

Supporting Information

Quorum sensing signals from sludge improving self-assembly of electrode biofilms in microbial fuel cells for chloramphenicol degradation

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FIGURES (5)

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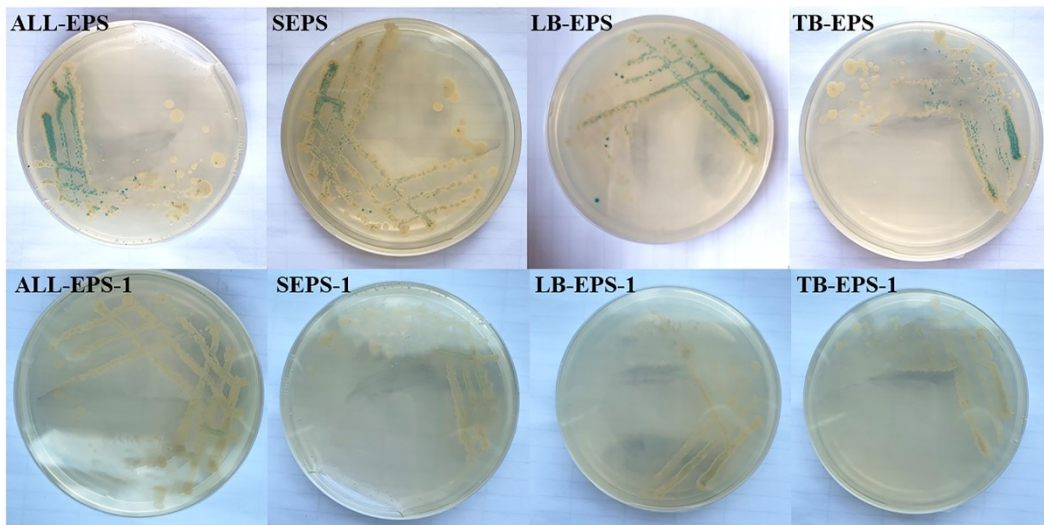


Fig. S1. Agar plate-based bioassay for AHL preliminary detection in different EPS.

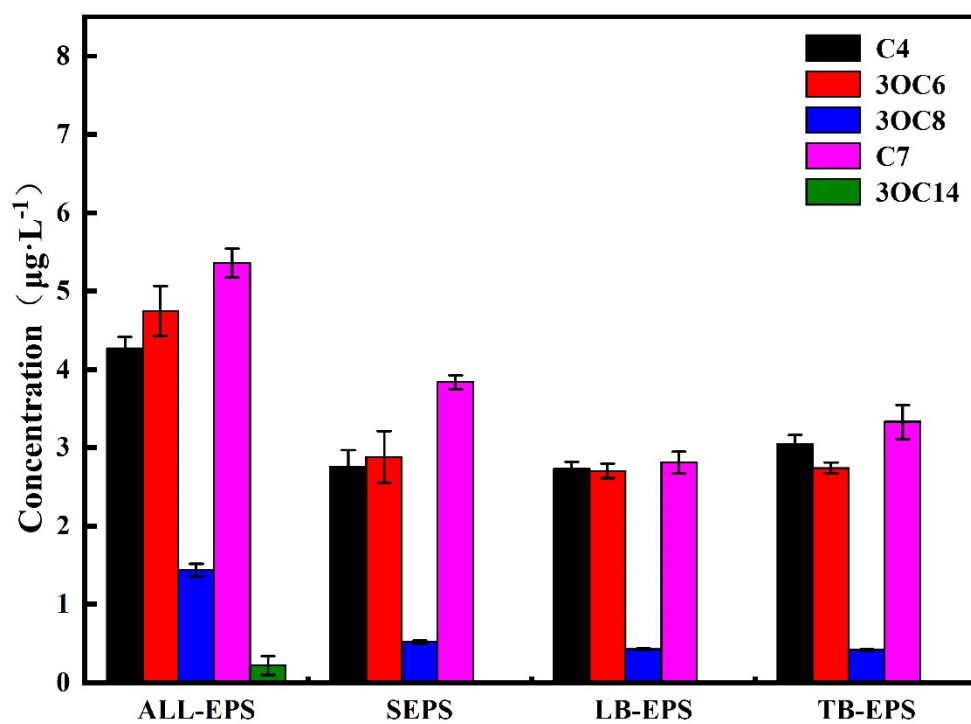


Fig. S2. The UPLC-MS/MS analysis for AHL identification in different EPS.

