

Article

# Cation Effect in the Corrosion Inhibition Properties of Coumarate based poly(ionic liquid)s

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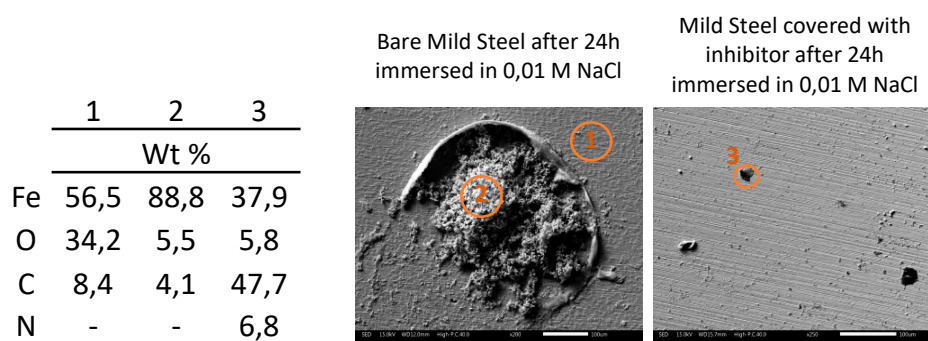
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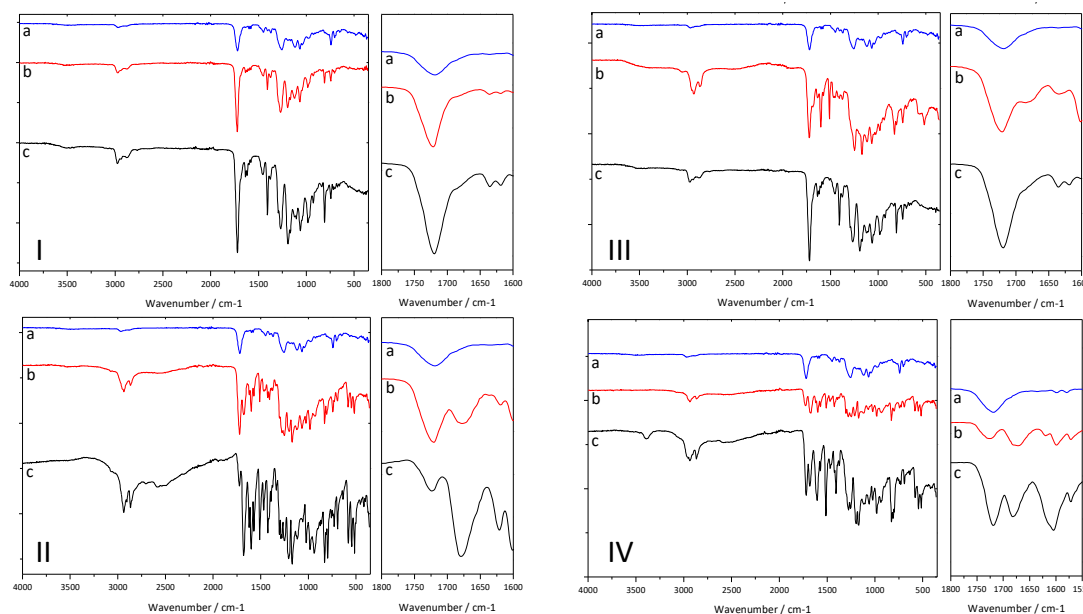
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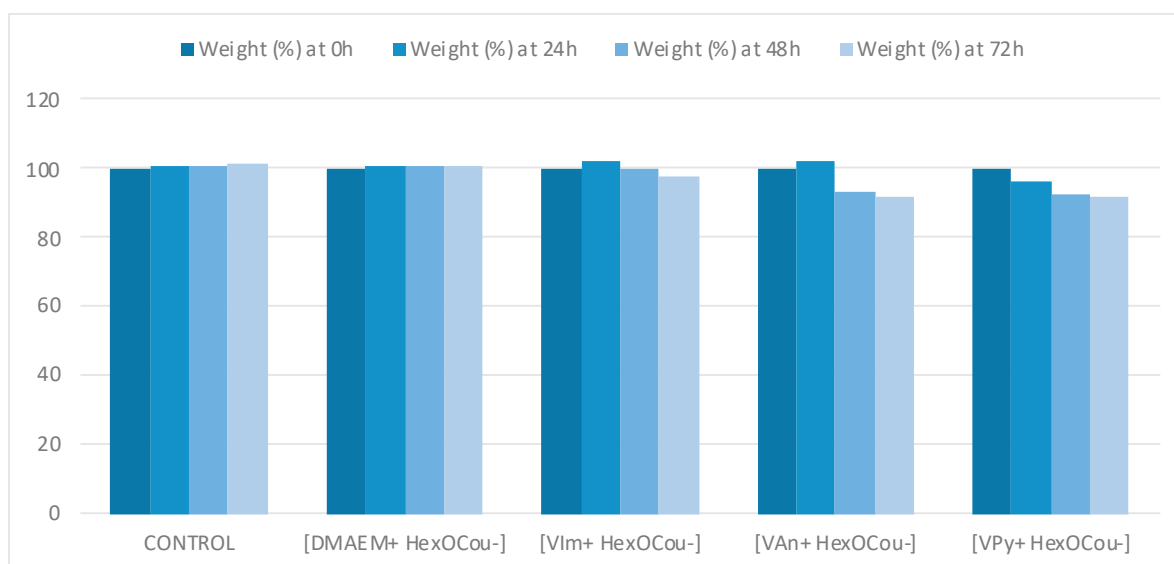
