

Supplementary Information

Dynamics of microbial communities on the corrosion behavior of steel in freshwater environment

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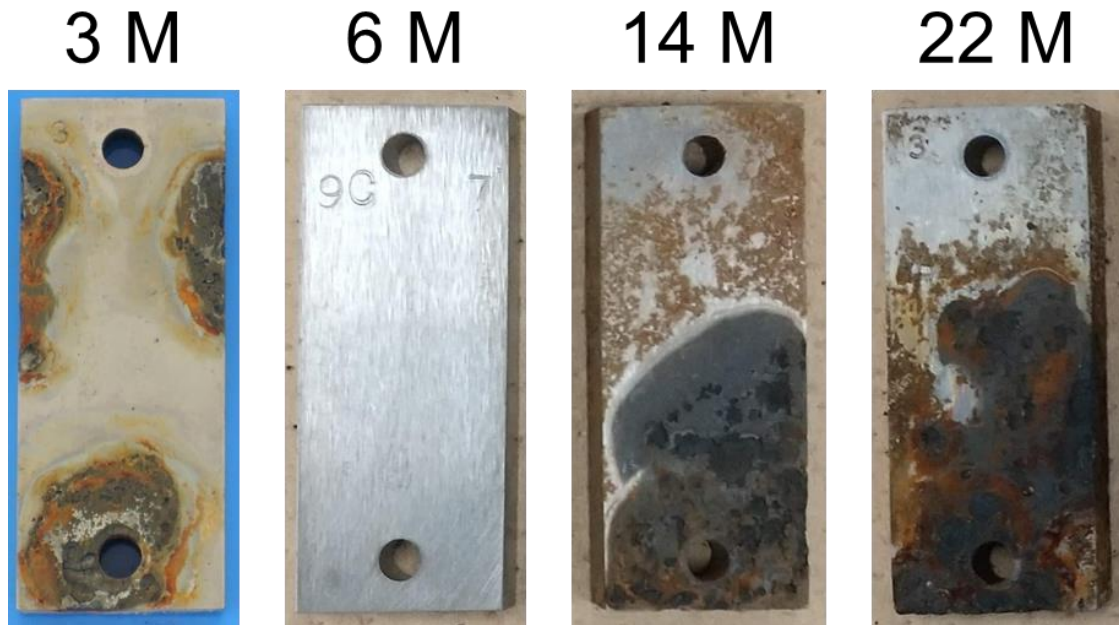
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Supplementary Table 1 Weight loss of each coupon after the descaling