Table S1 The maximum voltages and power densities in different MFCs during the 6th (18 d) and 9th (27 d) cycles; different lowercase letters indicate the values have significant differences ($P < 0.05$).

MFC group	V_{max} (mV)	P_{max} (mW/m²)
ALL-EPS/18 d	633.55 a	414.00 b
SEPS/18 d	643.45 a	385.70 c
LB-EPS/18 d	607.52 b	379.50 d
TB-EPS/18 d	633.59 a	538.14 a
ALL-EPS-1/18 d	485.45 c	168.39 e
SEPS-1/18 d	101.20 e	162.77 f
LB-EPS-1/18 d	102.86 e	135.88 h
TB-EPS-1/18 d	196.36 d	148.71 g
ALL-EPS/27 d	677.75 b	260.98 b
SEPS/27 d	659.71 d	214.94 c
LB-EPS/27 d	667.01 c	182.25 d
TB-EPS/27 d	713.07 a	498.17 a
ALL-EPS-1/27 d	354.88 f	167.74 f
SEPS-1/27 d	209.59 h	133.21 h
LB-EPS-1/27 d	350.10 g	139.62 g
TB-EPS-1/27 d	471.49 e	174.55 e

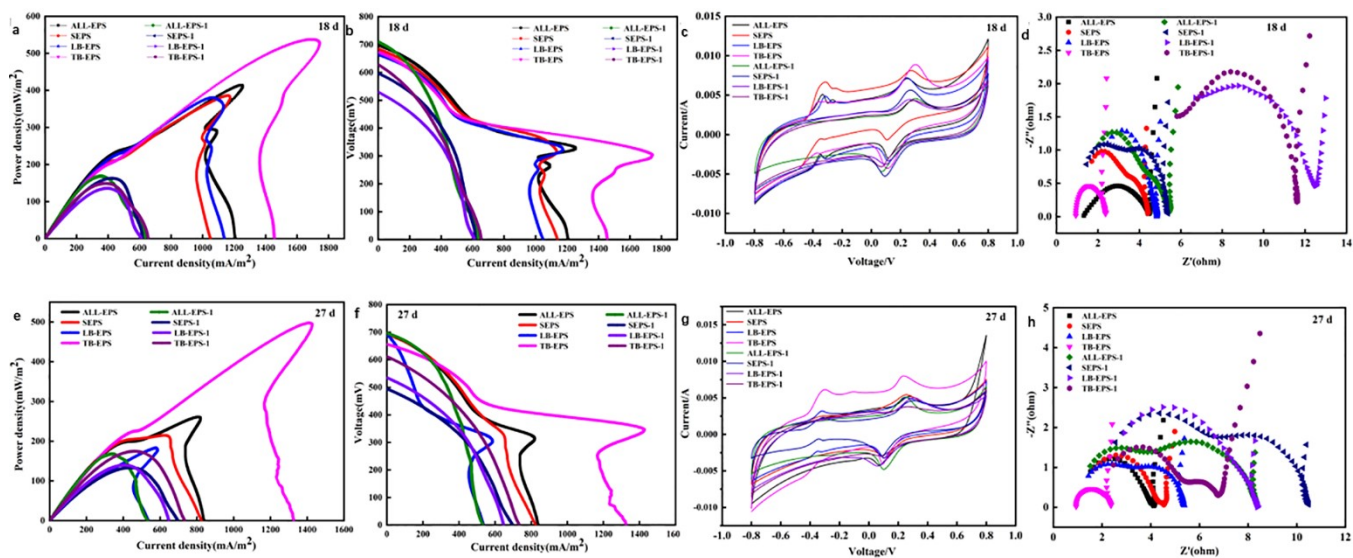


Fig. S3. The power density (a, e) and polarization (b, f), cyclic voltammogram (c, g), and electrochemical impedance spectroscopy (d, h) curves of different MFCs at different acclimation times (18 and 27 d).