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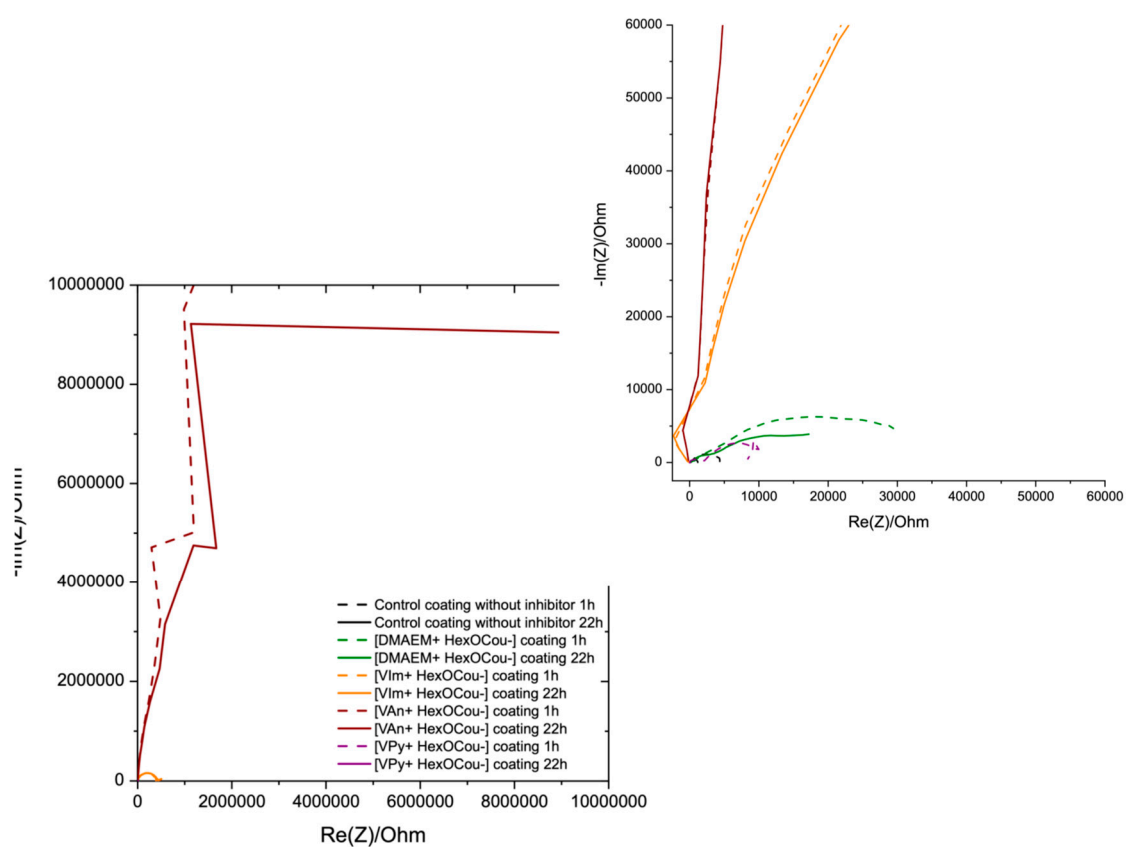
**Figure S1.** EDS data of 3 different zones (1: mild steel surface; 2: Rust deposits; 3: inhibitor deposits) bare mild steel and mild steel covered with inhibitor after 24h immersed in 0,01M NaCl.



