

## Supplementary Material

### The effect and mechanism of a microbial agent used for corrosion control in circulating cooling water

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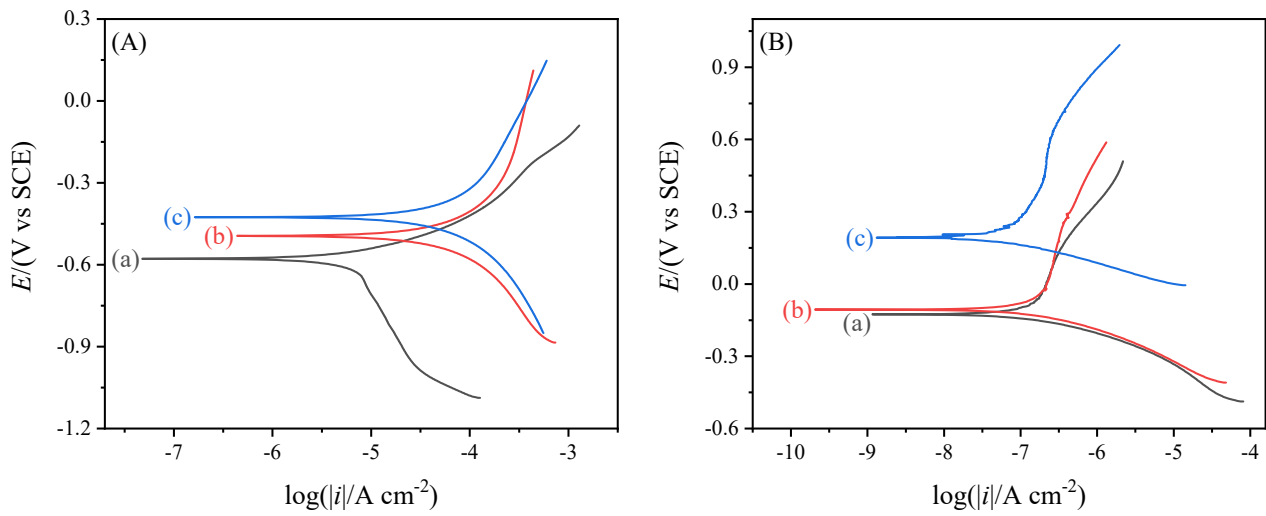
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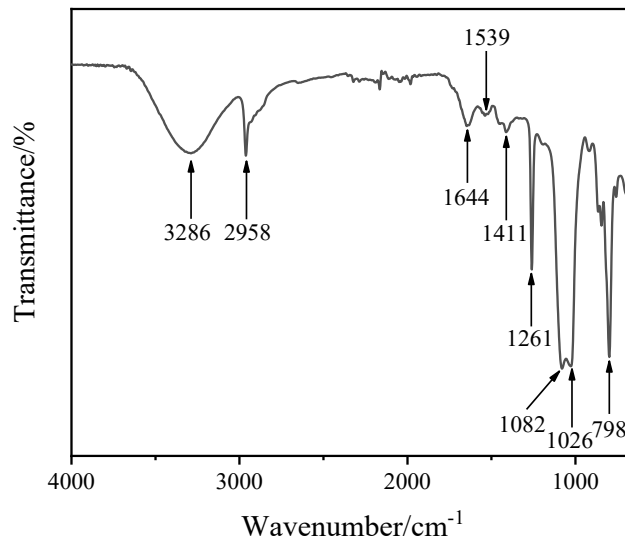
## Supplementary figures

### 1. Fig. S1



**Fig. S1** Potentiodynamic polarization curves of different electrodes. (A) Q235B electrode; (B) 316L electrode; (a) new electrode at 0 d; (b) without microbial agent after 30 d; (c) with microbial agent after 30 d.

### 2. Fig. S2



**Fig. S2** FTIR spectrum of the biofilm on the coupon surface.

## Supplementary tables

### 1. Table S1

**Table S1** Water quality index of circulating cooling water.

Index	Value	Index	Value
pH/(25°C)	7.61-7.80	NH <sub>3</sub> -N/(mg L <sup>-1</sup> )	0.17-0.28
Electric conductivity/ (ms cm <sup>-1</sup> )	0.63-0.67	COD/(mg L <sup>-1</sup> )	12.36-19.30
Suspended solids/(mg L <sup>-1</sup> )	2.50-6.20	TP/(mg L <sup>-1</sup> )	0.33-0.51
Turbidity/(NTU)	0.21-1.47	Ca <sup>2+</sup> /(mg L <sup>-1</sup> )	47.34-65.33
Total hardness/(mmol L <sup>-1</sup> )	1.57-2.65	Cl <sup>-</sup> /(mg L <sup>-1</sup> )	44.75-60.73
Total alkalinity/(mmol L <sup>-1</sup> )	1.54-2.49	SO <sub>4</sub> <sup>2-</sup> /(mg L <sup>-1</sup> )	42.16-64.29

### 2. Table S2

**Table S2** Corrosion rate of the coupon under different conditions.

Type	Corrosion weight loss/(g)	Corrosion rate/ (mm a <sup>-1</sup> )	Average corrosion rate/(mm a <sup>-1</sup> )
Q235B without microbial agent	0.5794	0.7319	0.7261 ± 0.0167
	0.5852	0.7392	
	0.5599	0.7072	
Q235B with microbial agent	0.5230	0.6606	0.6606 ± 0.0098
	0.5307	0.6704	
	0.5152	0.6508	
316L without microbial agent	0.0005	0.0006	0.0006 ± 0.0001
	0.0004	0.0005	
	0.0005	0.0006	
316L with microbial agent	0.0003	0.0004	0.0005 ± 0.0002
	0.0006	0.0007	
	0.0004	0.0005	

### 3. Table S3

**Table S3** Surface roughness parameters of the coupon at different times.

Time/(d)	$S_a/(\mu\text{m})$	$S_q/(\mu\text{m})$
0	0.27	0.35
5	0.35	0.53
10	0.45	0.75
15	0.53	0.89
20	0.76	1.28
25	0.72	0.94
30	0.78	1.20