) the parallel combination of R_b together with W and CPE_2 for the biofilm layer on the zinc surface.