

Effect of Microstructure Changes on the Mechanical and Electrochemical Properties of Mild Steel Under Chlorine-rich and Chlorine-free Media at different pHs

Shahid Parapurath¹, Liyamol Jacob², Ebru Gunister³ and Nader Vahdati^{1,*}

¹ Department of Mechanical Engineering, Khalifa University of Science and Technology, SAN Campus, P.O. Box 127788, Abu Dhabi, United Arab Emirates.

^{1*} Department of Mechanical Engineering, Khalifa University of Science and Technology, Healthcare Engineering Innovation Center, P.O. Box 127788, Abu Dhabi, United Arab Emirates.

² Department of Chemical Engineering, Khalifa University of Science and Technology, SAN Campus, P.O. Box 127788, Abu Dhabi, United Arab Emirates.

³ Department of Mechanical Engineering, Istanbul Health and Technology University, 34015, Istanbul, Turkey

* Correspondence: nader.vahdati@ku.ac.ae

Samples	pH 4	pH 7	pH 10
Original NaCl			
Quenched NaCl			
Tempered NaCl			

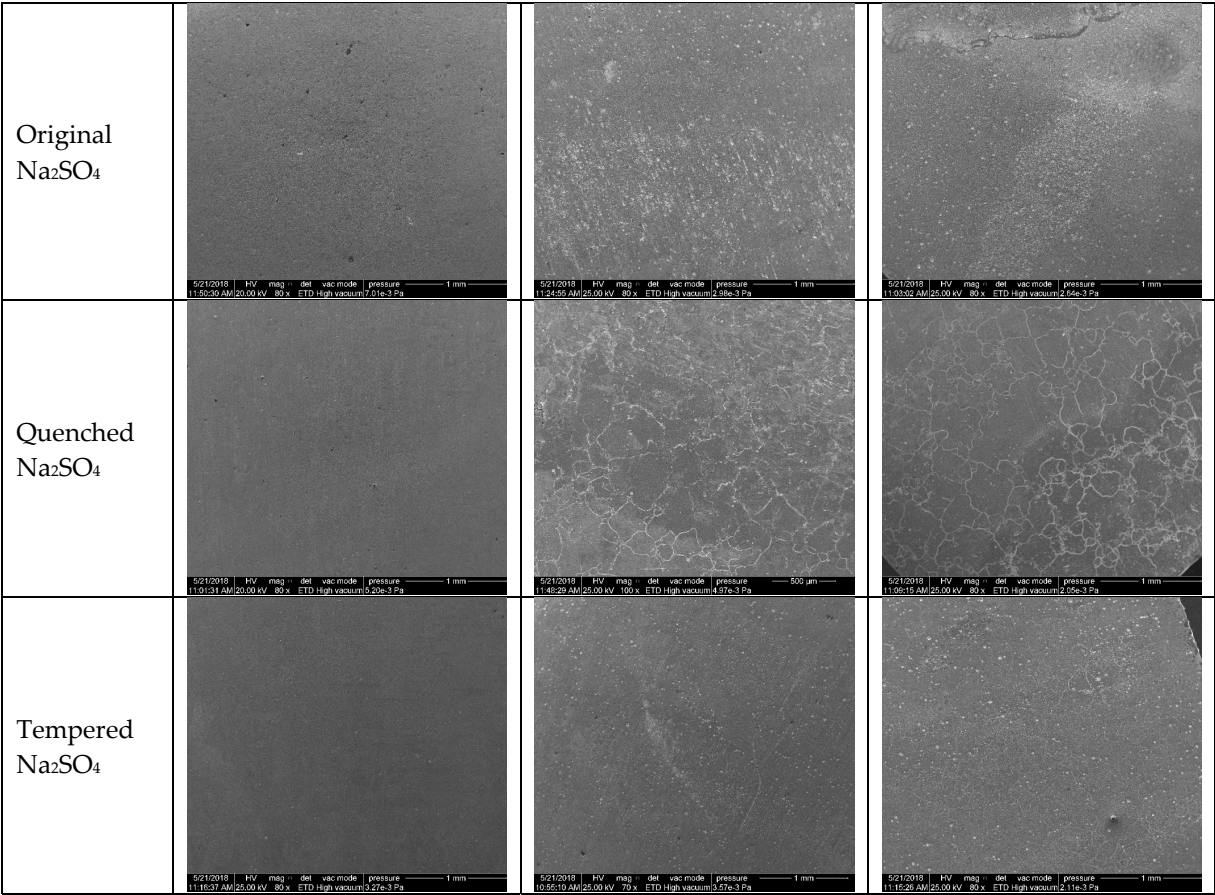


Figure S1. Macroscopic images of the corroded surface by SEM.

