

**Synergistic effect of KI on the corrosion inhibition of a poly(diallylammonium chloride)-
based cyclocopolymer containing bis-cationic motifs for mild steel corrosion in 20% formic
acid**

Lipiar K. M. O. Goni^a, Ibrahim Y. Yaagoob^a, Mohammad A. J. Mazumder^{a,b*}, Shaikh A. Ali^{a,b*}

^aChemistry Department, King Fahd University of Petroleum & Minerals, Dhahran 31261, Saudi Arabia

^bInterdisciplinary Research Center for Advanced Materials, King Fahd University of Petroleum & Minerals, Dhahran 31261, Saudi Arabia.

*Corresponding author

E-mail address: jafar@kfupm.edu.sa (MAJM)
Tel.: (966) 13 860 7836;
Fax: (966) 13 860 4277

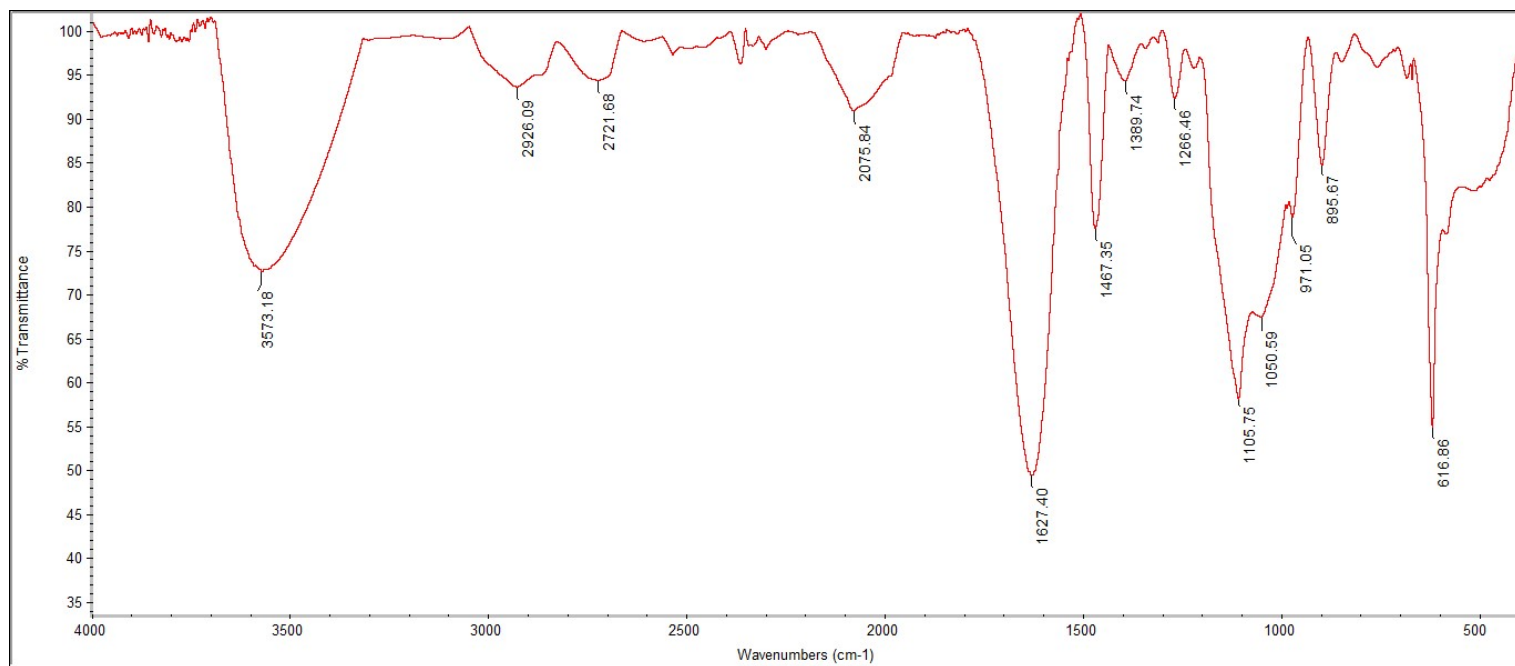


Fig. S1 FT-IR spectrum of homopolymer **3**.

