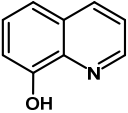
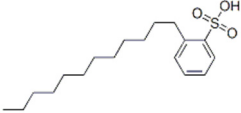
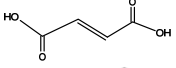
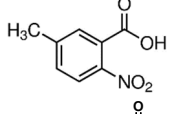
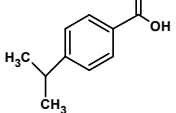
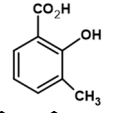
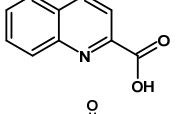
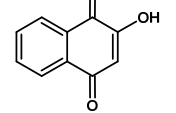
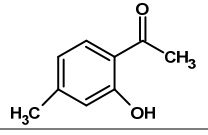


Table S1. Kinetic laws, with and without inhibitor, calculated from hydrogen measurements.

Inhibitor species	[I] (M)	NaCl (wt.%)	pH	b _{cr} (mL cm ⁻² d ⁻¹)	Formula
NaCl (reference)	0.05	0.5	8	0.21	
8-Hydroxyquinoline	0.05	0.5	8	0.02	
Dodecylbenzenesulphonic acid	0.05	0.5	8	0.05	
Fumaric acid	0.05	0.5	8	0.11	
5-Methyl-2-nitrobenzoic acid	0.05	0.5	8	0.03	
4-Isopropilicbenzoic acid	0.05	0.5	8	0.32	
3-Methylsalycilic acid	0.05	0.5	8	0.03	
Quinaldic acid	0.05	0.5	8	0.16	
2-Hydroxy-1,4-napothoquinone	0.05	0.5	8	1.29	
4-Methyl-3-salycilic acid	0.05	0.5	8	1.02	

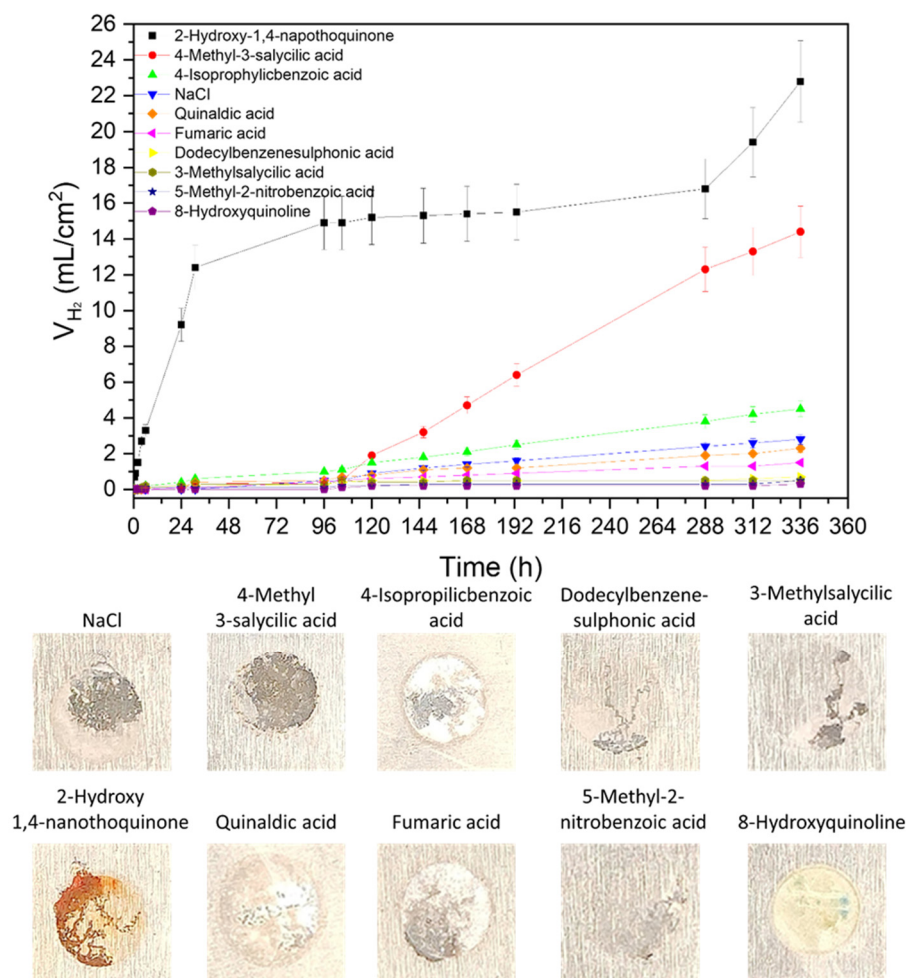


Figure S1. Volume of hydrogen evolved from the cathodic reaction during immersion in 0.5 wt.% NaCl solution and surface appearance of the exposed area after the test.