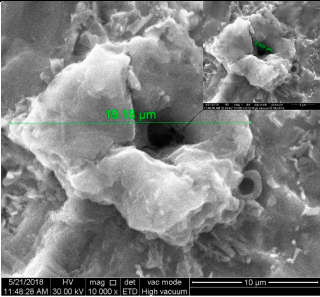
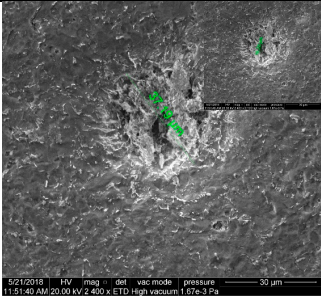
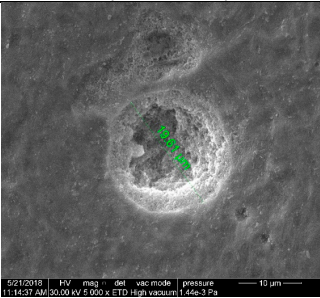
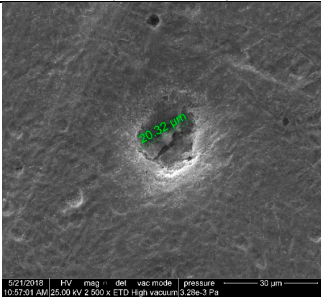
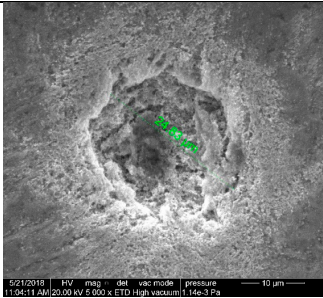
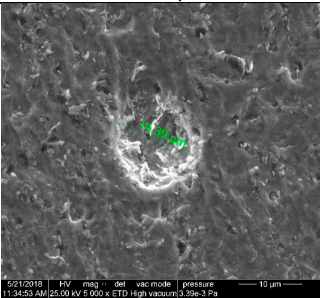
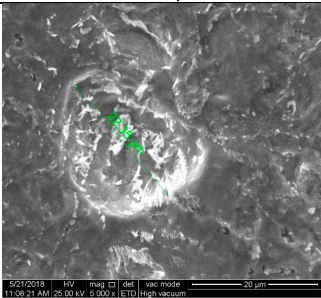
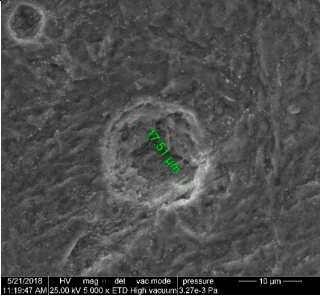
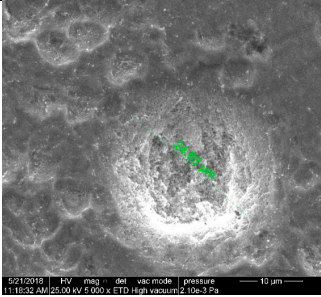
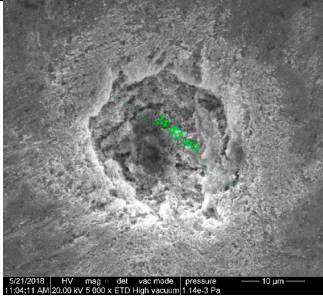
NaCl	 Original at pH 4 (19.18μm[2.429 μm])	 Original at pH 10 (37.19μm[10.23 μm])	
	 Tempered at pH 4 (19.61 μm)	 Tempered at pH 7 (20.32 μm)	 Tempered at pH 10 (24.83 μm)
Na ₂ SO ₄	 Original at pH 7 (14.39 μm)	 Original at pH 10 (22.35 μm)	
	 Tempered at pH 4 (17.51 μm)	 Tempered at pH 7 (24.63 μm)	 Tempered at pH 10 (24.83 μm)

Figure S2. SEM images of pits formed during corrosion