

Effect of electrochemical hydrogen charging on blistering and mechanical properties behavior of Q690 steel

Figure S1. Schematic diagram of the experimental setup for hydrogen charging used in hydrogen charging tests.

Figure S2. Schematic diagram of the processing (a) and geometry (b) of tensile specimens used in SSRT tests as well as the schematic diagram of the experimental setup (c).

Table S1. Relevant parameters of hydrogen charging experiments.

Table S2. Ultimate tensile strength, elongation, and energy density of Q690 alloy at different hydrogen charging current densities.

Figure S1. Schematic diagram of the experimental setup for hydrogen charging used in hydrogen charging tests.

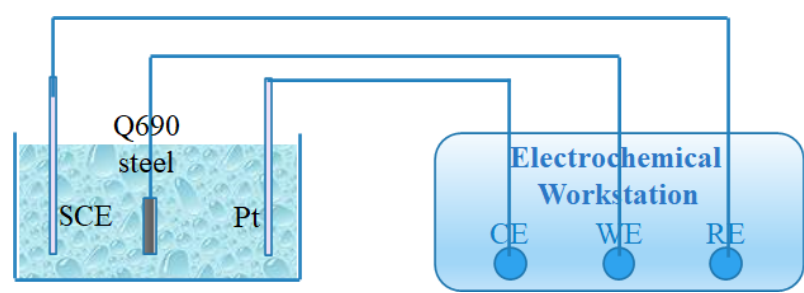


Figure S2. Schematic diagram of the processing (a) and geometry (b) of tensile specimens used in SSRT tests as well as the schematic diagram of the experimental setup (c).

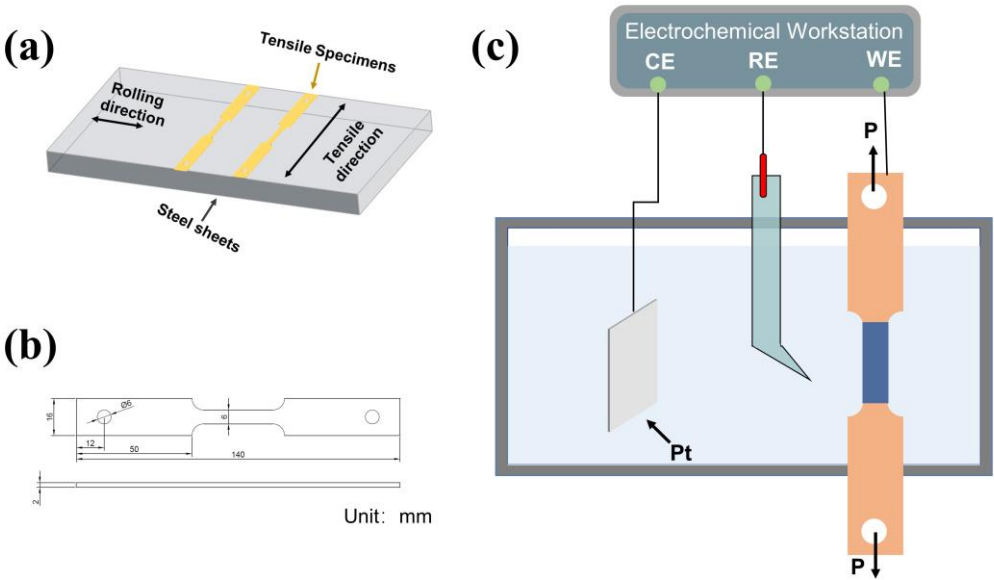


Table S1. Relevant parameters of hydrogen charging experiments.

Environment	2 mA/cm ²	5 mA/cm ²	10 mA/cm ²	50 mA/cm ²
Hydrogen charging	1, 2, 4, 6, 12 h	1, 2, 4, 6, 12 h	1, 2, 4, 6, 12 h	1, 2, 4, 6, 12 h
Surface morphologies	12 h	12 h	12 h	12 h
CLSM	1, 2, 4, 6, 12 h	1, 2, 4, 6, 12 h	1, 2, 4, 6, 12 h	1, 2, 4, 6, 12 h

Table S2. Ultimate tensile strength, elongation, and energy density of Q690 alloy at different hydrogen charging current densities.

Environment	Ultimate tensile strength (MPa)	Elongation (%)	The energy density (MJ/m ³)
Air	848.54	13.18	91.65
2 mA/cm ²	821.93	6.83	40.30
5 mA/cm ²	832.84	4.28	20.51
10 mA/cm ²	657.56	3.32	12.30
50 mA/cm ²	570.01	2.59	8.32