

## SUPPLEMENTARY MATERIALS

### ***Croton Lechleri* Extracts as Green Corrosion Inhibitors of Admiralty Brass in Hydrochloric Acid**

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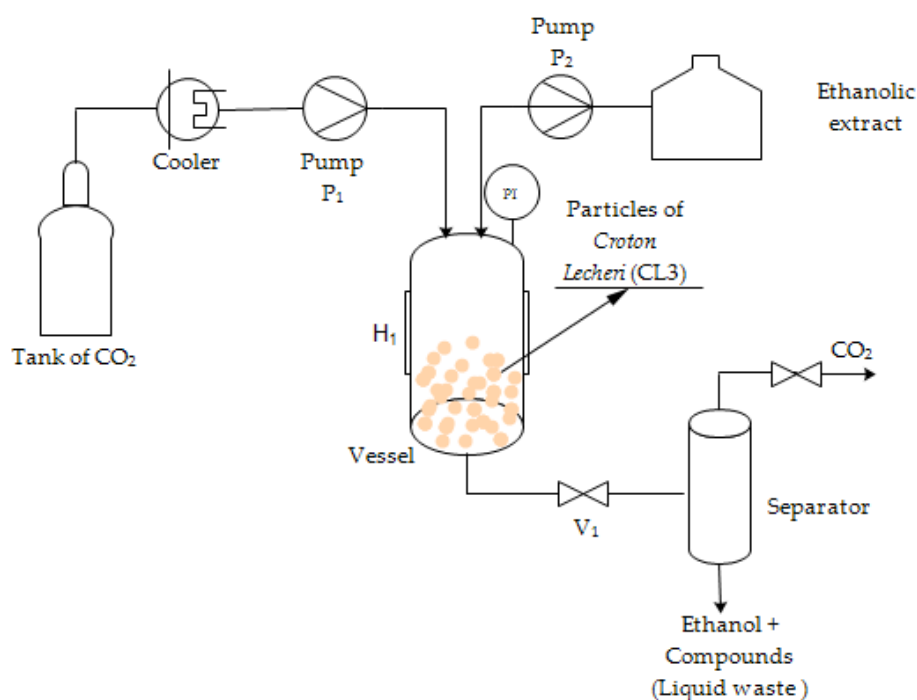
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**Figure S1.** Pilot plant of supercritical CO<sub>2</sub> antisolvent extraction of CL3.

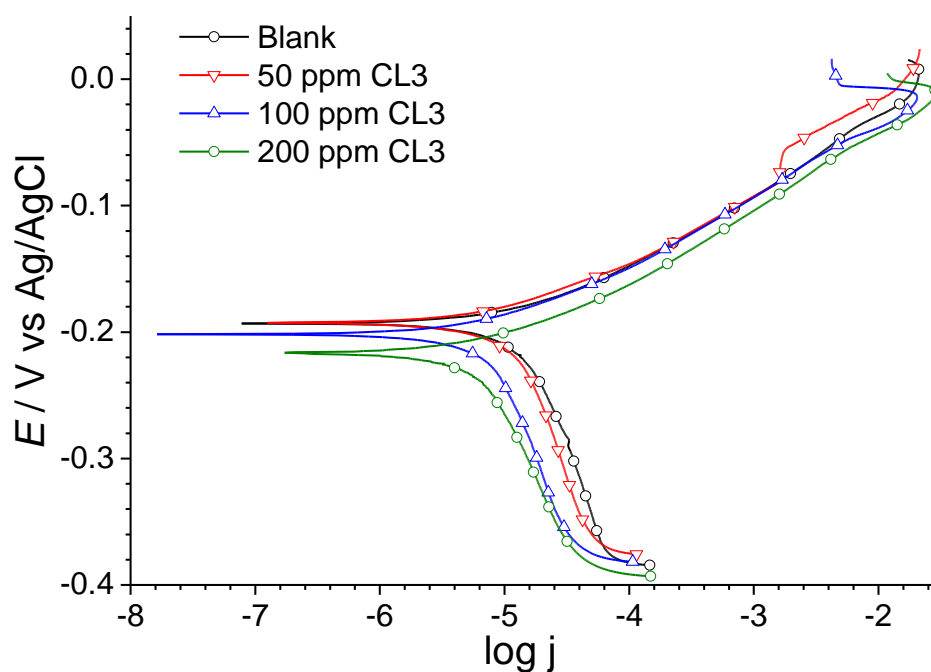
A home-made pilot plant was used in this study, the schematic diagram is shown in Figure S9. The equipment consisted in one tank of CO<sub>2</sub> and a cooler, two pumps, one for CO<sub>2</sub> (P1) and the other for the liquid extract (P2). These two flow currents mixed at a heated jacketed (H1) 250 mL precipitator vessel connected to a pressure gauge (PI). A micrometric valve (V1) allowed to control flux to the separator where CO<sub>2</sub> (g) was released from the ethanolic waste mixture. The values of the parameters used are shown in Table S1.