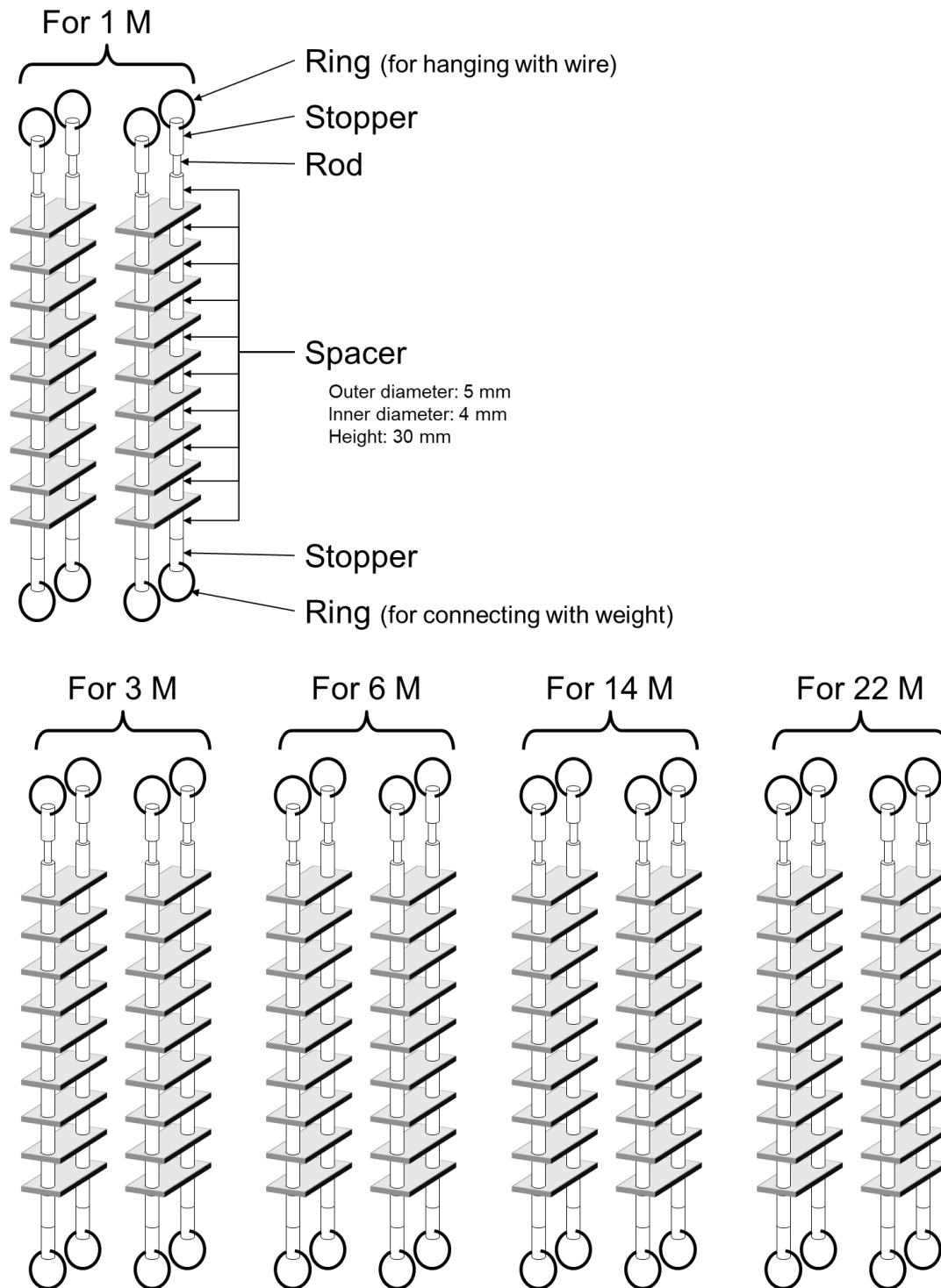
Grade (Surface area)	Weight loss (g)				
	1 M (29 days)	3 M (85 days)	6 M (181 days)	14 M (414 days)	22 M (673 days)
ASTM A283 (2,294 mm ²)	0.2126	0.4824	0.8819	1.8584	2.6439
ASTM A109 Temper No. 4/5 (2,022 mm ²)	0.1687	0.3804	0.6923	1.5809	2.4052
ASTM A179 (2,361 mm ²)	0.2391	0.5233	0.8984	1.8728	2.7823
ASTM A395 (2,5972 mm ²)	0.2623	0.5969	1.1299	2.1684	3.2324
1% Cr-steel (2,657 mm ²)	0.2311	0.5010	0.8539	1.8880	2.8730
2.25% Cr-steel (2,655 mm ²)	0.2199	0.4688	0.7736	1.5865	2.4911
9% Cr-steel (2,654 mm ²)	0.0312	0.0066	-0.0001	-0.0019	1.6865
Type-316 stainless steel (2,020 mm ²)	-0.0003	-0.0004	-0.0001	-0.0003	-0.0002
Type-304 stainless steel (2,034 mm ²)	0.0002	-0.0002	0.0001	0.0013	-0.0001

Supplementary figures:

