Supplementary material

The difference of corrosion behavior in initial period for the hot-rolled and cold-rolled 2205 duplex stainless steel

Tao Gao, Jian Wang*, Qi Sun, Peide Han*

College of Materials Science and Engineering, Taiyuan University of Technology, 79 Yingze west street, Taiyuan, 030024, China

*Correspondence: wangjian@tyut.edu.cn (J. Wang), hanpeide@tyut.edu.cn (P.D. Han)

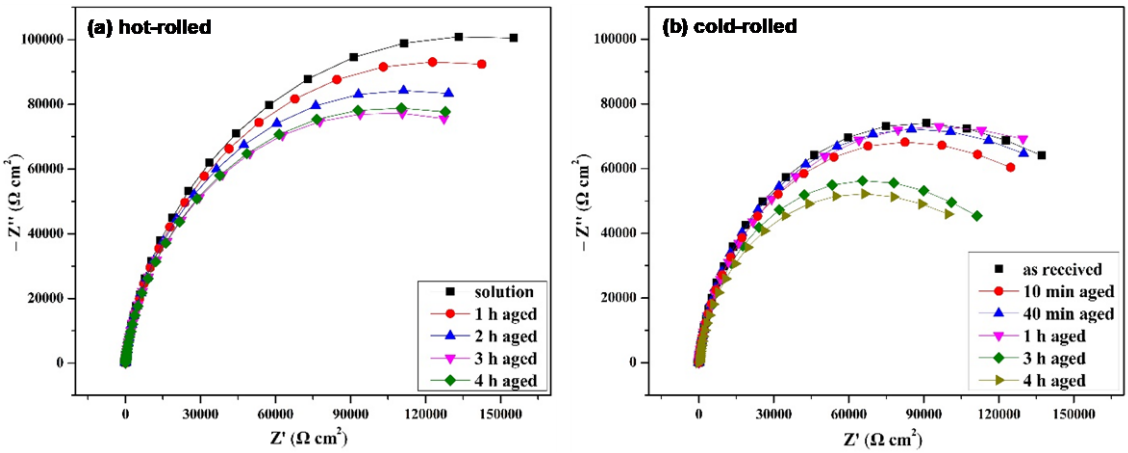

Fig. S1 Comparison of electrochemical impedance spectroscopy between cold-rolled and hot-rolled 2205 duplex stainless steel in 3.5 % NaCl, (a) Nyquist plots for cold-rolled, (b) Nyquist plots for hot-rolled

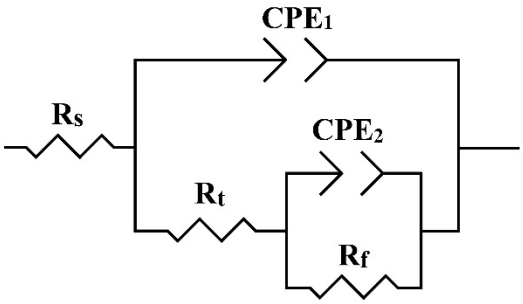

Fig. S2 Equivalent circuit of electrochemical impedance spectroscopy for 2205 duplex stainless steel aging in 3.5 % NaCl solution

Table S1 Fitting results of equivalent circuit of cold-rolled 2205 duplex stainless steel after long-term aging in 3.5 % NaCl solution

Sample	R_s (Ω cm^2)	CPE_1 (Ω^{-1} s^{-n} cm^2)	n_1	R_t (Ω cm^2)	CPE_2 (Ω^{-1} s^{-n} cm^2)	n_2	R_f (Ω cm^2)
Solid-solution	18.57	2.45×10^{-5}	0.9381	3318	1.29×10^{-5}	0.7702	1.74×10^{5}
Aging for10 min	15.63	2.53×10^{-5}	0.9147	2637	1.40×10^{-5}	0.7747	1.62×10^{5}
Aging for 40 min	14.92	2.59×10^{-5}	1	2814	1.56×10^{-5}	0.769	1.70×10^{5}
Aging for 1 h	19.42	2.78×10^{-5}	0.9496	3219	1.54×10^{-5}	0.751	1.75×10^{5}
Aging for 3 h	13.51	2.79×10^{-5}	1	2707	1.46×10^{-5}	0.7711	1.32×10^{5}
Aging for 4 h	13.26	2.45×10^{-5}	0.9231	2362	1.98×10^{-5}	0.7702	1.26×10^{5}

Table S2 Fitting results of equivalent circuit of hot-rolled 2205 duplex stainless steel after long-term aging in 3.5 % NaCl solution

Sample	R_s (Ω cm^2)	CPE_1 (Ω^{-1} s^{-n} cm^2)	n_1	R_t (Ω cm^2)	CPE_2 (Ω^{-1} s^{-n} cm^2)	n_2	R_f (Ω cm^2)
Solid-solution	10.61	2.27×10^{-5}	0.8212	5839	1.53×10^{-5}	0.7723	2.39×10^{5}
Aging for 1 h	17.15	2.08×10^{-5}	0.9265	893.9	1.47×10^{-5}	0.7318	2.22×10^{5}
Aging for 2 h	28.18	1.71×10^{-5}	1	366.2	1.55×10^{-5}	0.7463	2.26×10^{5}
Aging for 3 h	14.65	1.75×10^{-5}	1	1594	1.06×10^{-5}	0.7210	1.98×10^{5}
Aging for 4 h	15.25	3.60×10^{-5}	0.9313	2650	1.61×10^{-5}	0.7073	2.03×10^{5}