Electronic Supplementary Material

Influence of surface modified mixed metal oxide nanoparticles on the electrochemical and mechanical properties of polyurethane matrix

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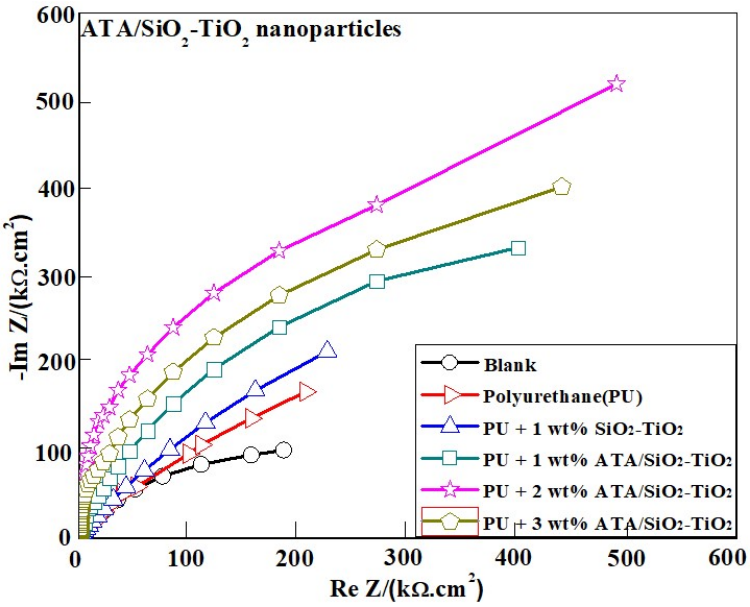

Fig. S1 Nyquist plots of pure polyurethane (PU) with various wt% of ATA/SiO_2-TiO_2 nanoparticle in PU coated steel exposed to seawater.

