**Abstract**

The corrosion protection of N80 steel in 15% HCl by two pyrazolone derivatives namely 2-(3-amino-5-oxo-4,5-dihydro-1H-pyrazol-1-yl)(p-tolyl)methyl)malononitrile (PZ-1) and 2-((3-amino-5-oxo-4,5-dihydro-1H-pyrazol-1-yl)(phenyl)methyl)malononitrile (PZ-2) has been investigated by using gravimetric, electrochemical and quantum chemical studies. The observed results reveal that PZ-1 is a better inhibitor than PZ-2. Tafel polarization showed that PZs are mixed type inhibitors but dominantly affect the cathodic reaction. Both inhibitors were found to obey the Langmuir adsorption isotherm. Scanning electron microscopy (SEM) and scanning electrochemical microscopy (SECM) images support the protection of the N80 steel in the presence of the PZs. Quantum chemical study reveals that both inhibitors have a tendency to get protonated and this result supports the experimental observations.