

Electronic Supplementary Information

**Corrosion Inhibition and Disinfection of Heating and Cooling
Water Systems Using In Situ Generated Hydrogen Peroxide**

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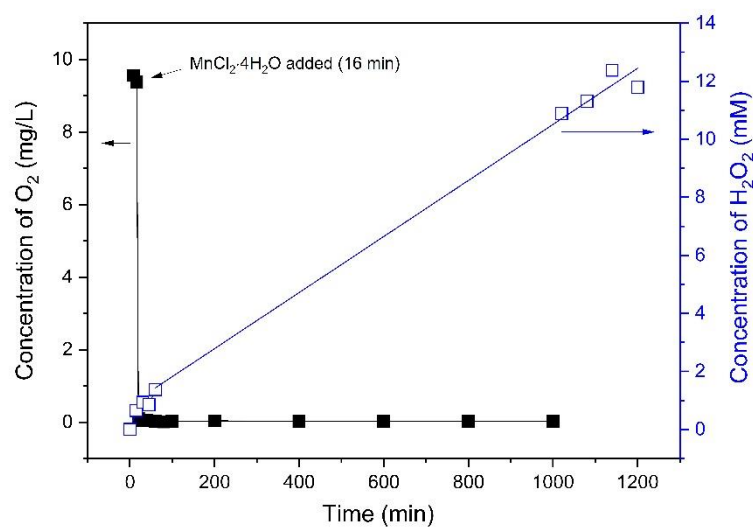


Fig. S1 The change of dissolved O_2 concentration (—■—) and H_2O_2 concentration (—□—) in the formulation. Experiment conditions: [Tiron] = 1.50 mM, $[NH_2OH]$ = 500 mM, $[MnCl_2 \cdot 4H_2O]$ = 50.0 μ M, initial pH: 9.0, [carbonate] = 50.0 mM, temperature: 20 ± 1 °C.

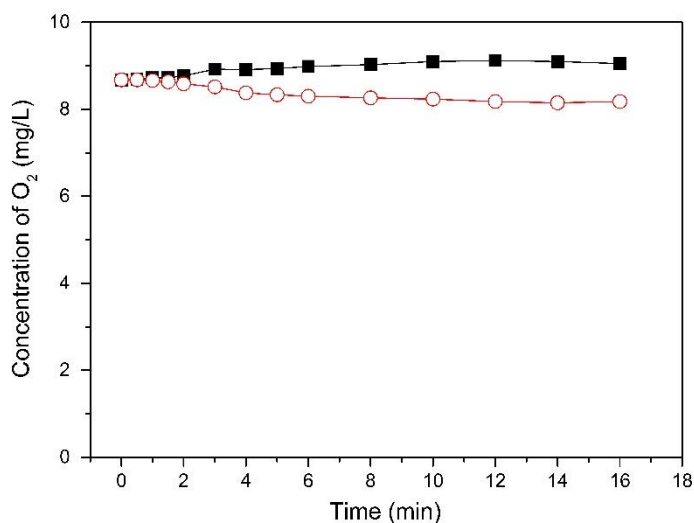


Fig. S2 The change of dissolved O_2 concentration in the formulation in the presence (—■—) and absence of EDTA (—○—). Experiment conditions: $[NH_2OH]$ = 500 mM, [EDTA] = 1.00 mM, $[MnCl_2 \cdot 4H_2O]$ = 50.0 μ M, initial pH: 9.0, [carbonate] = 50.0 mM, temperature: 20 ± 1 °C.

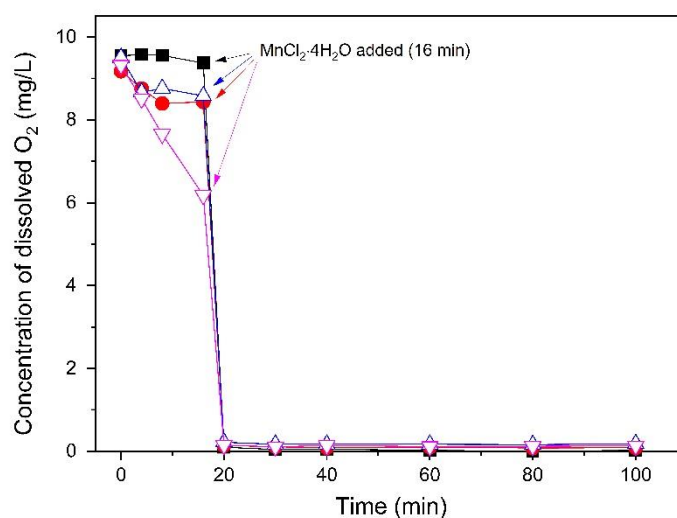


Fig. S3 The change of dissolved O₂ in the formulation at 20 ± 1 °C (—■—), 30 ± 1 °C (—●—), 40 ± 1 °C (—△—) and 50 ± 1 °C (—▽—). Experiment conditions: [Tiron] = 1.50 mM, [NH₂OH] = 500 mM, [MnCl₂·4H₂O] = 50.0 μM, initial pH: 9.0, [carbonate] = 50.0 mM.