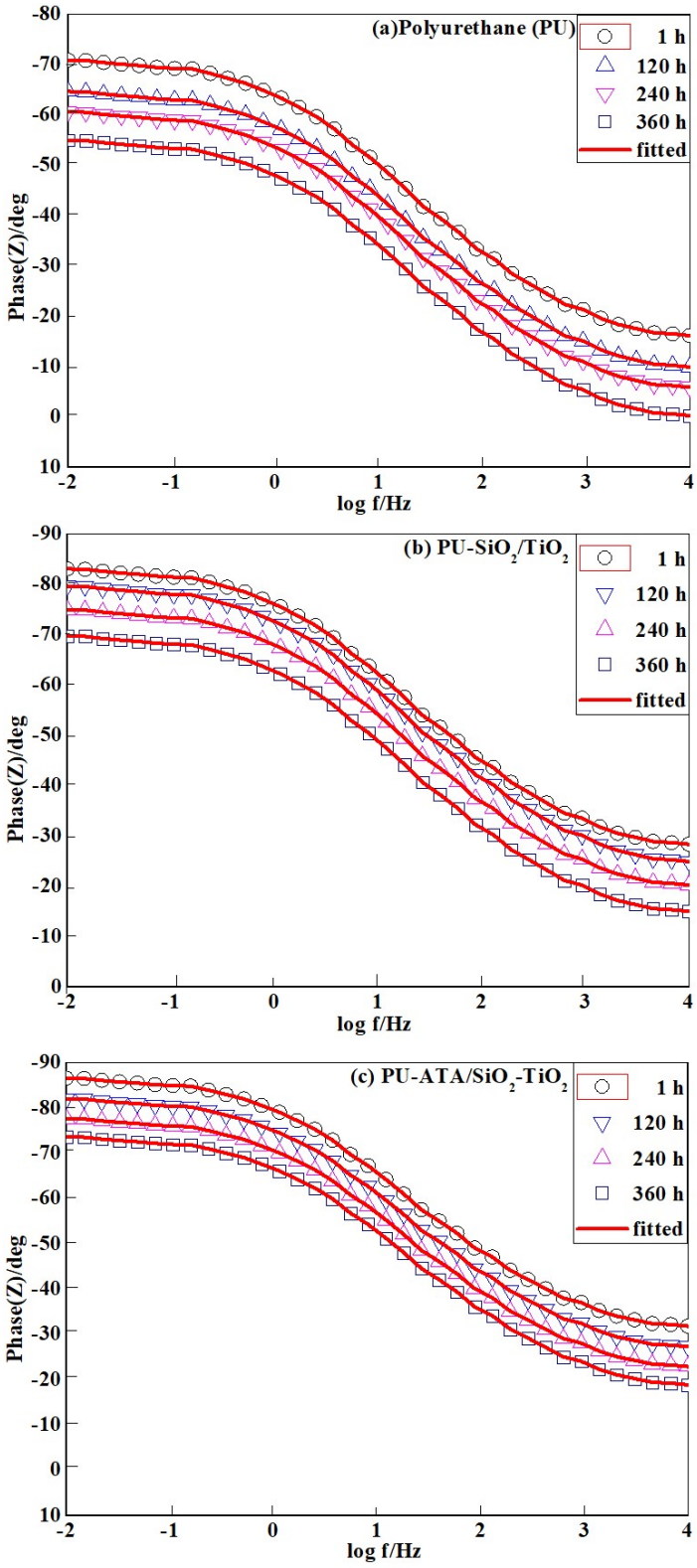

Fig. S2 Bode phase angle plots obtained for (a) pure polyurethane (PU), (b) PU-SiO_2/TiO_2, and (c) PU-ATA/SiO_2-TiO_2 coating exposed to seawater for different hours.