**Table S1.** Conditions of supercritical CO<sub>2</sub> antisolvent extraction of CL3.

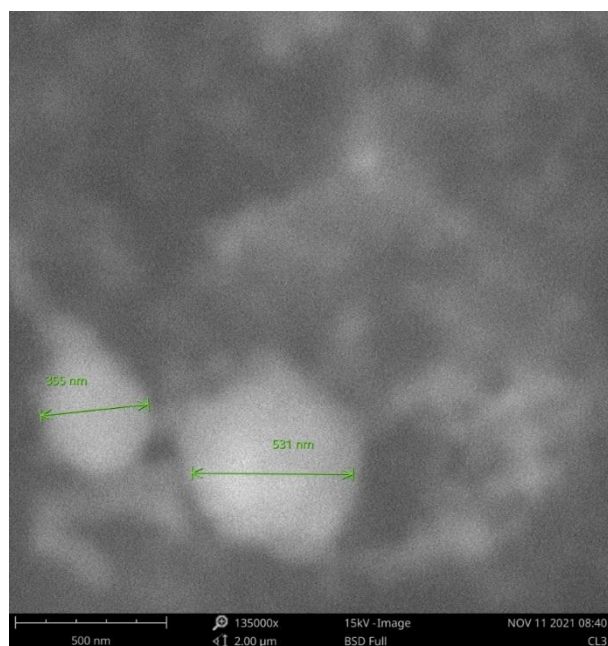
Pressure (bar)	Temperature (°C)	Concentration of the extract (mg/mL)	Flow of CO <sub>2</sub> (mL/min)	Time of wash (min)
90	35	30	10000	60



**Figure S2.** Photographs of solid extracts obtained from *C. lecheri* by (a) lyophilization, (b) solvent extraction, and (c) supercritical CO<sub>2</sub> antisolvent extraction.



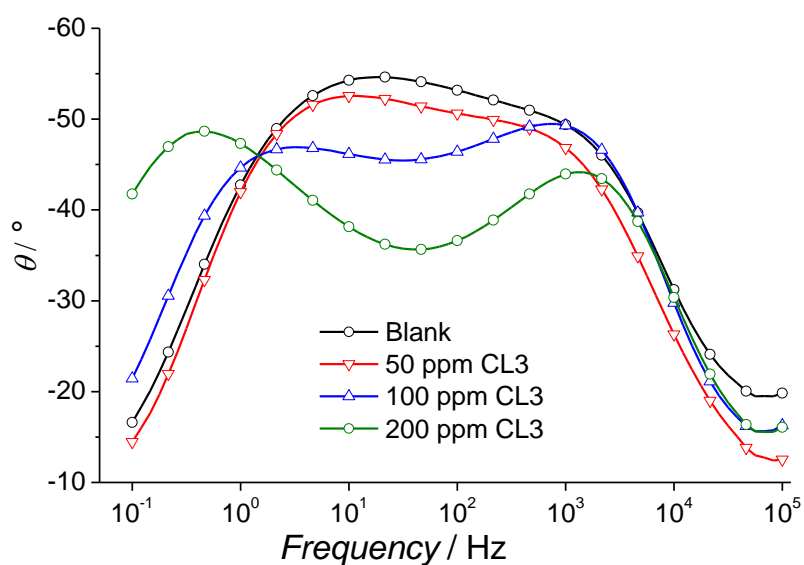
**Figure S3.** Potentiodynamic polarization plots of AB in 0.5 M HCl in the presence of CL3 at several concentrations at 25°C.