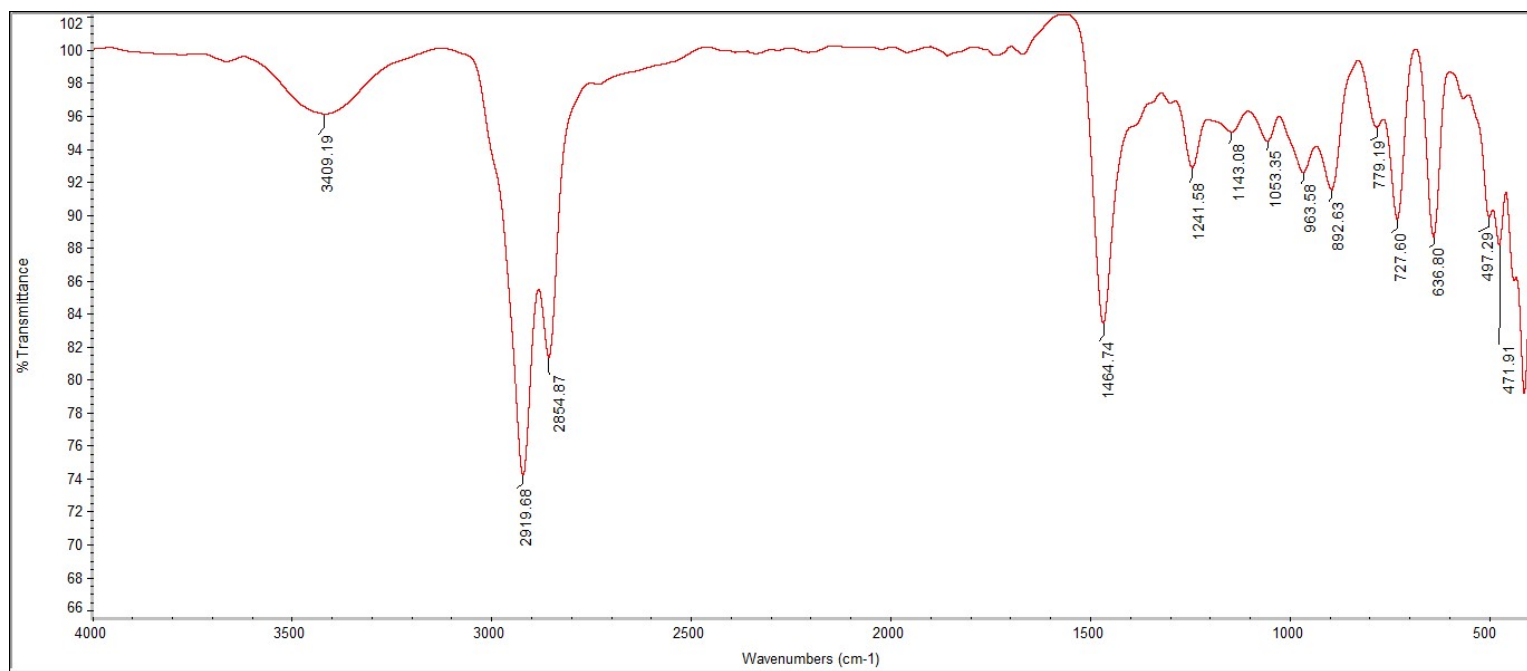


Fig. S2 FT-IR spectrum of quaternary ammonium bromide **6**.