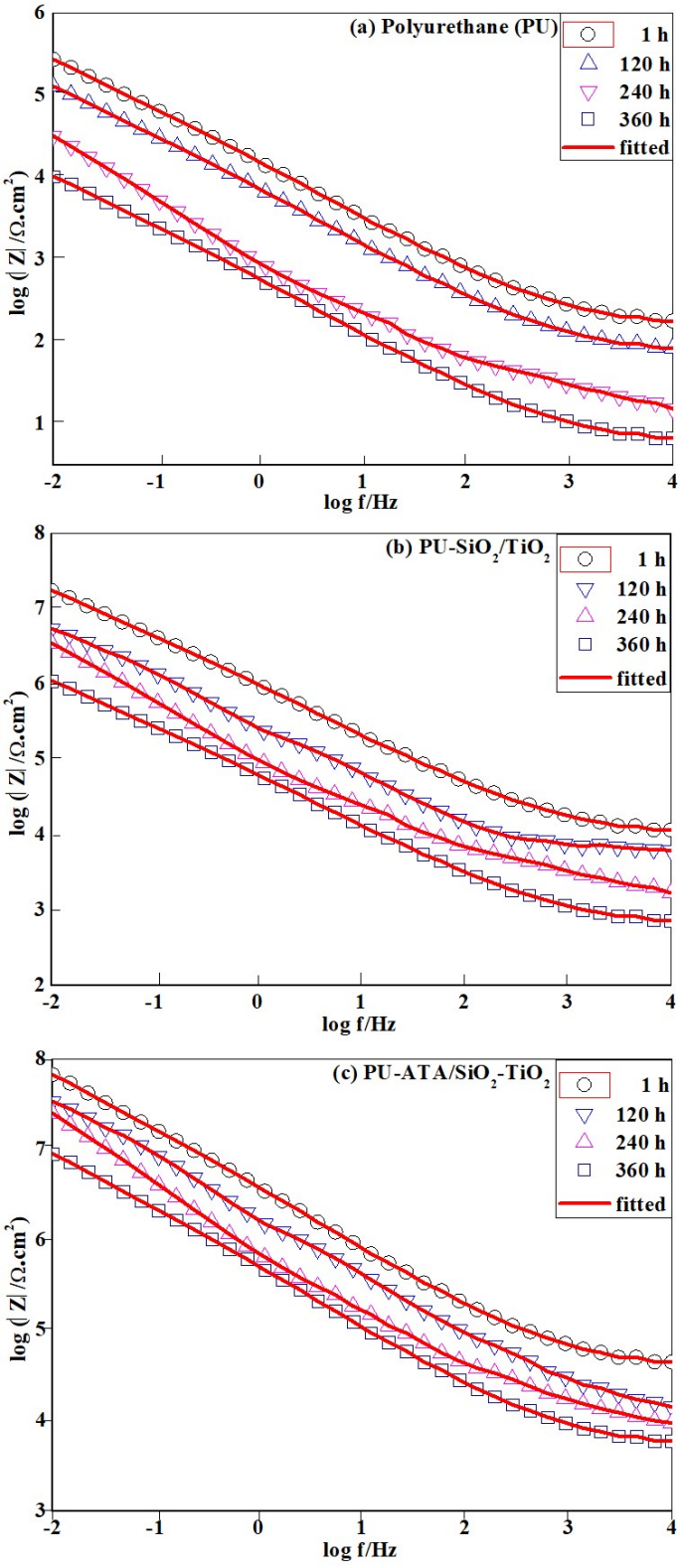

Fig. S3 Bode impedance plots obtained for (a) pure polyurethane (PU), (b) PU-SiO_2/TiO_2, and (c) PU-ATA/SiO_2-TiO_2 coating exposed to seawater for different hours.

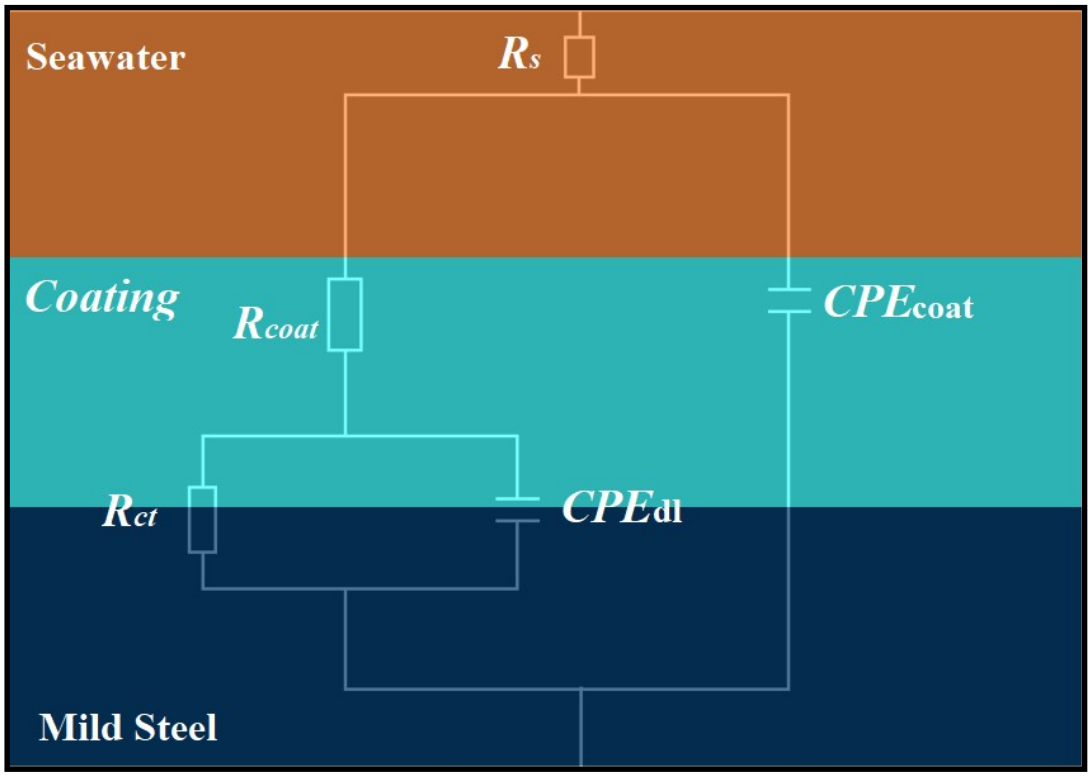

Fig. S4 Equivalent electrical circuit for pure polyurethane (PU), PU-SiO_2/TiO_2, and PU-ATA/SiO_2-TiO_2 coating exposed to seawater for different hours.

