Degradation of phenolic compounds in wastewater using a conical packed bed microbial fuel cell in continuous flow with recycle

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Figure S1. Digital images of Recycle-SCMFC setup in continuous mode.

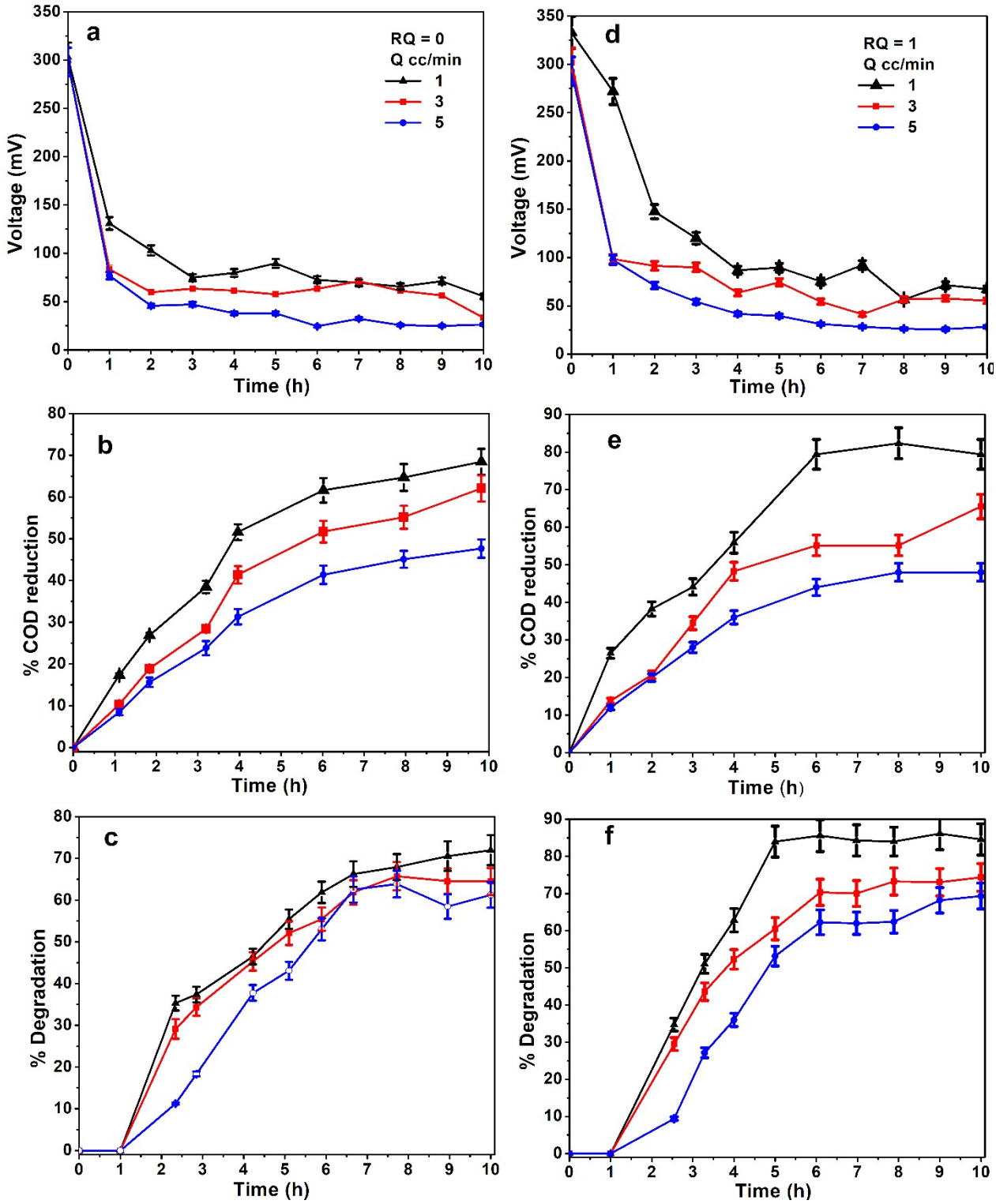

Figure S2. Effect of flowrates (RQ = 0 and Q = 1, 3 and 5 cc/min, left side) on (a) voltage generation, (b) % COD reduction of wastewater, and (c) % degradation of 1-2-PD (1000 ppm) w.r.t. time (h). Effect of flowrates (RQ = 1 and Q = 1, 3 and 5 cc/min, right side) on (d) voltage generation (e) %COD reduction and (f) % degradation of 1-2-PD (1000 ppm) w.r.t. time (h).

