Electronic Supplementary Material (ESI) for RSC Advances.

SUPPORTING INFORMATIONS

Adsorption and anticorrosive behavior of aromatic epoxy monomers on carbon steel corrosion in acidic solution: Computational studies sustained experimental studies

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Supplementary Information

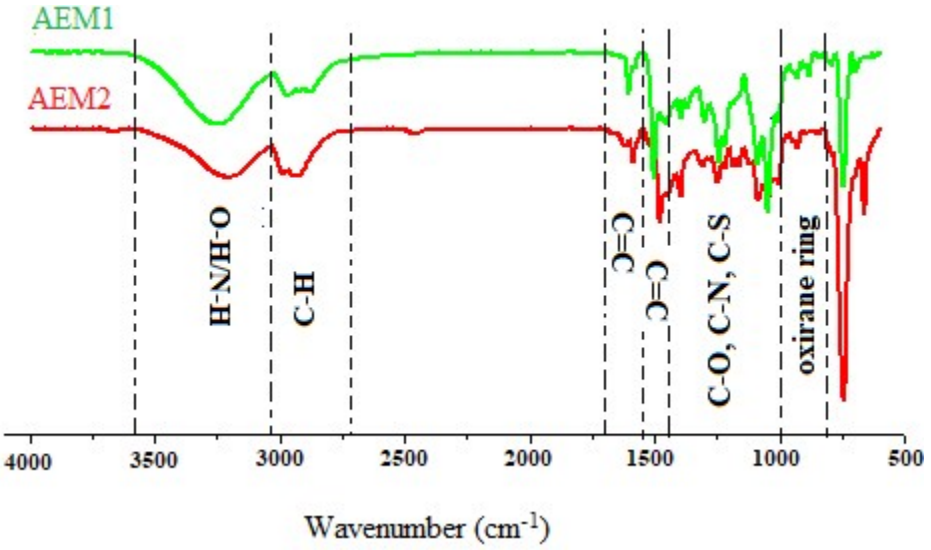

Fig. SI 1.ATR-FTIR spectra of AEM1and AEM2

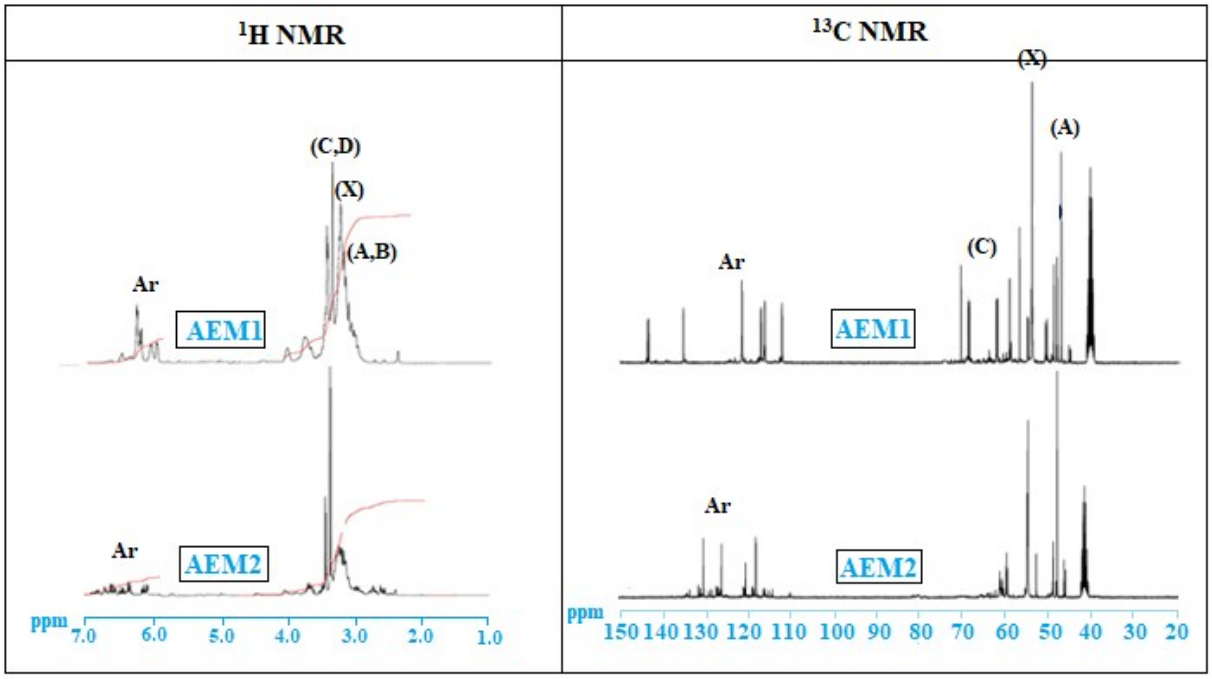

Fig. SI2.^{1}H and ^{13}C NMR spectra of AEM1and AEM2

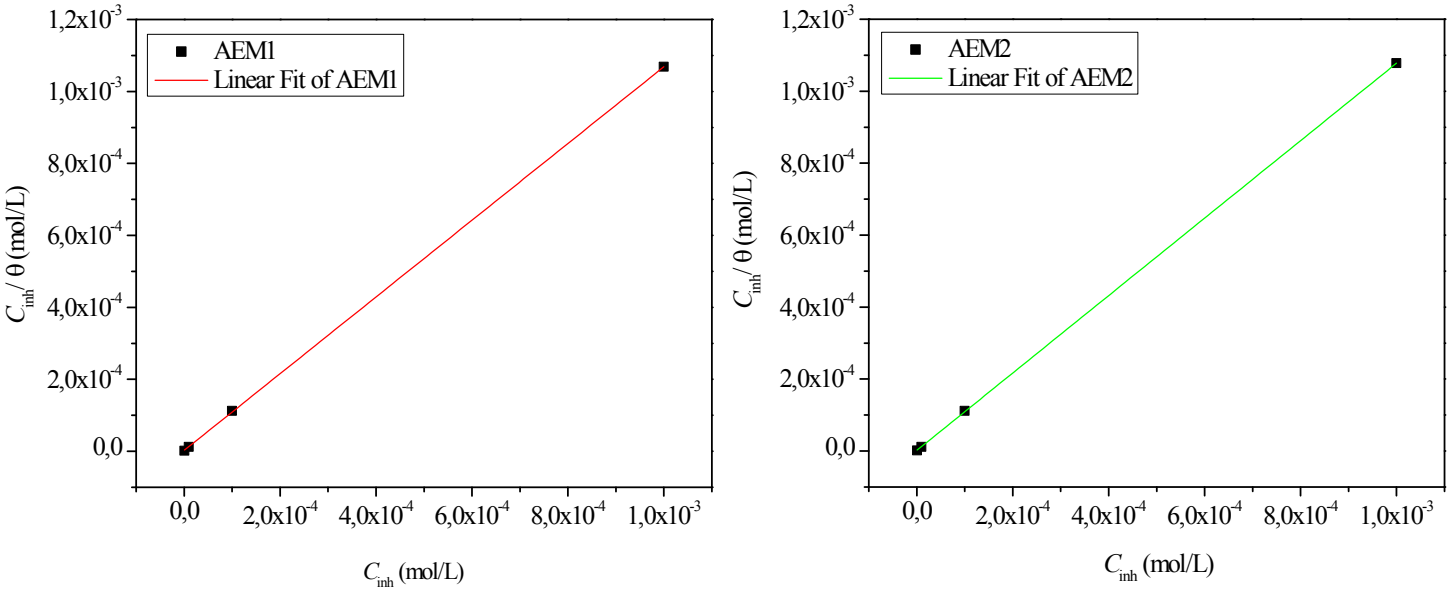

Fig. SI3. Plot of the Langmuir adsorption isotherm of aromatic epoxy monomers AEM1 and AEM2 on the carbon steel surface at 298 K.