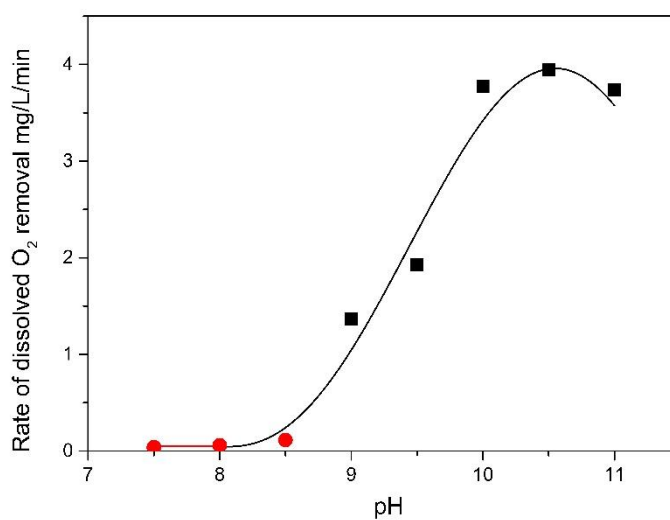


Fig. S4 The influence of buffer and pH on the dissolved O₂ removal rate in the formulation with either phosphate (●) or carbonate (■) buffer. Experiment conditions: [Tiron] = 1.50 mM, [NH₂OH] = 500.0 mM, [carbonate] or [phosphate] = 50.0 mM, [MnCl₂·4H₂O] = 50.0 μM, temperature: 20 ± 1 °C.

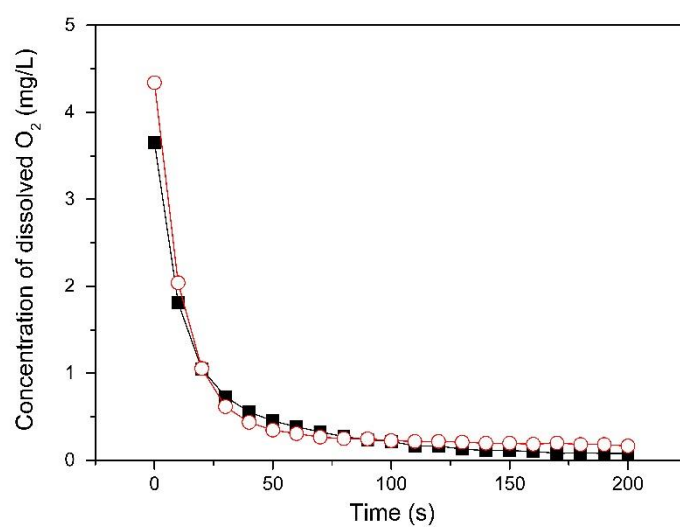


Fig. S5 The change of dissolved O₂ concentration in the formulation with NH₂OH (—■—) or ND₂OD (—○—). Experiment conditions: [Tiron] = 1.50 mM, [NH₂OH] or [ND₂OD] = 500.0 mM, [MnCl₂·4H₂O] = 50.0 μM, initial pH: 9.0, [carbonate] = 50.0 mM, temperature: 20 ± 1 °C.

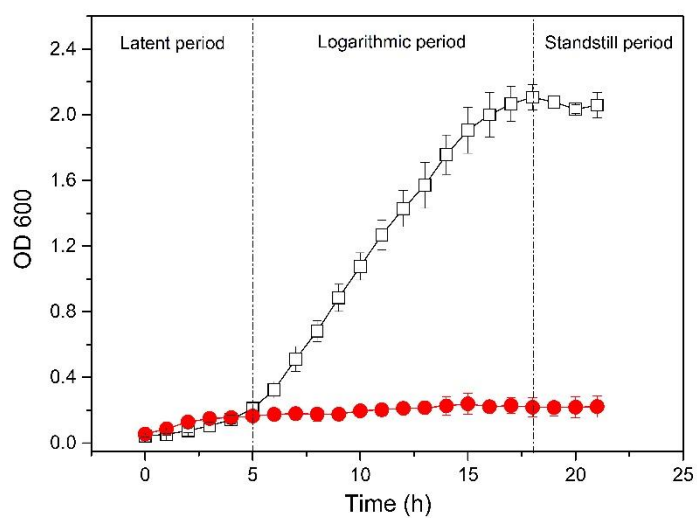


Fig. S6 The growth curve of *E. coli* in minimal media in the presence (—●—) and absence (—□—) of the formulation. Culturing conditions: temperature: 37 ± 1 °C. (—□—) no formulation, (—●—) [Tiron] = 1.50 mM, [NH₂OH] = 500.0 mM, [phosphate] = 50.0 mM, [MnCl₂·4H₂O] = 50.0 μM, temperature: 37 ± 1 °C.