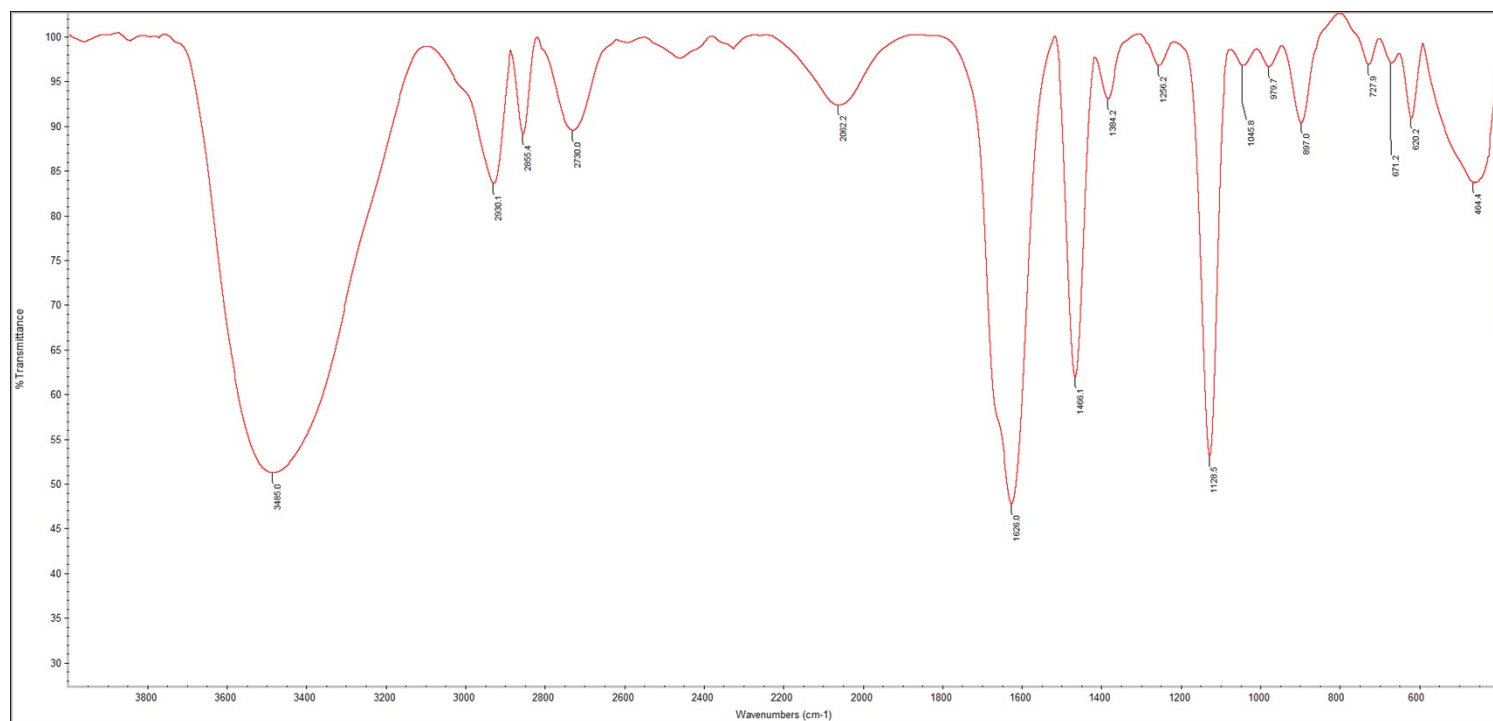


Fig. S3 FT-IR spectrum of Hydrophobic/Hydrophilically modified poly(diallylammonium chloride) copolymer **8a**.

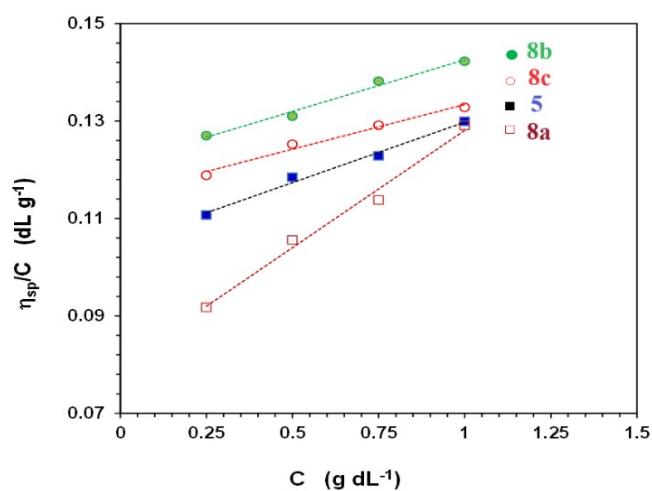


Fig. S4 The viscosity plots of homopolymer **3** and copolymers **8a-c** in 0.1 M NaCl at 30±0.1 °C.