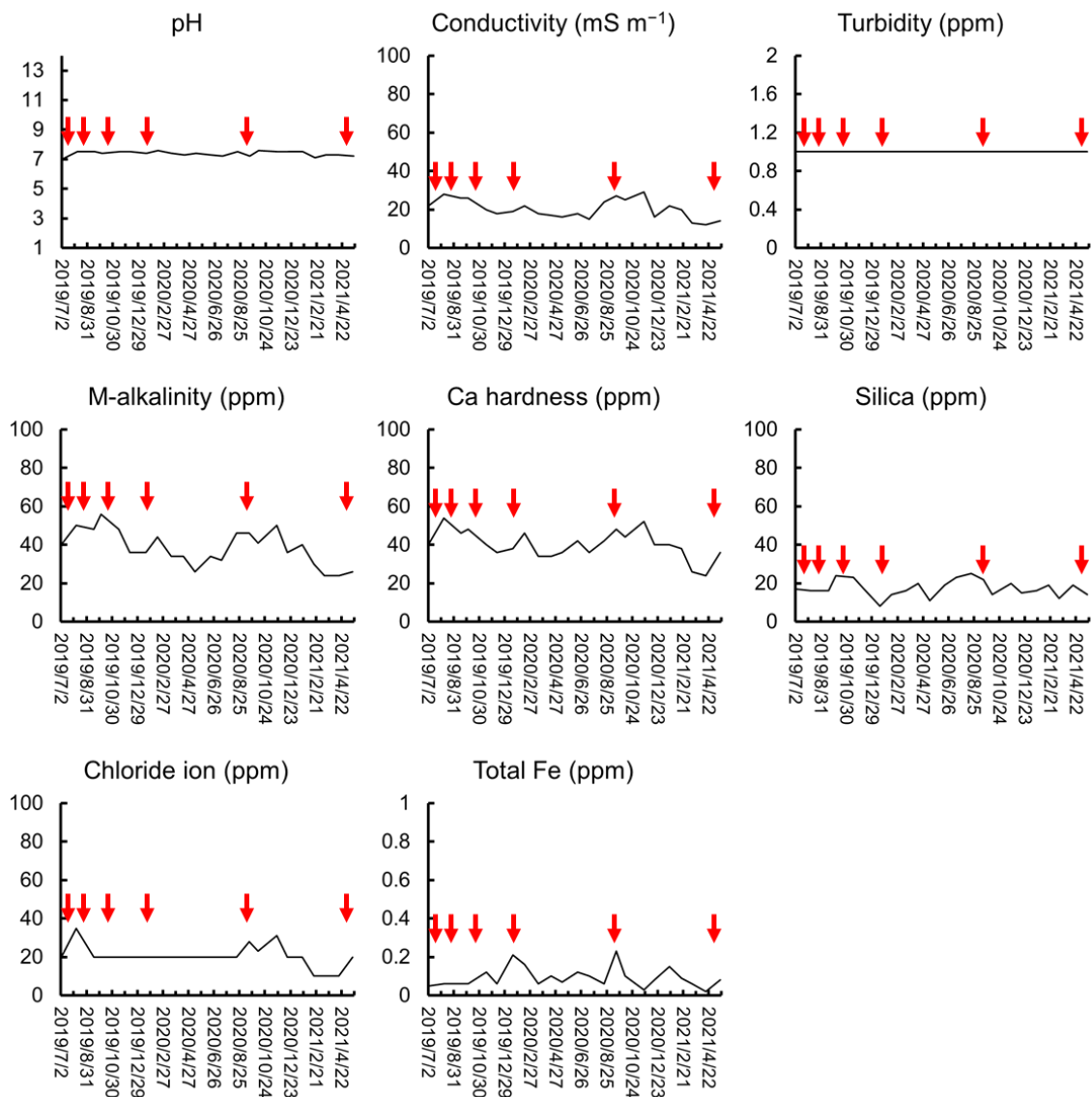


Supplementary Figure 1 Corrosion behavior of 9% Cr steels for DNA extraction.

These pictures show exterior views of coupons withdrawn at 3, 6, 14, and 22 months. These coupons were washed with 99.5% ethanol after the DNA extraction, but not descaled with acid. Picture of coupon withdrawn at 1 month was not captured because it was used in other experiment after washing and polishing.



Supplementary Figure 2 View of metal coupon ladders. Each coupon of carbon steels, cast iron, Cr content steels, and stainless steels was immobilized in a ladder with polytetrafluoroethylene rods and spacers, and 10 ladders were prepared. For each sampling period, two ladders were withdrawn and analyzed.



Supplementary Figure 3 Water qualities. These graphs show the monthly water qualities. Red arrows represent the sampling timing of water samples for the microbial community analysis. These values were based on the unpublished monthly reports from the operating company.