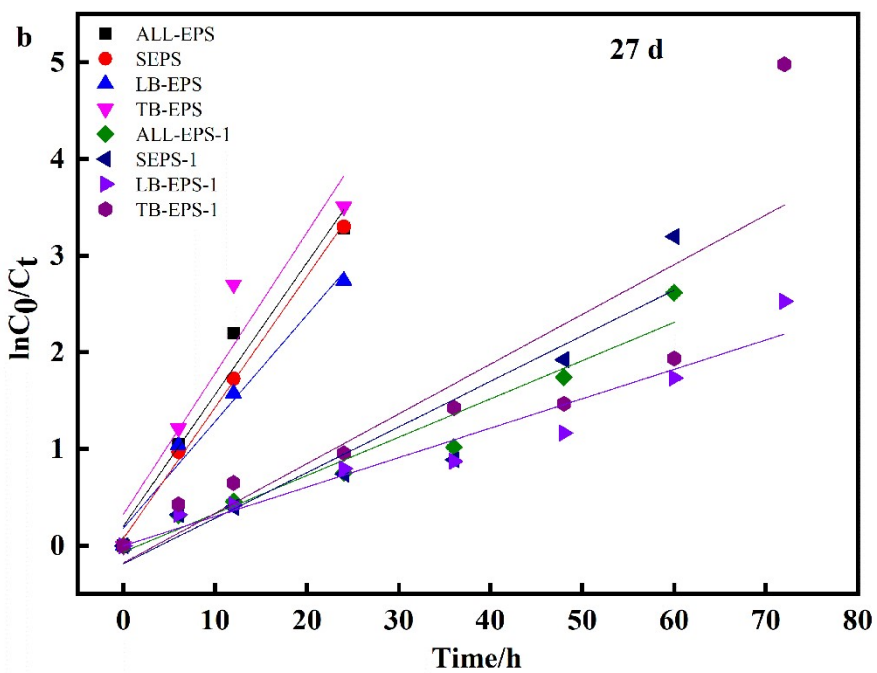
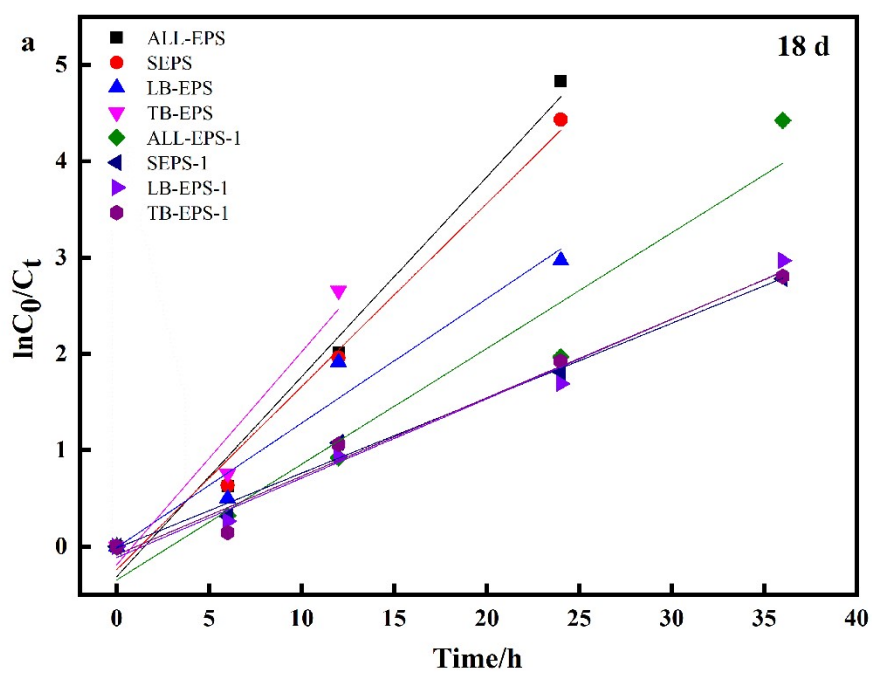