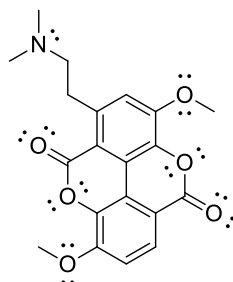
**Figure S4.** Microphotography of CL3 spherical particles.

**Table S2.** Tafel polarization parameters for AB in 0.5 M HCl with CL3 at concentrations of 50 ppm-200 ppm at 25°C.

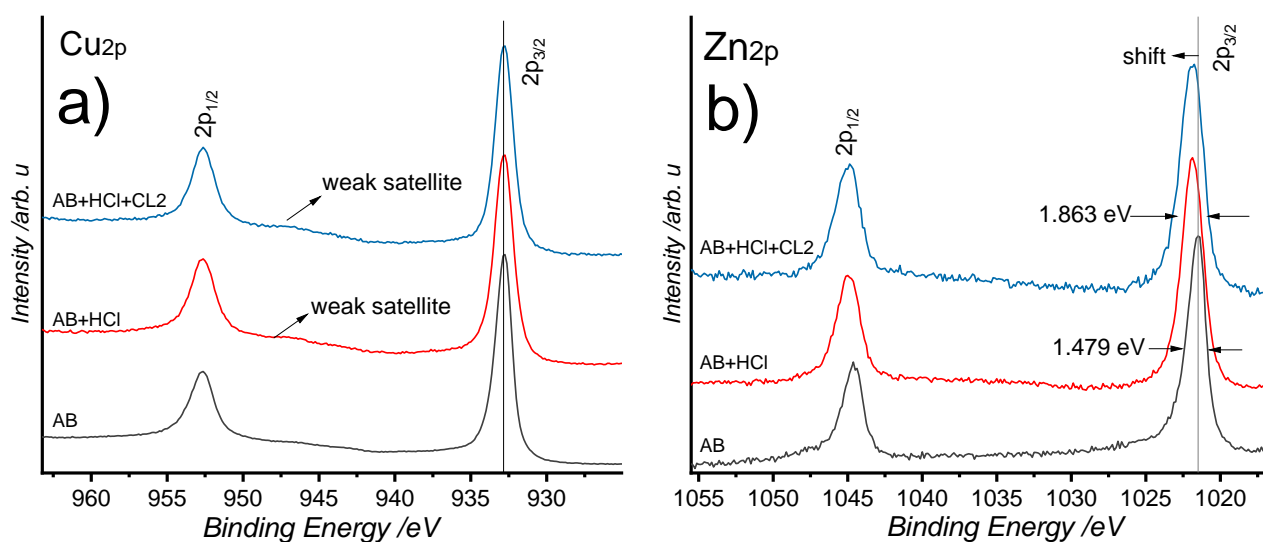
Entry	$E_{\text{corr}}$ (V)	$\beta_c$ (mV/dec)	$\beta_a$ (mV/dec)	$j_{\text{corr}}$ ( $\mu\text{A}/\text{cm}^2$ )	IE%
Blank	-0.193	281.6	53.8	14.84	-
50 ppm	-0.194	360.5	53.1	13.13	11.56
CL2 100 ppm	-0.202	308.5	45.5	8.95	39.72
200 ppm	-0.214	238.0	47.5	7.58	48.93