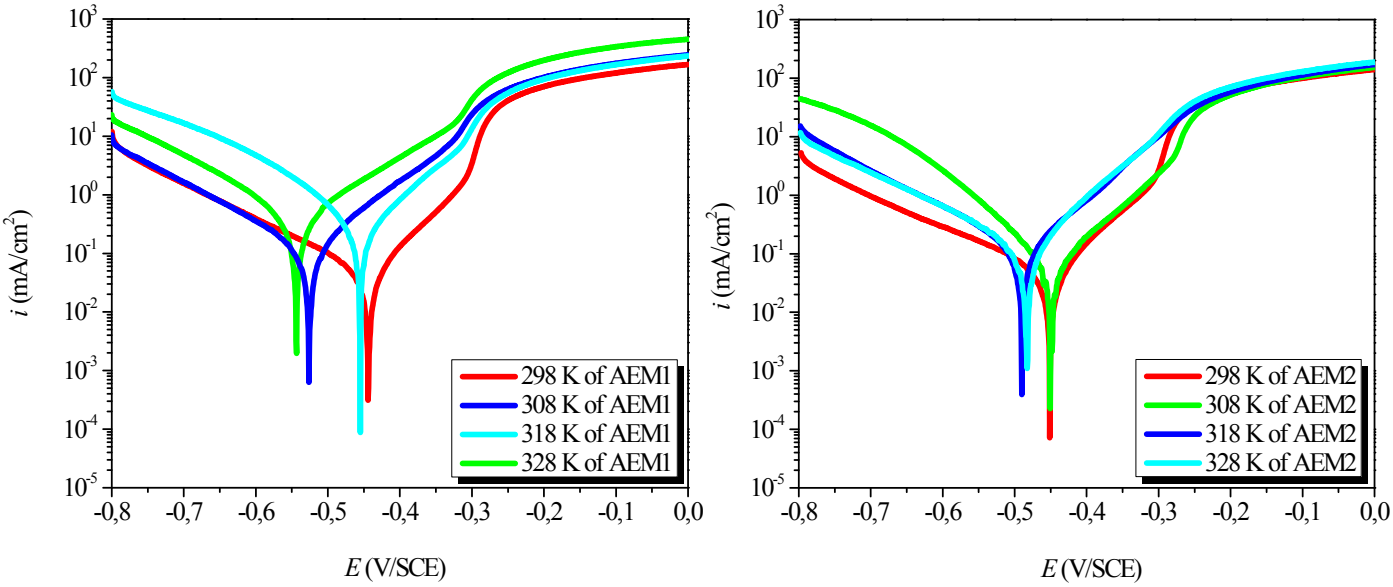

Fig. SI4. Potentiodynamic polarization curves of carbon steel in 1 M HCl solution in the presence of 10^{-3} M of AEM1 and AEM2 at different temperatures