Fig. S4. The degradation kinetics of CAP in different MFCs during the 6th (a: 18 d) and 9th (b: 27 d) cycles.

Table S2 The CAP removal kinetics in different MFCs during the 6th (18 d) and 9th (27 d) cycles.

MFC group	Fitting equation	K (h⁻¹)	Half-life time (h)	R²
ALL-EPS/18 d	$\ln C_0/C_t = 0.21t$	0.21	4.76	0.99
SEPS/18 d	$\ln C_0/C_t = 0.19t$	0.19	5.26	0.99
LB-EPS/18 d	$\ln C_0/C_t = 0.13t$	0.13	7.69	0.98
TB-EPS/18 d	$\ln C_0/C_t = 0.22t$	0.22	4.55	0.97
ALL-EPS-1/18 d	$\ln C_0/C_t = 0.12t$	0.12	8.33	0.97
SEPS-1/18 d	$\ln C_0/C_t = 0.08t$	0.08	12.50	0.99
LB-EPS-1/18 d	$\ln C_0/C_t = 0.08t$	0.08	12.50	0.99
TB-EPS-1/18 d	$\ln C_0/C_t = 0.08t$	0.08	12.50	0.89
ALL-EPS/27 d	$\ln C_0/C_t = 0.15t$	0.15	6.67	0.98
SEPS/27 d	$\ln C_0/C_t = 0.14t$	0.14	7.14	0.98
LB-EPS/27 d	$\ln C_0/C_t = 0.11t$	0.11	9.09	0.99
TB-EPS/27 d	$\ln C_0/C_t = 0.16t$	0.16	6.25	0.96
ALL-EPS-1/27 d	$\ln C_0/C_t = 0.04t$	0.04	25.00	0.95
SEPS-1/27 d	$\ln C_0/C_t = 0.05t$	0.05	20.00	0.94
LB-EPS-1/27 d	$\ln C_0/C_t = 0.03t$	0.03	33.33	0.96
TB-EPS-1/27 d	$\ln C_0/C_t = 0.06t$	0.06	16.67	0.90