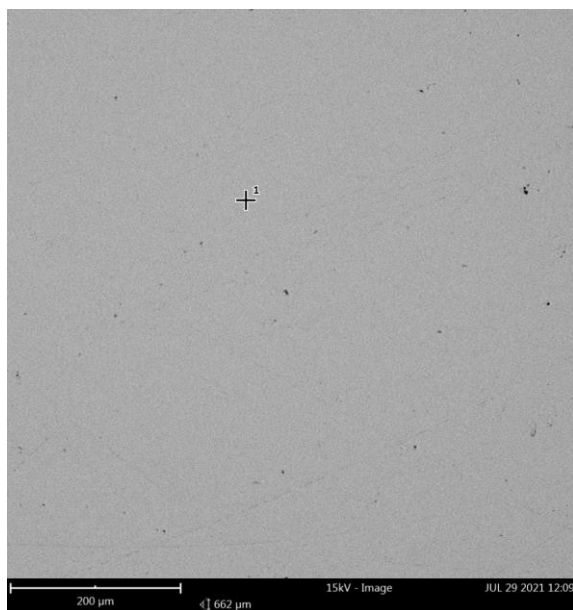
**Figure S5.** Bode diagrams of AB at  $E_{\text{corr}}$  in 0.5 M HCl at various concentrations of CL3.



**Figure S6.** Chemical structure of tapsine.

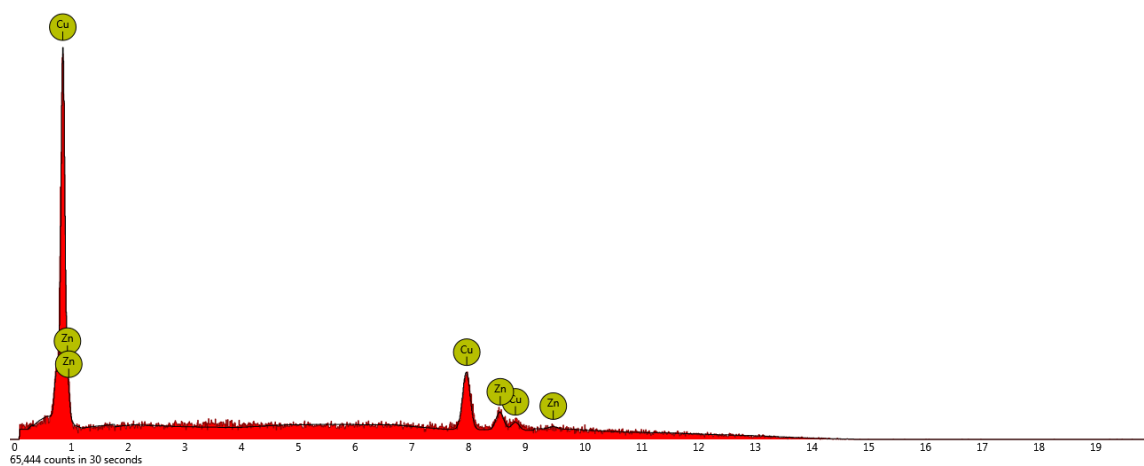


**Figure S7.** (a) Cu2p and (b) Zn2p XPS spectra for a polished admiralty brass (black line), admiralty brass after immersion in 0.5 M HCl (red line), and admiralty brass after immersion in 0.5 M HCl with 50 ppm CL2 (blue line).

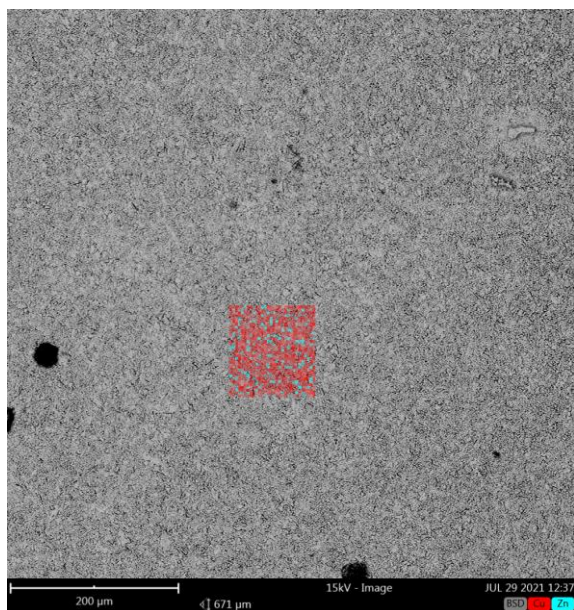


Element Symbol	Atomic Conc.	Weight Conc.	Oxide Symbol	Stoich. Conc.
Cu	70.58	69.99	Cu	70.58
Zn	29.42	30.01	Zn	29.42