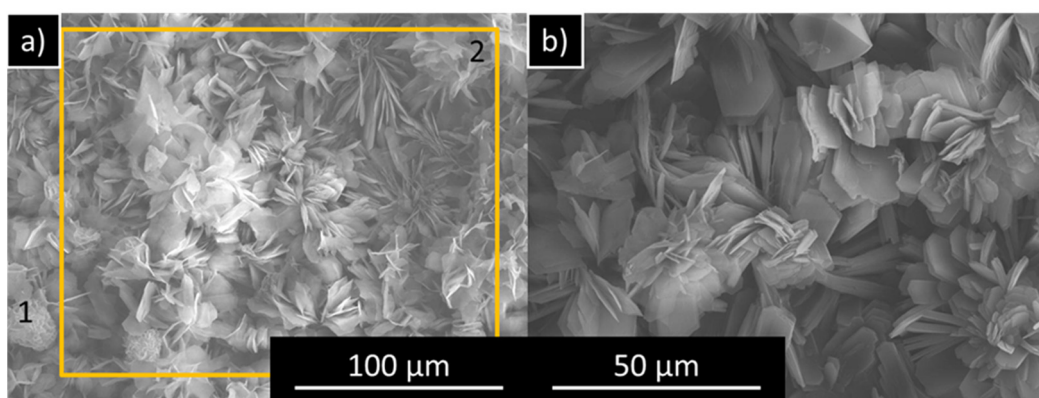


Figure S2. (a) Surface morphology of bare AZ31 exposed to 0.5 wt.% NaCl containing 8HQ after 14 days. A higher magnification view of the flakes is presented in (b). Marked areas corresponds to the EDS analysis collected in Table S2.

Table S2. Results of the local EDS surface analysis of the coatings (at.%).

	C	O	Na	Mg	Al	Cl	Zn
1	76.3	20.7	0.1	2.6	0.1	0.1	0.1
2	78.0	16.9	0.2	4.6	0.1	–	0.1

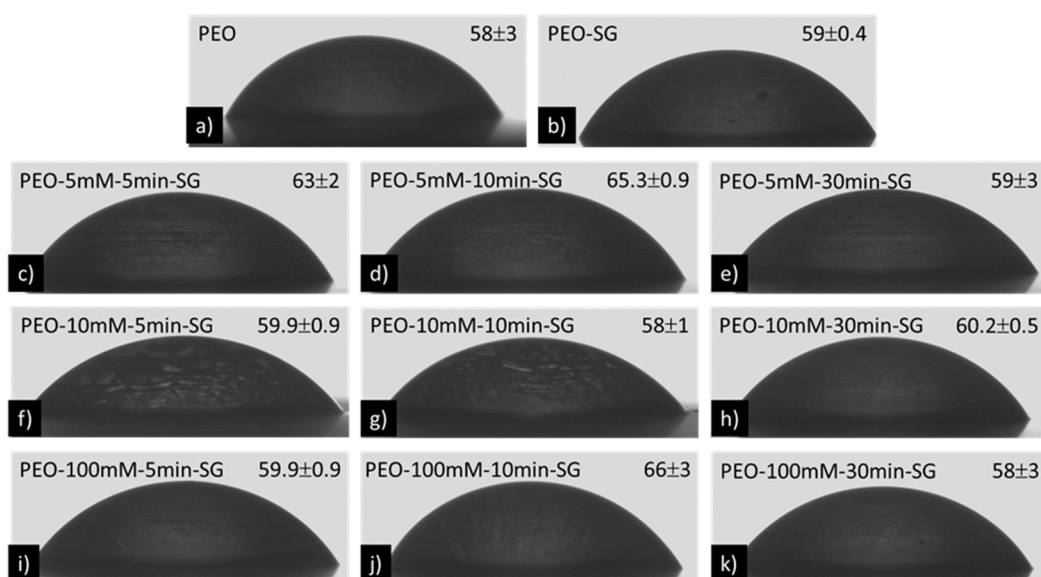


Figure S3. Water contact angle measurements: (a) PEO, (b) PEO-SG and (c-k) PEO-8HQ-SG.