**Supplementary Material:**

***Cupressus arizonica* fruit essential oil: A novel green inhibitor for acid corrosion of carbon steel**

Sara Cherrad 1,2, Awad A. Alrashdi 3, Han-Seung Lee 4,\*, Yassmina El aoufir 5, Hassane Lgaz 4,\*, Badr Satrani 2, Mohamed Ghanmi 2, El Mahjoub Aouane 1, and Abdelaziz Chaouch 6

1 Natural resources and sustainable development laboratory, University Ibn Tofail, PB 133-14050, Kenitra, Morocco.

2 Forest Research Center B.P 763, Rabat Agdal, 10050, Morocco.

3 Chemistry Department, Umm Al-Qura University, Al-Qunfudah University College, Saudi Arabia.

4 Department of Architectural Engineering, Hanyang University-ERICA, 1271 Sa 3-dong, Sangnok-gu, Ansan 15588, South Korea.

5 Laboratory of organic chemistry, catalysis, and environment, Higher School of Education and Formation, University Ibn Tofail, PB 133-14050, Kenitra, Morocco.

6 Laboratory of organic chemistry, catalysis, and environment, University Ibn Tofail, PB 133-14050, Ke-nitra, Morocco.

\*Correspondence: [ercleehs@hanyang.ac.kr](mailto:ercleehs@hanyang.ac.kr) (H-S.L.); [hlgaz@hanyang.ac.kr](mailto:hlgaz@hanyang.ac.kr) (H.L.).

Chart

Description automatically generated

**Figure S1.** Tafel polarization curves of carbon steel without and with the various concentrations of CAFEO in 1.0 mol/L HCl shifted to E=0.

|  |  |
| --- | --- |
|  |  |

Figure S1. PDP curves of carbon steel exposed to 1.0 M HCl in (a) absence and (b) presence of 0.5 g/L of CAFEO at different temperatures.

Table S1. Electrochemical parameters derived from PDP curves without and with 0.5 g/L concentration of CAFEO as a function of temperature.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Inhibitor | Temperature  (K) | -*E*corr  (mV/SCE) | *i*corr  (µA/cm²) | % IE |
|  | 298 | 474.83 | 996 | ---- |
| Blank | 303 | 454.42 | 1181 | ---- |
|  | 313 | 442.97 | 1 844 | ---- |
|  | 323 | 450.95 | 2 408 | ---- |
|  | 298 | 527.17 | 76 | 92 |
| CAFEO | 303 | 514.31 | 171 | 85 |
|  | 313 | 543.38 | 444 | 76 |
|  | 323 | 509.60 | 1 447 | 40 |