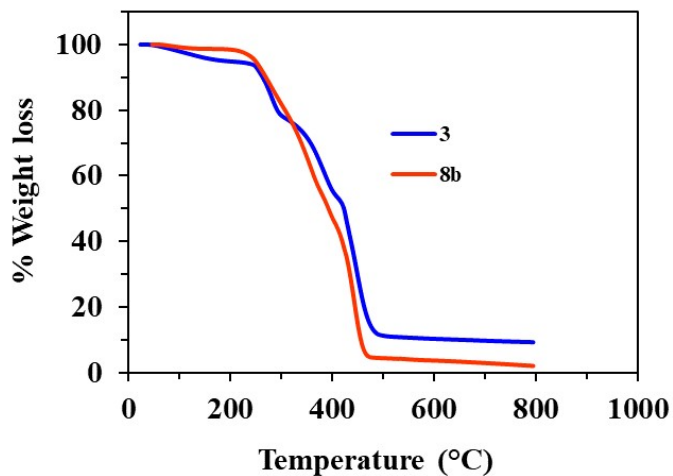


Fig. S5 TGA curves of the homopolymer (3) and copolymer 8b.

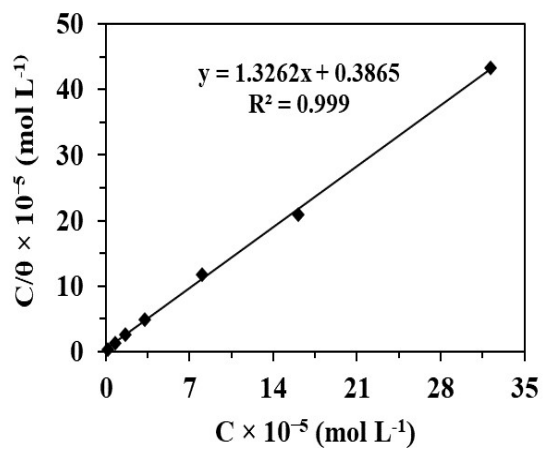


Fig. S6 Langmuir adsorption isotherm for the adsorption of 8b onto mild steel surface in 20% formic acid.

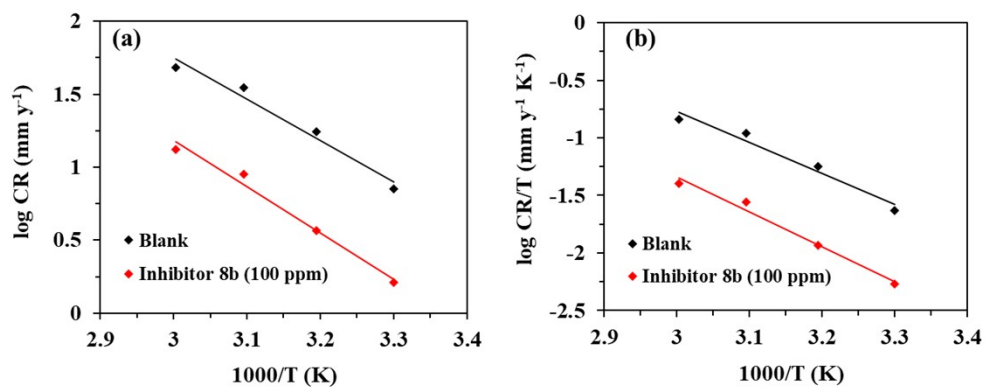


Fig. S7 (a) Arrhenius and (b) transition state plots obtained for the corrosion of mild steel.

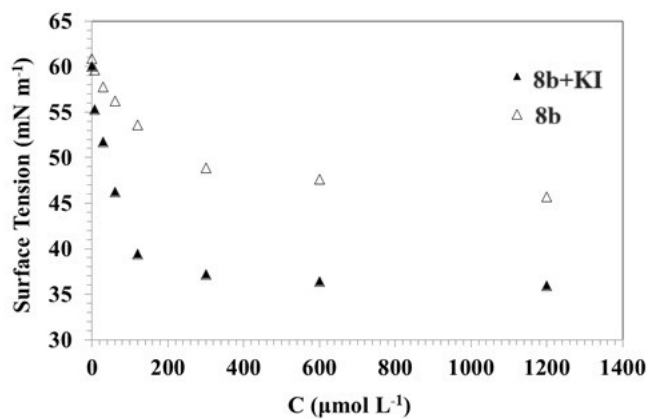


Fig. S8 Surface tension vs. concentration curves for **8b** with and without KI.