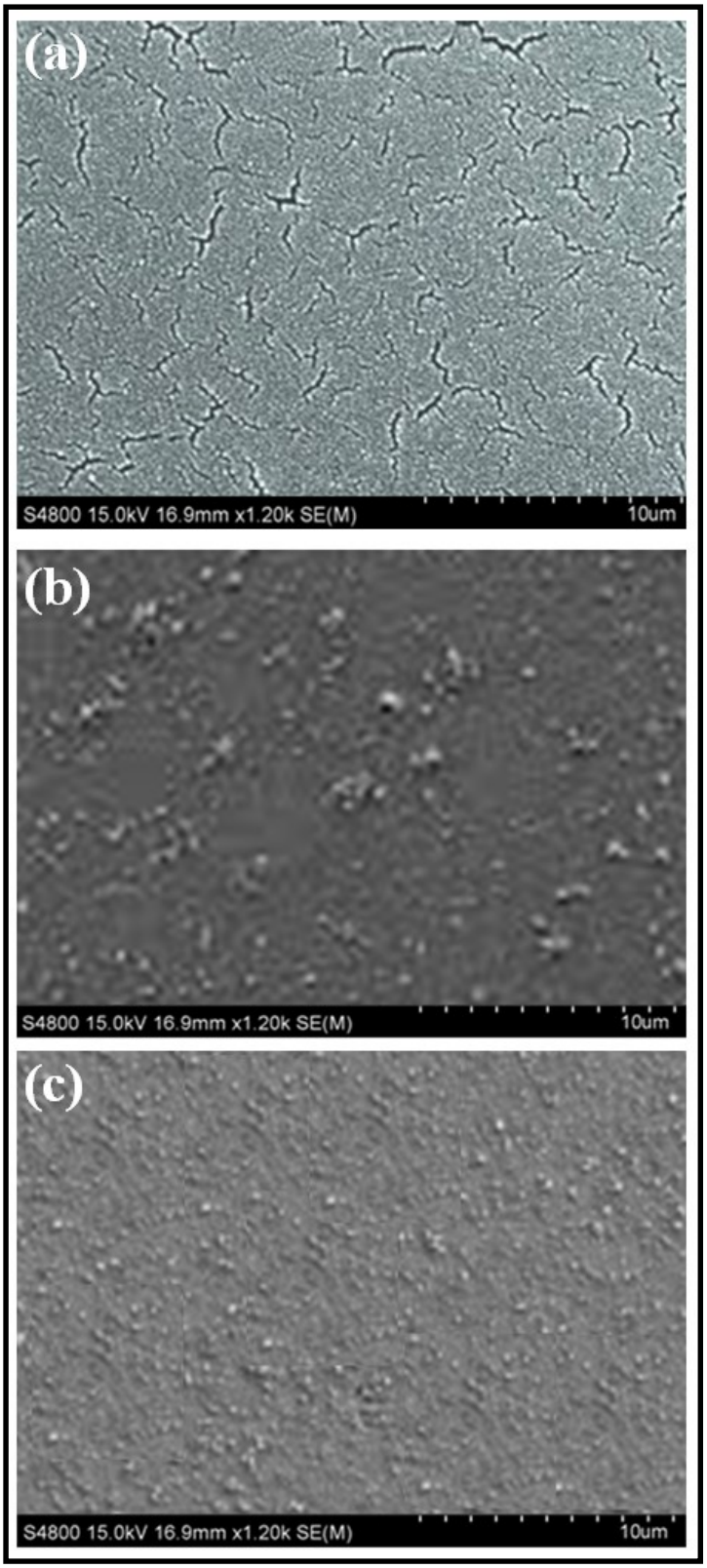

Fig.S5 SEM images of (a) pure polyurethane (PU), (b) PU-SiO_2/TiO_2, and (c) PU-ATA/SiO_2-TiO_2 nanocomposite coated mild steel surface without exposure to the electrolytes.