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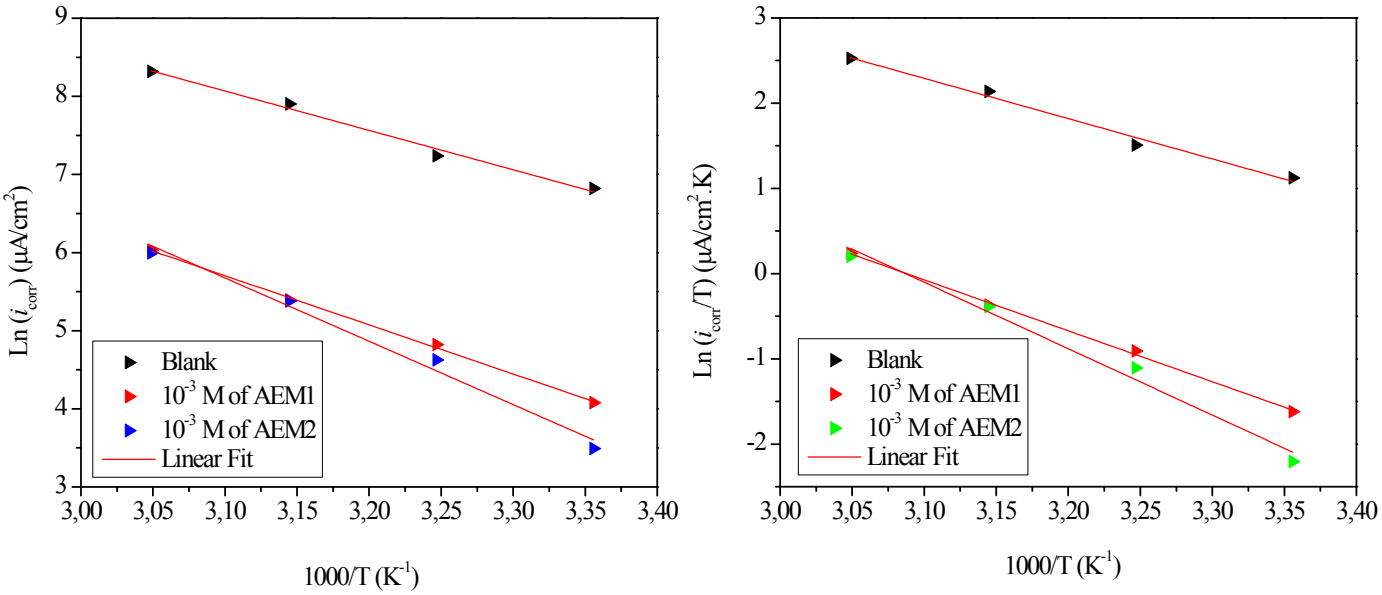

Fig. SI5. Arrhenius plots of Ln (i_{corr})vs. 1/Tand Ln (i_{corr}/T)vs. 1/T for carbon steel in 1 M HCl solution in the absence and presence of 10^{-3} M AEM1 and AEM2.

Tables

Table SI 1 Langmuir adsorption parameters.

Inh	R^2	slope	K_{ads} ($M^{-1}\times10^6$)	$-\Delta G_{ads}$ (kJ.mol^{-1})
AEM1	0.9999	1.0662	0.42	42.03
AEM2	0.9999	1.0762	1.01	44.20

Table SI 2 Influence of temperature on the corrosion rate and inhibition efficiency of carbon steel in1 M HCl at 10^{-3} M of AEM1 and AEM2.

T (K)		**E_{corr} mV/SCE**		**i_{corr} µA/Cm^2**	**E_{ct} %**
	Blank	**10^{-3} M of AEM1**	**Blank**	**10^{-3} M of AEM1**	**-**
298	- 473	-444	916	058.96	93.6
308	- 459	-528	1390	124.40	91.0
318	- 455	-454	2700	219.90	91.8
328	- 453	-537	4100	416.01	89.8
	Blank	**10^{-3}M of AEM2**	**Blank**	**10^{-3}M of AEM2**	**-**
298	- 473	-451	916	032.88	96.4
308	- 459	-456	1390	102.00	92.6
318	- 455	-458	2700	216.59	91.9
328	- 453	-468	4100	401.86	90.1

Table SI 3 Activation parameters for carbonsteel in 1 M HCl solution in the absence and presence of AEM2.

	R^2	**E_a (kJ/mol)**	**ΔH_a (kJ/mol)**	**ΔS_a (J.mol^{-1} K^{-1})**	**E_a-ΔH_a (kJ/mol)**
Blank	0.9830	41.90	39.30	- 56.70	2.59
10^{-3} M of AEM1	0.9977	52.28	49.69	11.97	2.59

10^{-3} M of AEM2	0.9790	67.37	64.78	58.49	2.59