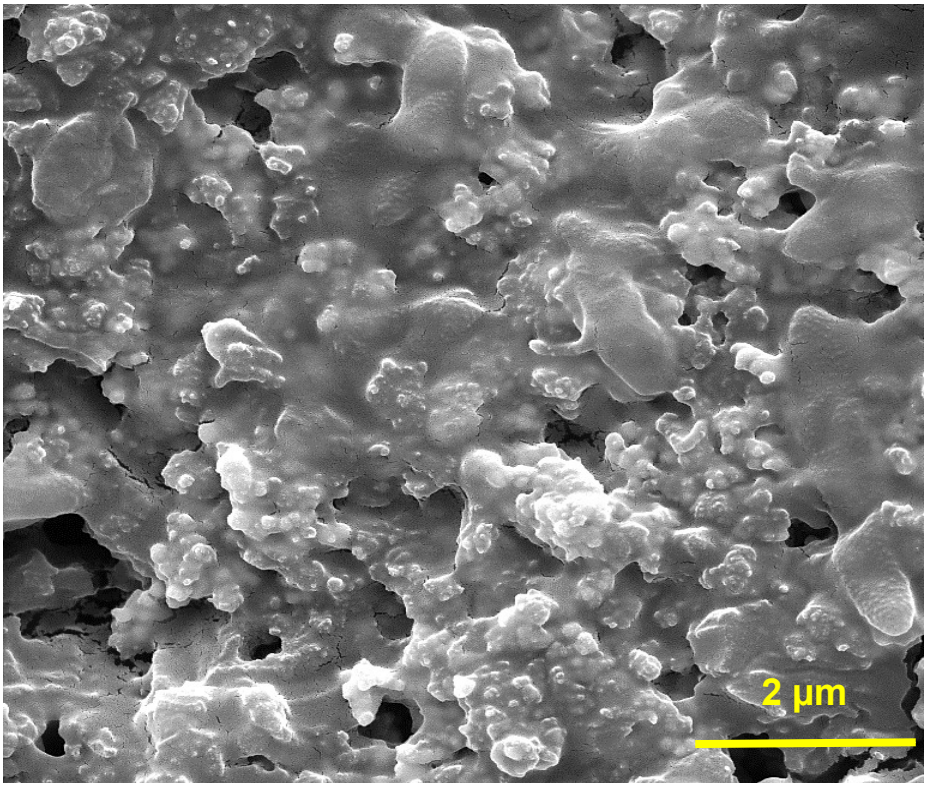

Figure S3. SEM image of a thick and dense biofilm on the anode surface.