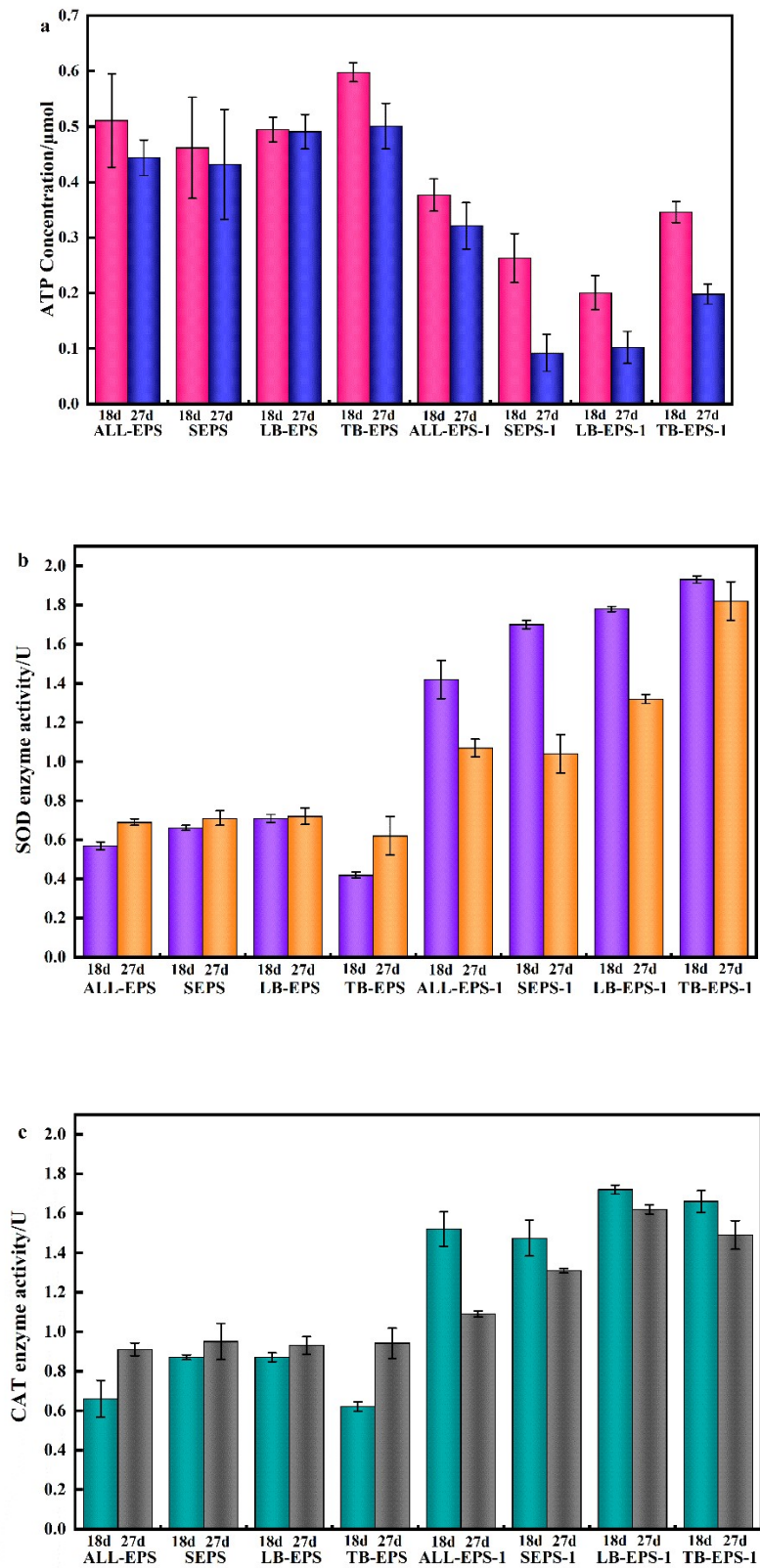


Fig. S5. The ATP concentrations (a), superoxide dismutase (b) and catalase (c) activities of different anode biofilms at different acclimation times.

Table S3 The α -diversity indices of microbial community in different anode biofilms.

Sample	OTU	ACE	Chao1	Shannon	Simpson
ALL-EPS/18 d	601	666	677	4.67	0.0181
SEPS/18 d	838	996	979	4.70	0.0220
LB-EPS/18 d	657	724	732	4.66	0.0195
TB-EPS/18 d	807	882	893	4.67	0.0204
ALL-EPS-1/18 d	483	653	647	3.39	0.0706
SEPS-1/18 d	235	355	356	2.59	0.1198
LB-EPS-1/18 d	276	449	368	2.85	0.1112
TB-EPS-1/18 d	350	615	500	2.00	0.2928
ALL-EPS/27 d	629	735	748	4.21	0.0379
SEPS/27 d	710	793	806	4.46	0.0324
LB-EPS/27 d	451	516	522	4.27	0.0290
TB-EPS/27 d	500	550	550	3.82	0.0628
ALL-EPS-1/27 d	319	372	376	2.35	0.1776
SEPS-1/27 d	551	712	681	3.05	0.1348
LB-EPS-1/27 d	376	432	434	1.77	0.4322
TB-EPS-1/27 d	462	605	560	2.55	0.2397