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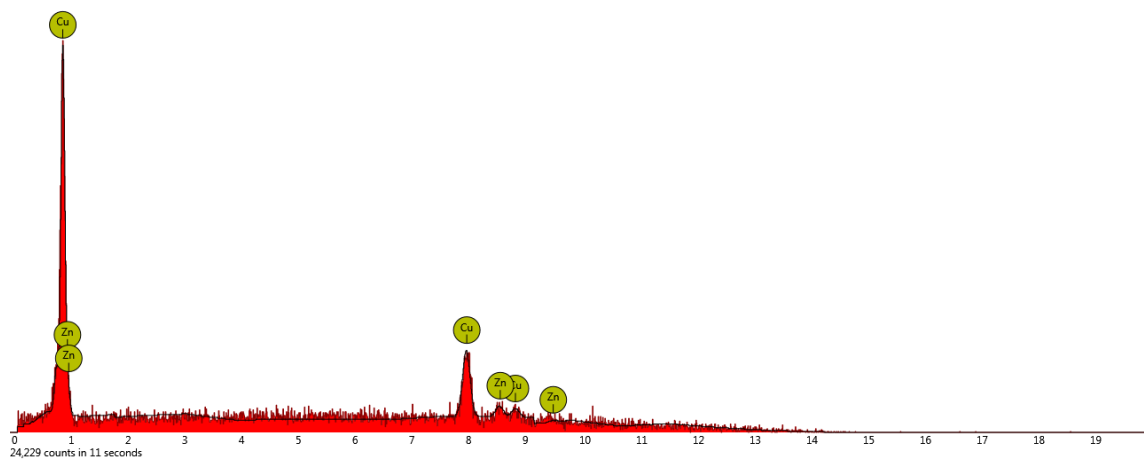