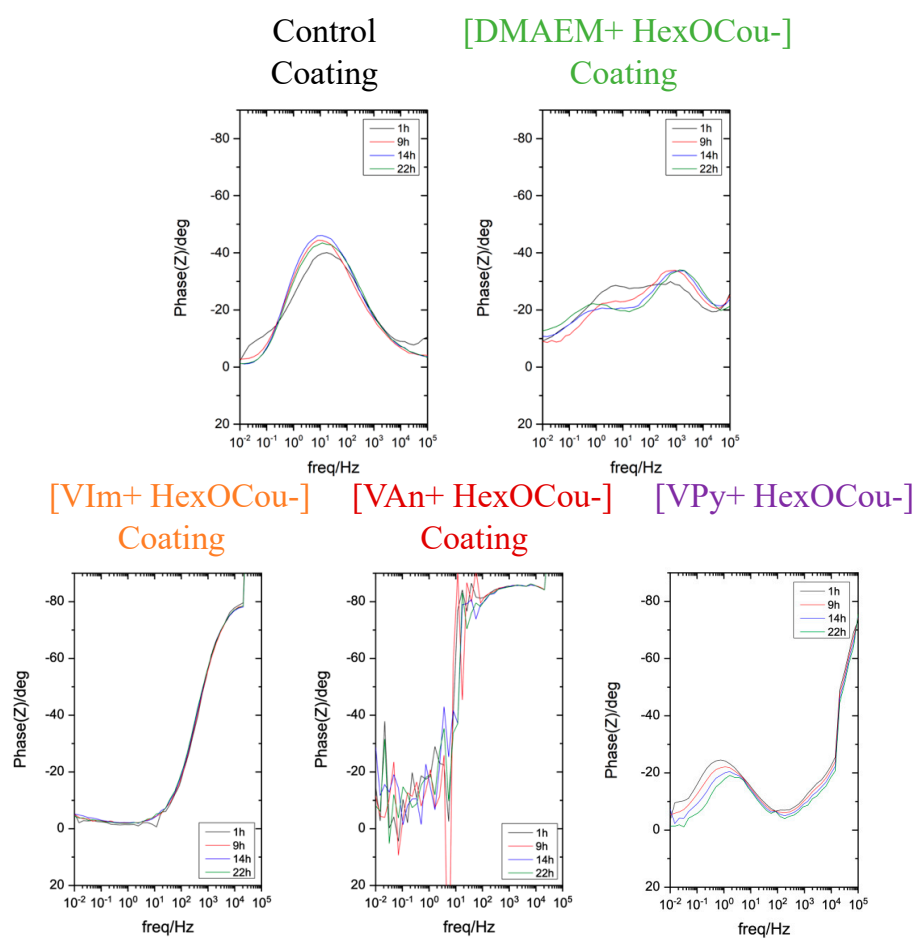
**Figure S2.** ATR-FTIR of inhibitors based monomer mixture (c) and coatings (b) compared to the control coating (a). I: [DMAEM+ HexOCou-]; II: [VIm+ HexOCou-]; III: [VAn+ HexOCou-]; IV: [VPy+ HexOCou-].



**Figure S3.** Swelling test of polymer coatings. Weight of polymers after 24h, 48h and 72h immersion in water.



**Figure S4.** Nyquist plot of polymer coating on AS1020 mild steel containing 20% of [DMAEM+ HexOCou-] (green), 20% of [VIm+ HexOCou-] (orange), 20% of [VAn+ HexOCou-] (wine), 20% of [VPy+ HexOCou-] (purple) and control (black) immersed in 0.005M NaCl after 22h



**Figure S5.** Electrochemical impedance spectra of different polymer coatings on AS1020 mild steel immersed in 0.005M NaCl at different immersion times: phase angle plots for control, inhibited coating containing 20% [DMAEM+ HexOCou-]; inhibited coating containing 20% [VIm+ HexOCou-]; inhibited coating containing 20% [VAN+ HexOCou-]; inhibited coating containing 20% [VPy+ HexOCou-]