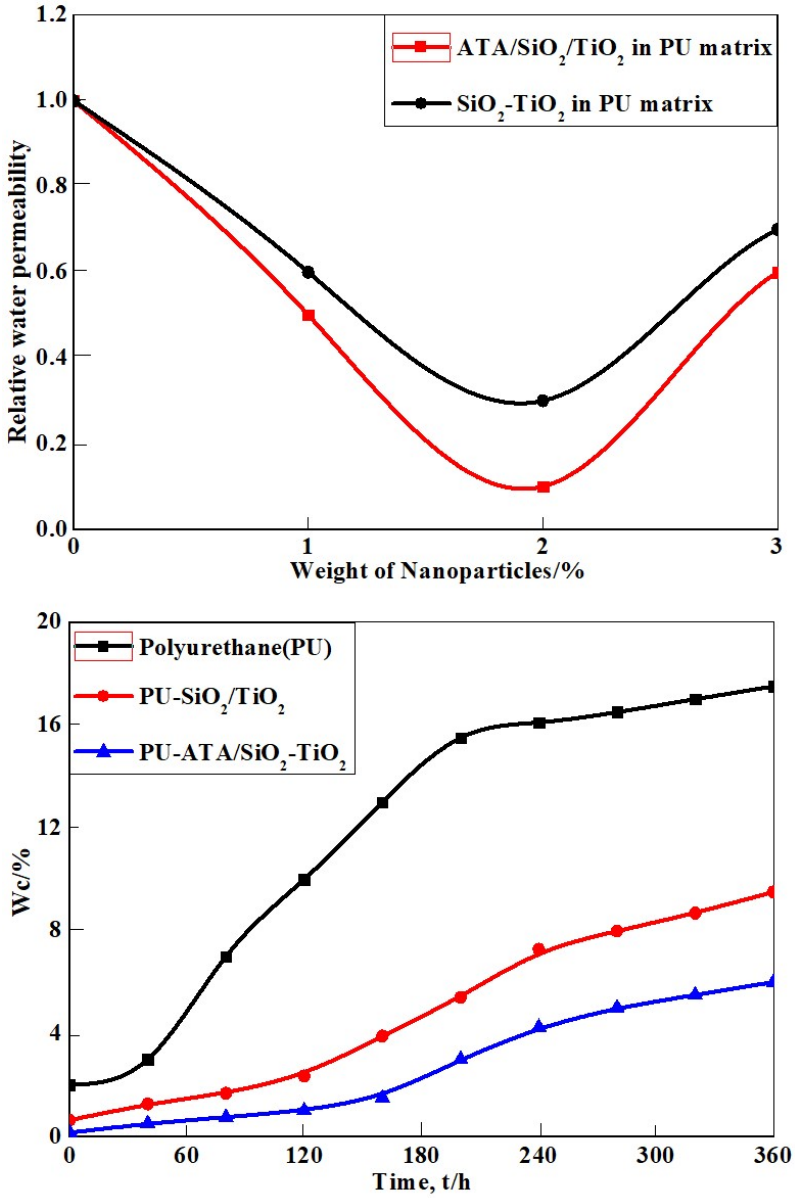

Fig.S6 (a) Relative water permeability for PU with different wt.% of SiO_2-TiO_2 nanoparticle and ATA/SiO_2-TiO_2 immersed in seawater for 1 hour (b) Water permeability for pure polyurethane (PU), PU-SiO_2/TiO_2, and PU-ATA/SiO_2-TiO_2 coating in seawater for 1, 120, 240, and 360 hours

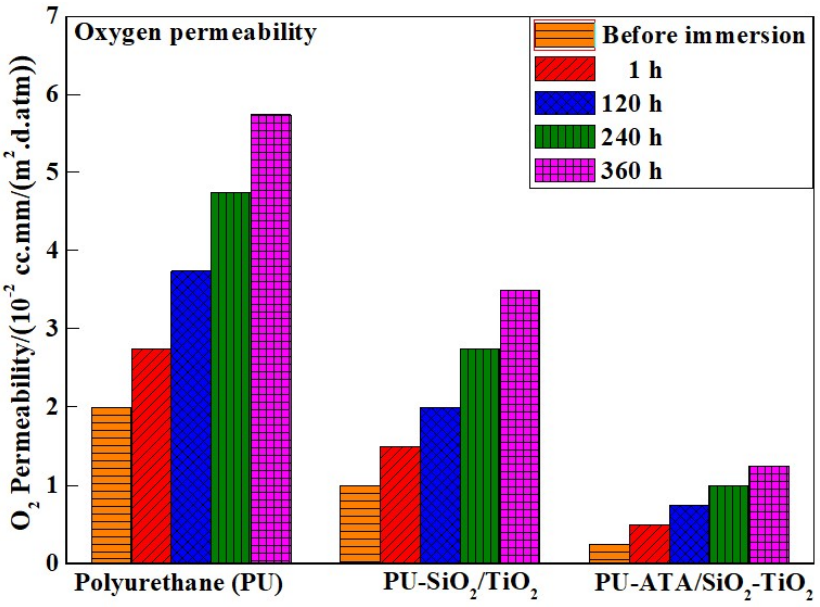

Fig.S7 Oxygen permeability for pure polyurethane (PU), PU-SiO_2/TiO_2, and PU-ATA/SiO_2-TiO_2 coated steel before and after exposure to seawater for 1, 120, 240, and 360 hours