**Figure S8.** EDS spectrum of a polished admiralty brass sample.

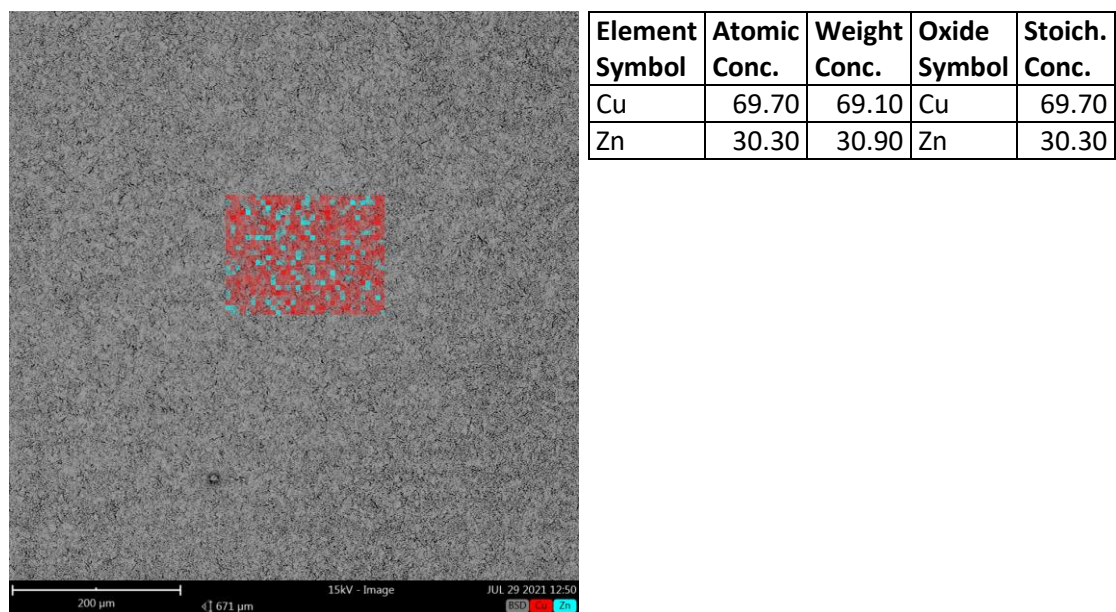


Element Symbol	Atomic Conc.	Weight Conc.	Oxide Symbol	Stoich. Conc.
Cu	82.12	81.70	Cu	82.12
Zn	17.88	18.30	Zn	17.88

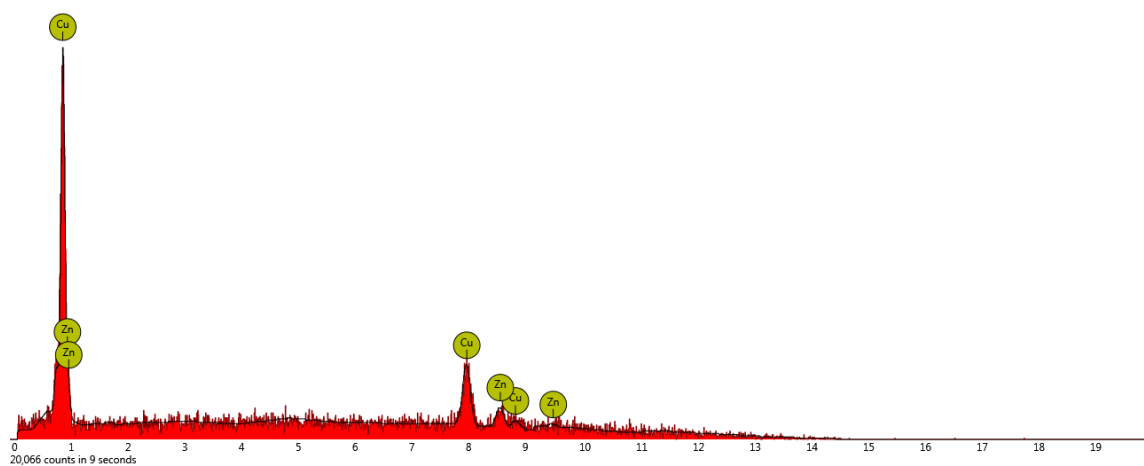
FOV: 671 μm, Mode: 15kV - Image, Detector: BSD Full



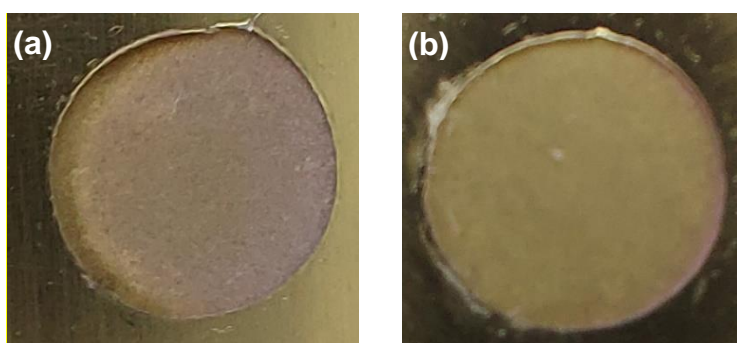
**Figure S9.** EDS spectrum of admiralty brass after immersion in 0.5 M HCl.



FOV: 671 μm, Mode: 15kV - Image, Detector: BSD Full



**Figure S10.** EDS spectrum of admiralty brass after immersion in 0.5 M HCl with 50 ppm CL2.



**Figure S11.** Photographs of admiralty brass after immersion in (a) 0.5 M HCl and (b) 0.5 M HCl with 50 ppm CL2.