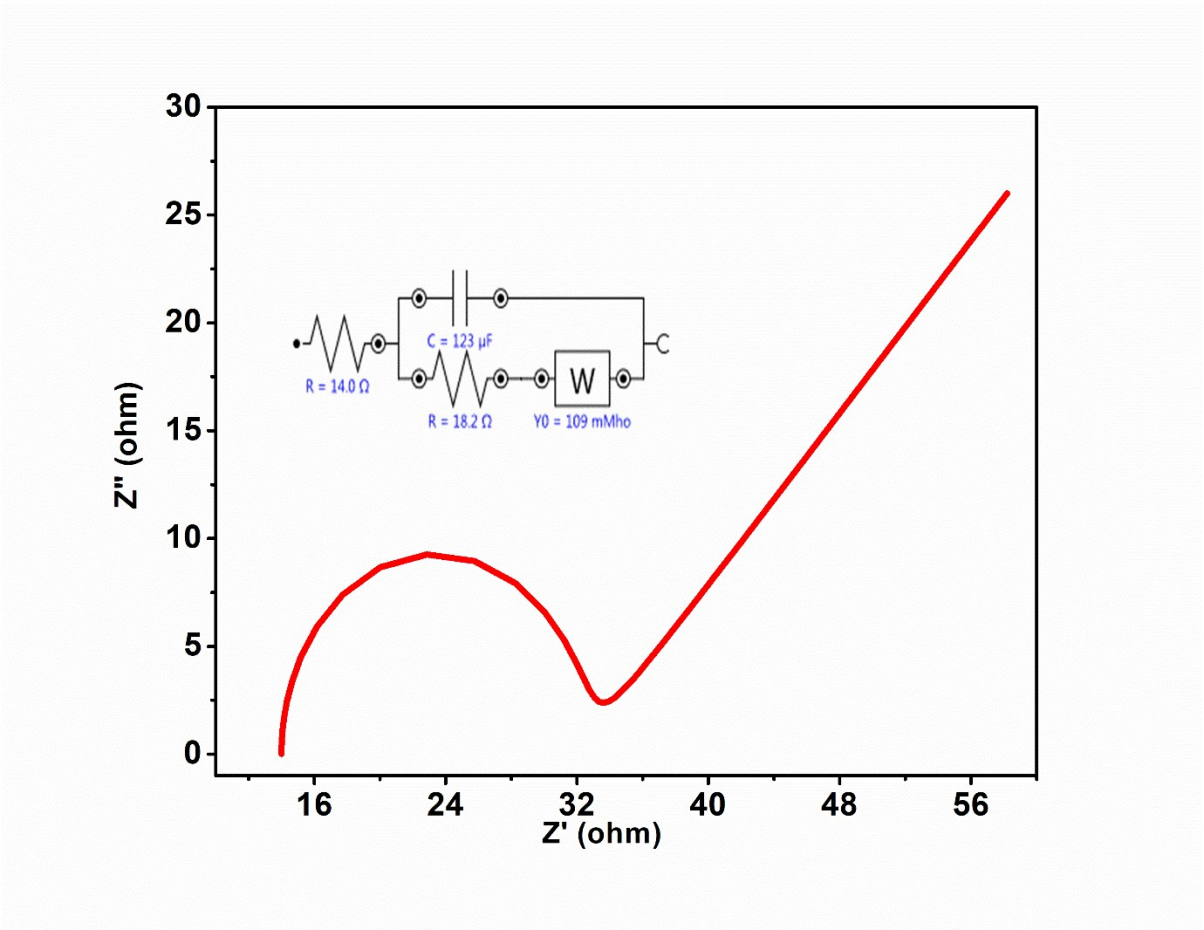

Figure S4. EIS analysis of the prepared recycle-SCMFC in continuous mode using 1000 ppm of 1-2-PD.

Table S1. Comparison of the SCMFC developed in this study with the literature for the treatment of phenolic wastewater.

S.No.	Type of industrial effluent	COD (mg/L)	Chamber volume (mL)	Anode/Cathode	Flow rate (mL/min)	% COD reduction	OCP (mV)	Power density (mW/m^2)	Current density (mA/m^2)	Ref.
1	1,2 Propanediol/Propylene glycol	10000	51	CeO_2-CNF/ACB / CeO_2-CNF/ACF	1, 3, 5	84	380	~420	~4500 mA/m^3	This study
2	Glycerol	9200	346	Cu–Ru/MgO catalysts	0.03	97				[1]
3	Ethoxylated nonylphenols (NPnEO) (synthetic nonionic surfactant)	30, 60, 90	6500	silica beads, granular activated carbon, or glass spheres	9.0, 10.6,13.2	77-99				[2]
4	Ethylphenol (4-EP)	40000	6200	K5 biomass carriers						[3]
5	Phenol	2400	5000	sugarcane bagasse (SCB)	4, 8, 12, 16, 20	94				[4]
6	Phenol, o-cresol, and p-cresol	300	450	stainless steel mesh	300 – 500	93				[5]
7	SCMFC	Phenol	1000, 2000	5000	tea waste	5.46, 8.19, 16.3	120	97		[6]

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